5G for Media Distribution, Production and Contribution

Dr. Jordi J. Gimenez - Head of Technology 5G-MAG

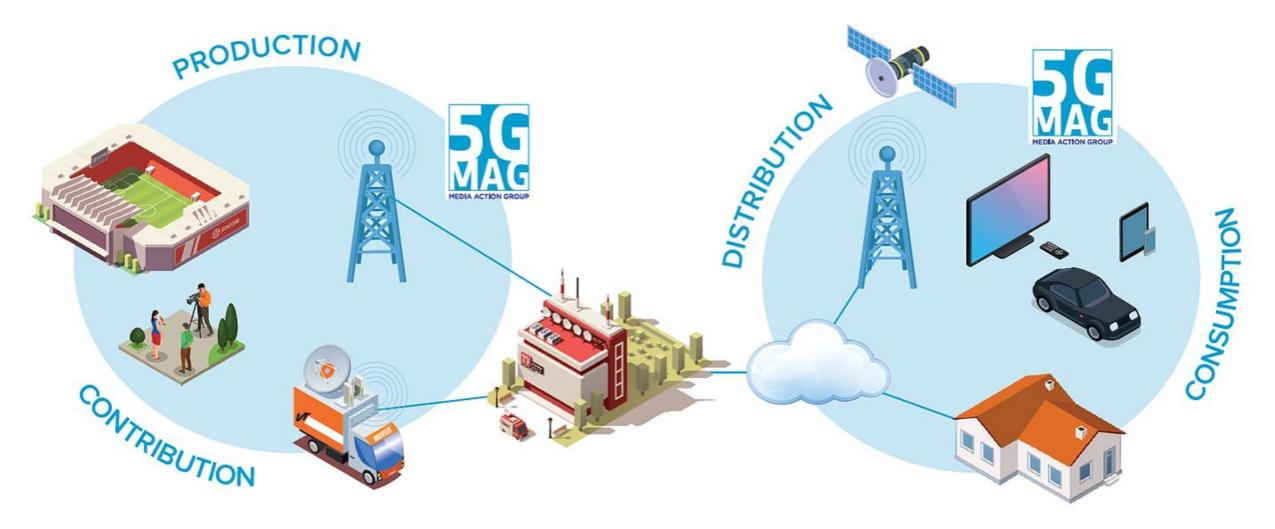
InterSDO meeting - 13.10.2021



www.5g-mag.com

What's in 5G for the media industry?





The Media Action Group is an association bridging the media and ICT industries







Understanding what 5G and related technologies can do for Media



Developing Use cases, Requirements, Commercial propositions



Influencing standards and making them understandable by the Media community



Steps towards implementing standards, trials and deployments

Commercial Aspects

Technology

Regulation

Trials

Implementation





The Mobile Broadband Standard



A Global Partnership





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5G-MAG brings audio-visual media into focus for 3GPP

February 3, 2021

The Organizational Partners (OPs) of 3GPP have approved 5G Media Action Group (5G-MAG) as a Market Representation Partner (MRP) in the project.

5G-MAG represents major stakeholders in the production and distribution of audiovisual media content and services, driving their collaboration on the implementation of 5G solutions, aligned to 3GPP standards.

READ MORE ...

Search

3GPP Website: Search for...

Search and download specs, docs, CRs and more from the 3GPP FTP Server:

DADVANCED FTP SEARCH

More News:

