

5G Media Action Group

Together we shape the future of media



www.5g-mag.com

5G-MAG - Where Media meets 5G

The 5G Media Action Group is an association bridging the media and ICT industries



analysing what 3GPP standards can do for media



defining new use cases for media production, contribution and distribution enabled by new technologies



recommending how to use and implement technologies and networks



developing requirements for new features and recommendations for improving the 5G specifications

Influencing standards and deployments for the benefit of the media industry



**Content
Creation**

Contribution

Consumption



Distribution

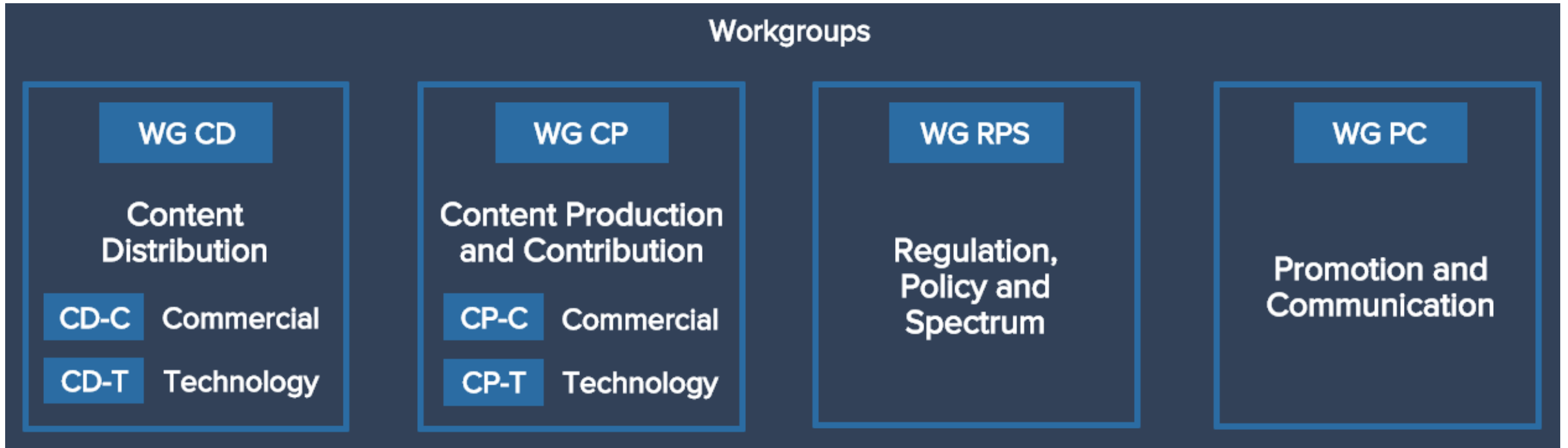
Production



5G in the Media Value Chain

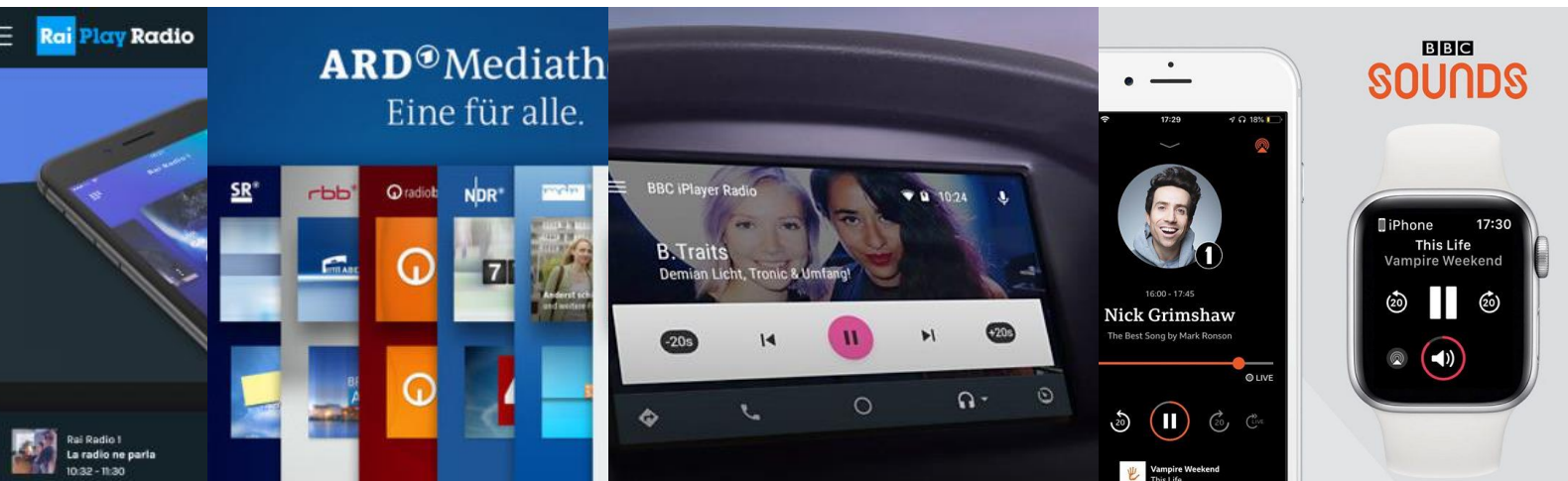
What are our areas of work?

