Media and 5G

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The Media Industry and 5G Looking at opportunities across the entire media value chain





Content Creation Contribution

Multiple Camera Single source Use Case

Source: 3GPP TR 22.827 AVPROD

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Content Creation

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5G for Media Production





A NEW DIMENSION FOR REMOTE PRODUCTION

Higher bandwidth, low latency, synchronization, edge computing are key features for enhanced production workflows and flexible wireless deployments.

NEWSGATHERING & OUTDOOR BROADCAST

Quick response to events with a new approach to newsgathering and outdoor broadcast levaraging network slicing and the connection of media production equipment to 5G networks.

NON-PUBLIC NETWORKS AND MEDIA CAMPUS

Leveraging the development of non-public networks to integrate wireless production equipment into media premises, TV studios as well as on third-party networks. Security over public and non-public networks is also a key issue for media production applications.



Non-Public Networks (NPNs), Network Slicing Non-Public Networks for media production



5G Campus Networks



- Technology neutral: Continue to use and optimise existing systems in a mixed operation with 5G
- Technology convergence: PMSE equipment able to work in different deployments and countries
- Spectrum: Licensed (preferably), local, stationary and temporary usage, globally harmonized
- Content Sovereignty: Isolation of data/infrastructure, full management & control
- Deployment & Operation: automated as far as possible, feasible for non-telecommunication experts









SCALABLE DISTRIBUTION WITH UNICAST/MULTICAST & 5G BROADCAST

• 5G includes capabilities to address the lack of **scalability** for IP-based media distribution.

MOBILITY AND UBIQUITY FOR MEDIA SERVICES

• Distribution to **audiovisual content** with unprecedented **user device** reach.

TERRESTRIAL AND SATELLITE ARCHITECTURES

- Opportunities to integrate **terrestrial and satellite networks** for content distribution.
- Cloud-based architectures, software network functions for cost-effective network deployment.

EDGE CACHING, MEDIA NETWORK FUNCTIONS, NETWORK SLICING,...

• Exploring the **benefits** that the 5G **architecture components** may offer to improve media distribution.

Where are we?







- Services
 - Linear Content
 - TV, Radio, Live events, sports,...
 - Non-Linear Content
 - Catch-up, on-demand, personalised services
 - Increasing the reach of media content to users

Anywhere Anytime Using any Device

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AT HOME



CONNECTED CARS

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- How ?
 - With scalability
 - With universal coverage
 - With guaranteed QoS
 - Regardless of network congestion
 - Interoperability across networks
 - Enabling free access for users for PSM
 - With sustainable distribution cost

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USE THE LAW OF PHYSICS WHERE THE WORK BEST

- **Collaborative 5G infrastructure:** providing services over a wide area using a cooperative multilayer network
- Enhanced user experience: creation of a delivery system able to effectively meet the evolving user requirements for access to media services :
 - from highly personalised and interactive to highly popular live events
 - in a technically and cost-efficient way
- Intelligent receivers: optimising reception of the provided services (including two-way unicast services)









THE OPPORTUNITY: IP BROADCAST/MULTICAST/UNICAST



- Combining broadcast/multicast using Towers + Satellite overlay + Unicast Cellular to
 - The **broadcast of events** interesting large number of users and entire territories
 - The unicast delivery of one to one personalized contents
 - The multicast push delivery of multimedia contents
 - entertainment contents but also other public service contents (e.g. live traffic/alerts, navigation corrections and emergency information)
 - and in general software and information distribution to large population of users with a zero marginal cost per additional user
 - The same contents delivered to mobiles/vehicles can be received and managed at the very edge of the network (end devices) and at the level of any edge server in general
 - Using a local storage to maximize efficiency and economical sustainability.
 - At the exception of some limited cases where the information flow can be purely unidirectional (emergency transmission or free to air broadcast content delivery), it is always assumed the existence of a bidirectional link resource for the integration and orchestration of the 5G multilayer approach.
 - Broadcast-only would also work in areas where there is no unicast/uplink coverage

A GREEN SOLUTION BASED ON A MULTILAYER APPROACH



- The cost of and the power consumption of the whole distribution infrastructure is
 optimized combining cellular 'base stations' with broadcasting towers, covered by a
 satellite overlay, guaranteeing almost 100% area coverage of territories. An optimized
 number of base stations will mean better economies and less energy consumption.
- Towers will cover urban/suburban outdoor areas for mobile personal devices (and where satellite delivery solutions will not be able to reach), the Satellite overlay will cover vehicles and all other mobile (boats, planes,...) and nomadic reception devices.
- Most content in today's linear channels is pre-recorded and only a small part is native live (typically 3 or 4 H/day). Only live content has to be delivered in real time. Pre-recorded content can be stored in caches on network edges during the time of lesser network load, live content can also be stored in the same way for later on-demand viewing
- The stored content can then be delivered in two ways: as a linear channel combining live an non-live programmes in a schedule or on-demand from a catalogue, **network load can be optimised in time** (e.g. outside the live transmissions the capacity is used to feed the caches) or by utilising the multiplex gain as not all channels require constant capacity





Looking Beyond 5G...



Efficient Integration of Wireless Infrastructure

Cloud-Native approaches



Vertical Industry Integration and Access



Automation

Security, Trust, Service Integrity

Many Thanks!

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