 Advanced plans for 5G - Results of the RAN workshop on Rel-18



Media Distribution and Consumption

Content Anywhere, at Anytime, to Any Device







Mobile Broadband

Terrestrial Broadcast

Satellite



Home Gateway

Digital Media Player

Smart TV

Smartphone / Tablet

Wearables

Smart Speaker

Smartphone / Tablets

Automotive

Our Work Areas







Mobile Broadband

Terrestrial Broadcast

Satellite

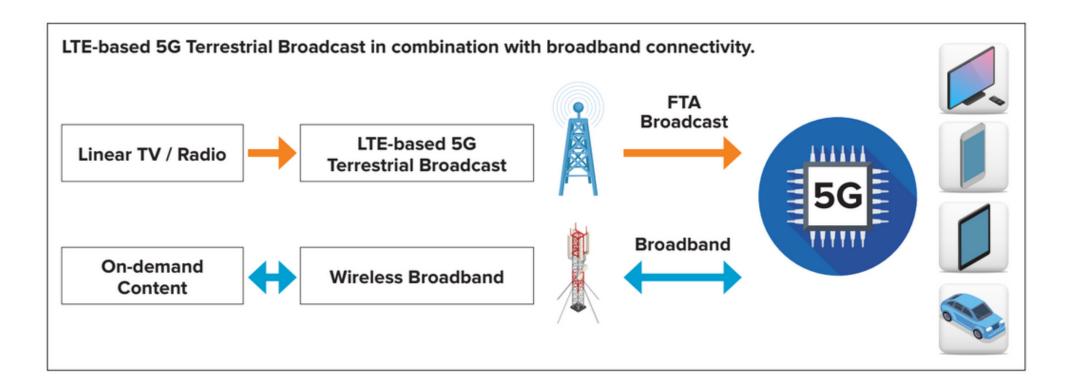


- LTE-based 5G Terrestrial Broadcast
 - LTE_terr_bcast (Rel-16)
 - LTE_terr_bcast_bands (Rel-17)

Work Area: 5G Terrestrial Broadcast



 Linear TV and Radio over LTE-based 5G Terrestrial Broadcast (Rel-16)



Work Area: 5G Terrestrial Broadcast

LTE-based

5G Terrestrial

Broadcast



 Linear TV and Radio over LTE-based 5G Terrestrial Broadcast (Rel-16)

RADIO ACCESS ENHANCEMENTS

Wider coverage and high mobility

New numerologies to support up to 100 km radius and 250 km/h speed

More broadcast capacity

Support for 100% broadcast carrier allocation in dedicated broadcast and mobile networks

More deployment flexibility

Suitable for broadcast and mobile networks to target mobile, handheld and fixed reception

Better efficiency

Reduced signalling overhead in dedicated broadcast transmissions

SYSTEM LAYER ENHANCEMENTS

Delivery of free-to-air content to devices without SIM/service

Receive-only mode

out SIM/service subscription

Unified protocol stack

CMAF packaging – compatible with unicast and broadcast stacks in addition to MPEG Transport Stream

Standardized interface

Content providers can deliver linear TV and radio with a unified framework

Shared broadcast

Multiple operators can serve users on a common broadcast carrier + Release 17 adds support for 6/7/8 MHz channel bandwidths

+ Release 18 adds support for downlink-only operation in the UHF band (470-694/8)

Standalone Downlink
Only
Dedicated Broadcast

UHF Band

Evolving LTE-based 5G Terrestrial Broadcast in Rel-18?

• 5G-MAG proposes enhancements on:

Priorities

- Connection of EnTV RAN (FeMBMS) to 5G Core
- Optimization for simultaneous support of 5G Broadcast & NR Unicast

submission

to 3GPP

- Time Interleaving
- Other topics of interest are (the order does not imply priority):
 - Public Warning capability
 - Efficiency enhancements, e.g., MIMO (existing antennas/RF stages in handsets), Overhead Reduction.

Our Work Areas

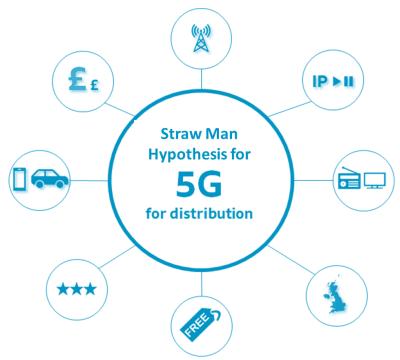


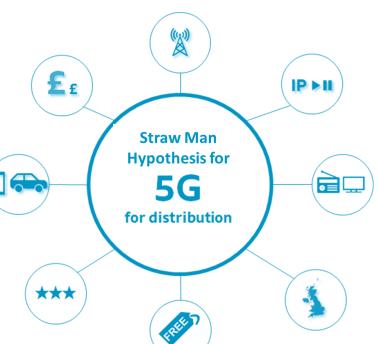


Mobile **Broadband**

Terrestrial Broadcast

Satellite





- **5G Media Streaming Architecture**
 - 5GMSA (Rel-16)
 - + Multicast FS_5GMS_Multicast (Rel-17)
 - + Extensions FS_5GMS_EXT (Rel-17)
 - + Cloud/Edge Computing FS_EMSA (Rel-17)
- **Multicast Broadcast Services (MBS)**
 - <u>5MBS</u> (Rel-17)
 - NR_MBS (Rel-17)