- 5G-MAG members are welcome to contribute and join any of the workgroups and activities



Why 5G for media distribution?

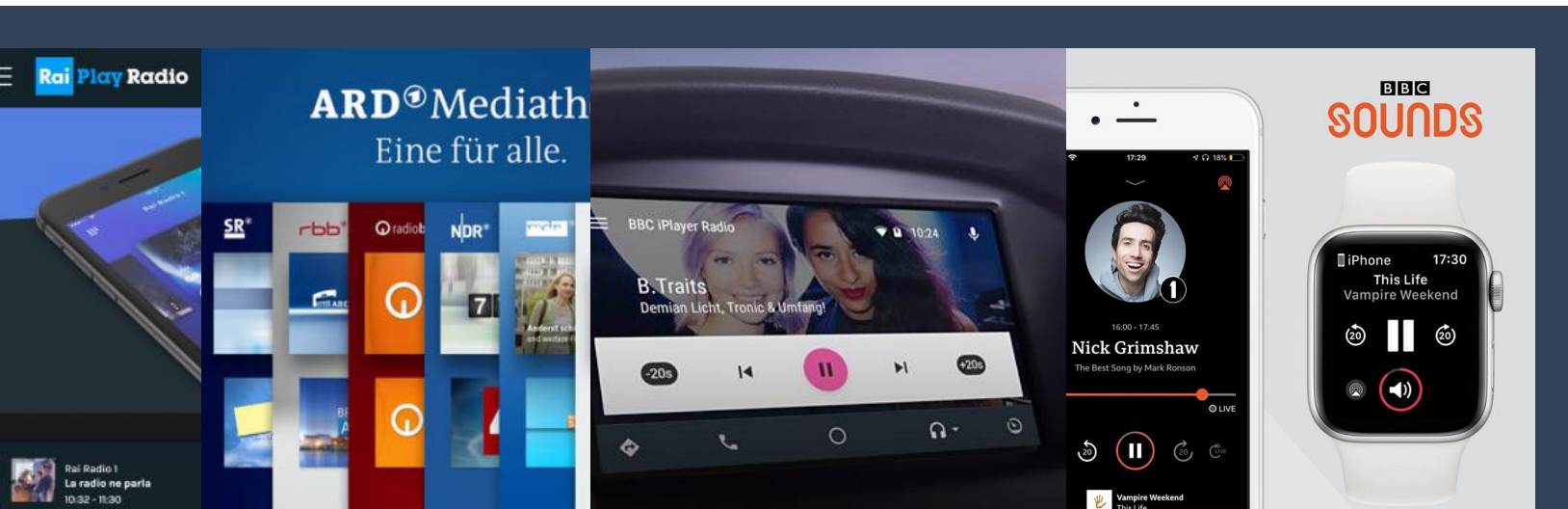
- Content Distribution to smartphones, tablets, wearables, cars,...
- Linear TV and Radio
- On-Demand offers, podcasting,...
- New formats, personalization, targeted content,...



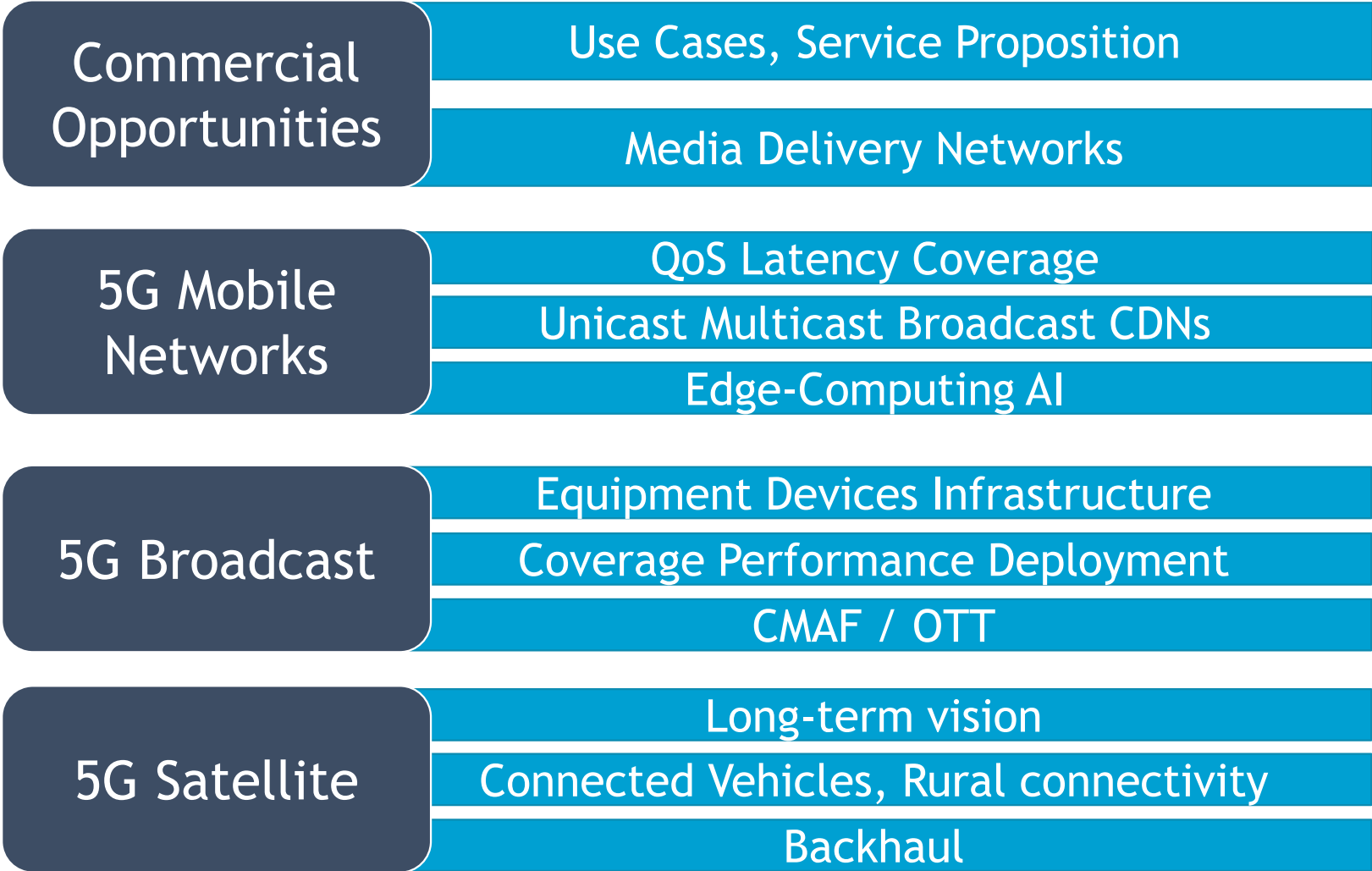
5G for Media Distribution

- How to reach all audiences at scale?
- How to contain distribution cost?
- How to ensure universal coverage?
- How to cope with large traffic volumes?
- How to retain control and trust in distribution?
- Is 5G the enabler for more than just best effort?