Work Area: 5G Mobile Broadband



5G Media Streaming Architecture ()



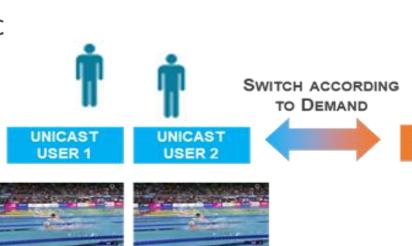
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 - + Cloud/Edge Computing FS_EMSA (Rel-17)

DRM Client	Media Presentation and Rendering	Media Decoders	Delivery Procedures	Adaptive Bit Rate Encoder	Encryption and Encapsulation	Manifest Generation and Segment Packager
Metrics Measurement & Logging Client	Consumption Measurement & Logging Client	Media Decryption	Media Decapsulation	CDN Server	DRM Server	Service Discovery
Session Management Server	Content Guide Server	Consumption Collection and Reporting	Network assistance and QoS	Replacement Content Server	Manifest Proxy	Metrics Collection and Reporting

Work Area: 5G Mobile Broadband



- Multicast Broadcast Services (MBS)
 - <u>5MBS</u> (Rel-17)
- R.
- NR_MBS (Rel-17)
- Adding Multicast support
 - Users can be grouped to access specific multicast content
 - UE feedback may be possible
- Adding Broadcast support
 - Content delivered to a service area
- Allows for Dynamic Switching between PTP - PTM
 - Optimization of resources







Evolving 5G Multicast Broadcast Services in Rel-18?

- 5G-MAG proposes enhancements on
 - Priorities
 - Receive-only mode/Free-to-air for MBS
 - Multicast reception in RRC_INACTIVE state
 - Potential leftovers from MBS Rel-17
 - Other topics of interest are (the order does not imply priority):
 - Considerations on UE handset backwards compatibility are essential
 - MBS SFN support for inter-gNB/DU scenarios
 - MBS resource optimization for RAN sharing deployment
 - MBS Physical Layer Time Interleaving
 - Broadcast/Multicast and Unicast Superposition Transmission (BMUST)
 - Techniques to enhance cell coverage, in particular in rural areas (e.g. CovEnh)
 - Techniques to address universal access to unicast/multicast/broadcast services (e.g. FS_PALS)



Our Work Areas







Mobile Broadband

Terrestrial Broadcast

Satellite



- Non-Terrestrial Networks
- Satellite as Backhaul
- Satellite to Edge
- Satellite to End Users