TV Radio UHDP
 Personalized Im
 mersive Linear
 On Demand Geo
 location Global
 Audience Time
 Shift Podcast So
 cial networks



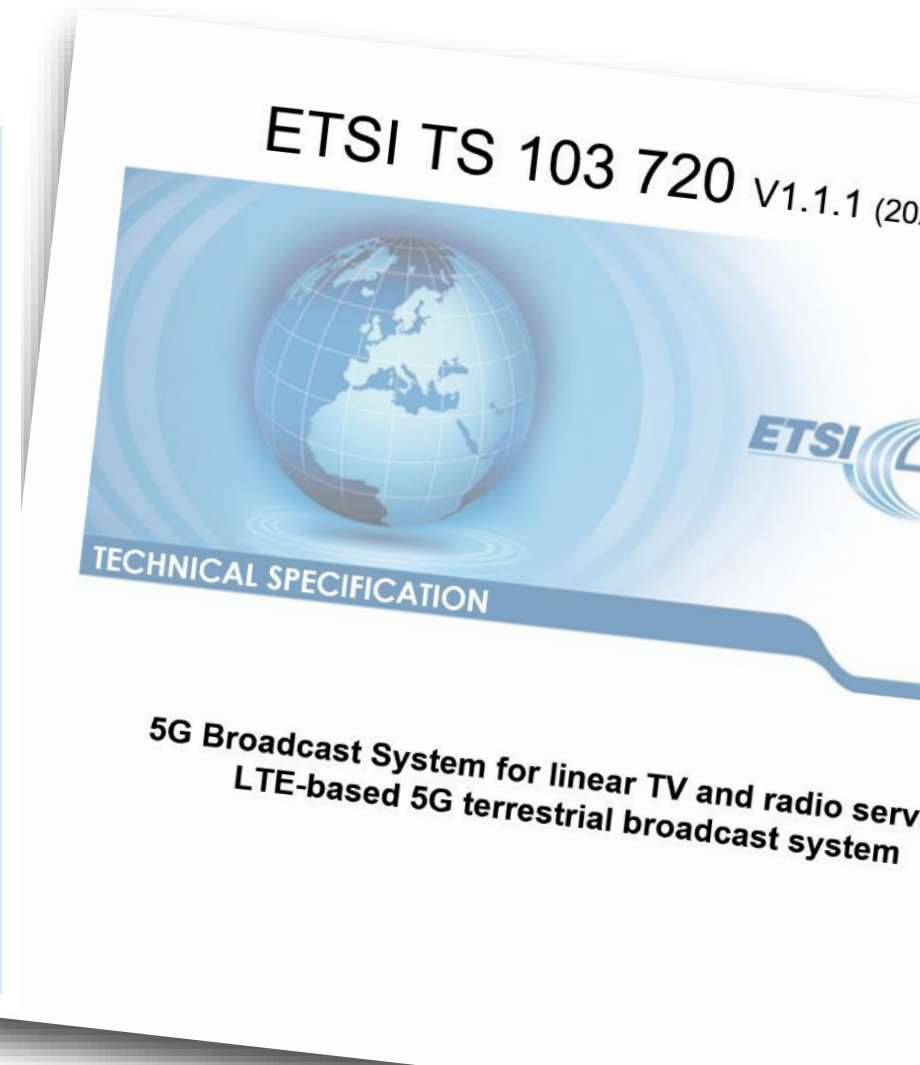
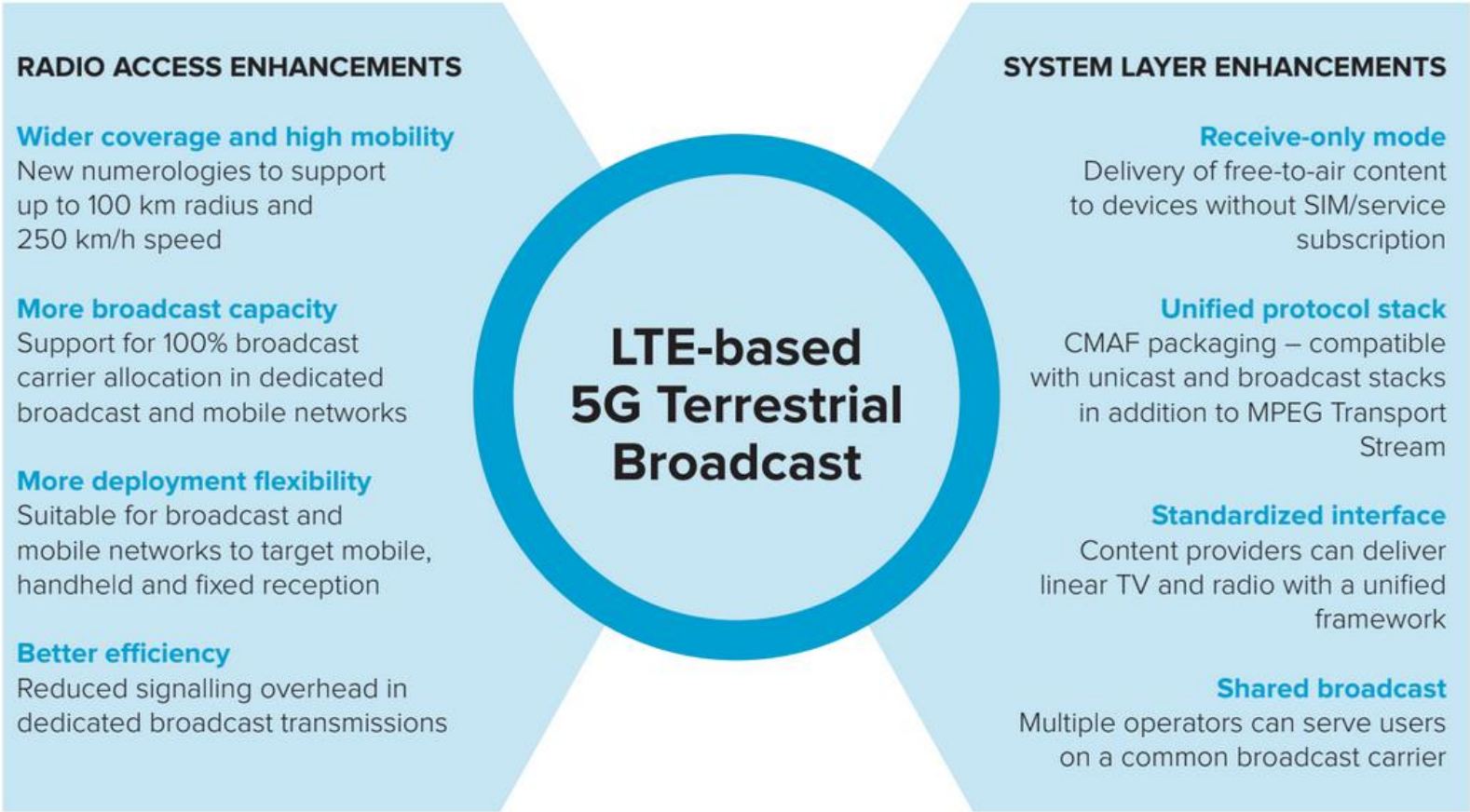
Work Areas