Media Production and Contribution

Connectivity Requirements





Video Light, Effects



Recording



Theater, Musical



Broadcast, Sport



Live Music



Wireless Monitoring



Conferencing



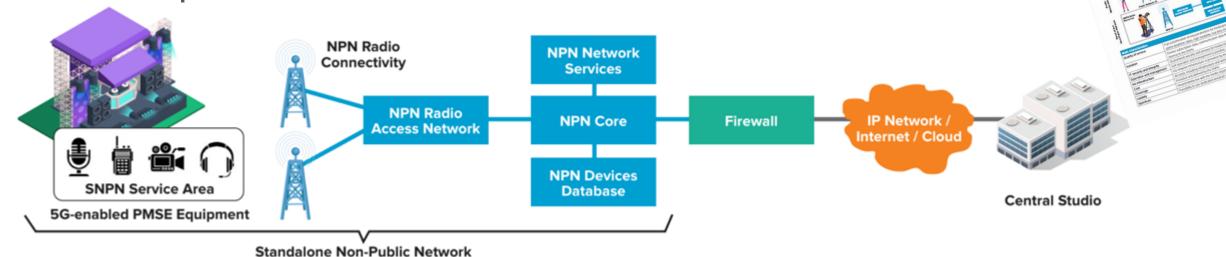
Tour Guiding



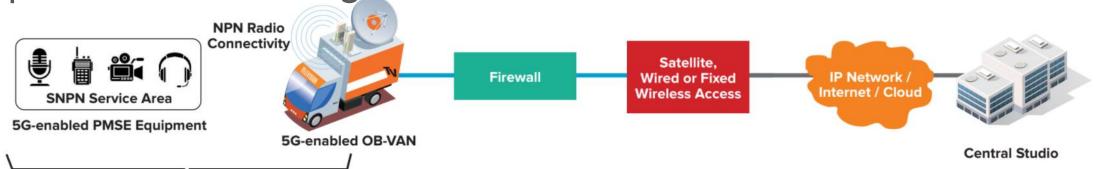
www.5g-mag.com/Explainers

Work Area: Non Public Networks

On-site production and Venues



Special Event Coverage



Standalone Non-Public Network

Work Area: Non Public Networks



- Study Item on Media Production over 5G NPN
 - Development of reference architectures
 - Identify relevant QoS requirements for media production workflows
 - Identify relevant 5G System features
 - Identify the suitability of existing media production content delivery protocols, codecs and service layers for 5G System usage
 - Study media device and network orchestration solutions

3GPP TR 26.805 V0.1.1 (2021-04)

Technical Report

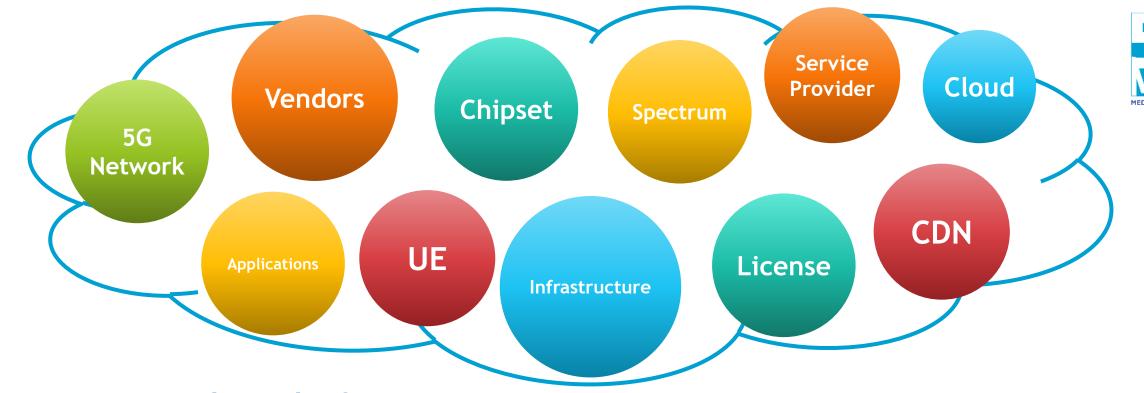
3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Study on Media Production over 5G NPN Systems (Release 17)







Commercial and Regulatory Aspects



- Spectrum bands for 5G operation
- Requirements for Media Distribution and Production
- Localized Spectrum Access
- Zero-Rating
- NetNeutrality

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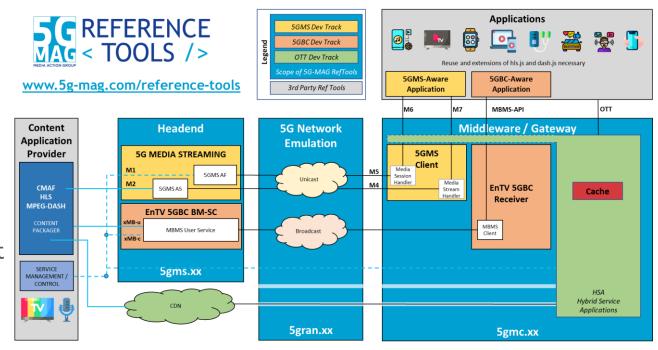


Towards deployments, products and services

Open Source Development Programme



- Development of an open reference platform for 5G media services
- Initial target is 3GPP Release 16: Media Streaming + 5G Broadcast
- Use cases:
 - TV and Radio services
 - Low-latency streaming
 - Targeted-advertising
 - Regional/Local program insertion
 - Hybrid consumption scenarios
 - Integration in apps receiving broadcast + unicast
- Consumption environments:
 - Outdoor / On-the-move consumption
 - Automotive infotainment systems (Android Auto,...)
 - Home entertainment ecosystem: Cast to devices, TV, smart speakers, etc







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Thank you!

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