Multicast Unicast
Broadcast Edge
Computing Cloud
Network Slicing
CDN Media
Streaming Architecture
QoS SCM
AFHLS DASH

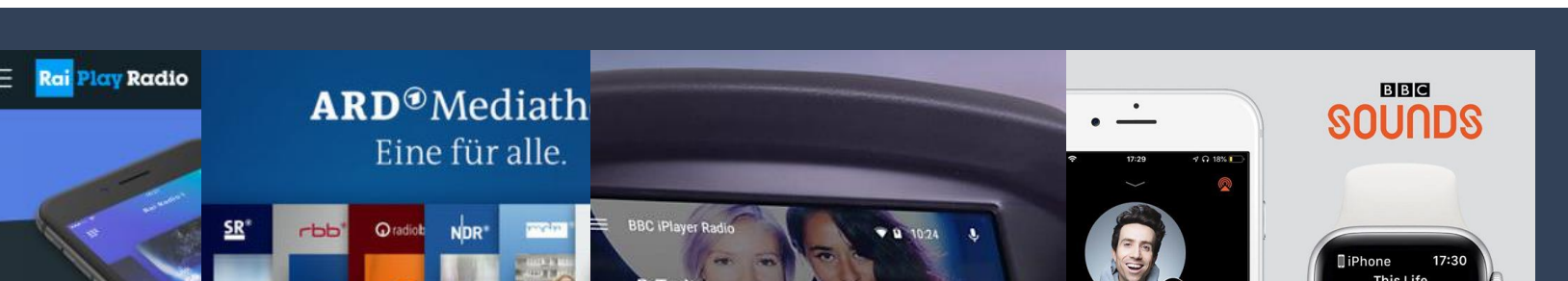
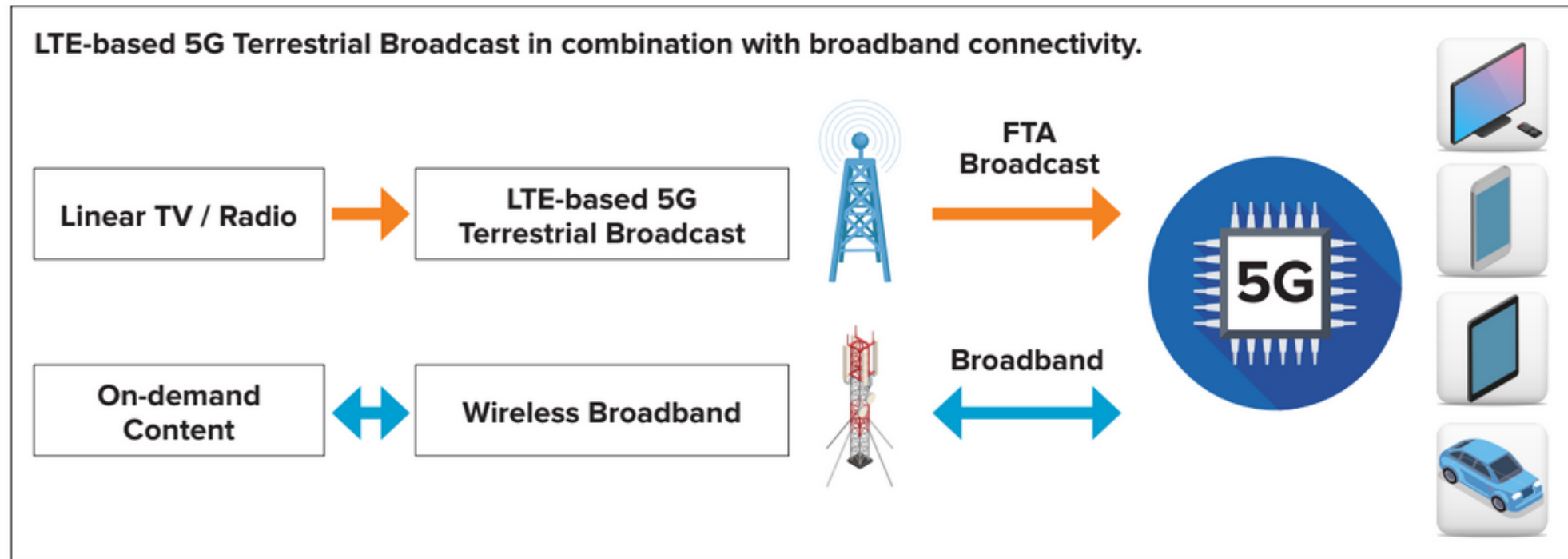
Work Area: 5G and Terrestrial Broadcast

- Can Terrestrial Broadcast networks be used for 5G distribution?



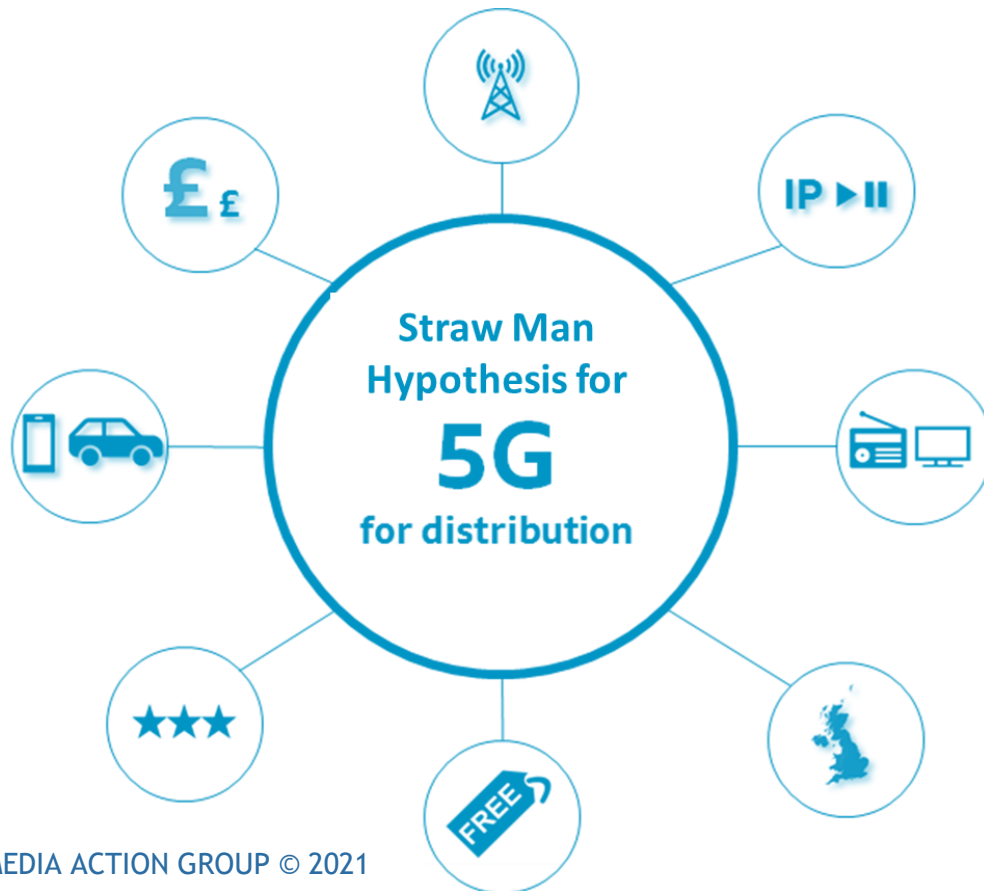
Work Area: 5G and Terrestrial Broadcast

- Distributing linear radio and TV services



Work Area: 5G and Mobile Broadband

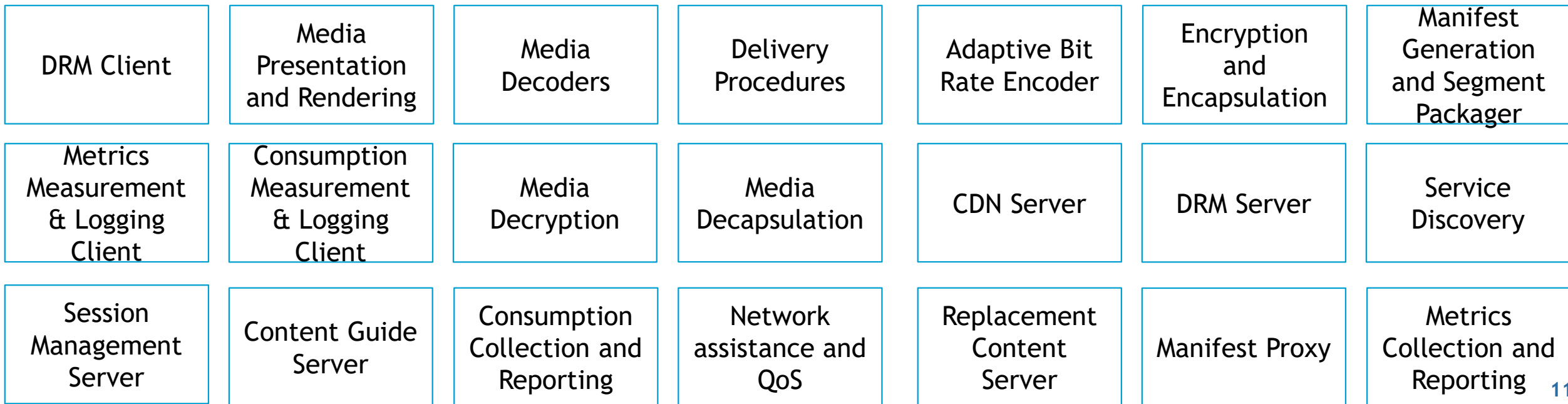
- Content delivered over mobile networks providing linear, on-demand, and other personalised services.



- Technical solutions supported by other sizeable industry verticals and market players?
- Cost of distribution sustainable?
- User experience equal to or better than with current networks?
- Can content be offered free at the point of use?
- Can networks offer universal coverage?
- Can current and future innovative services be developed?

Work Area: 5G and Mobile Broadband

- Can 5G be the future media distribution network?
 - New Radio (NR) Multicast/Broadcast - mixed mode
 - Media Streaming Architecture
 - ...



Work Area: 5G and Satellite

- What is the role of satellite integration with 5G for media distribution?
 - Backhaul
 - Edge caching
 - Distribution to end-users



5G for Media Production & Contribution

- Changing the way to create content
- High Bandwidth / Low Latency
- News, Sports, Music Festivals
- Enhancing Cellular Bonding
- Remote and Distributed Production

News Gathering
User Generated Content
Remote Production
Venues
Music Festivals
Sports Events
TV Studios
Smartphones



Work Areas

Technology Enablers

NPN, MEC, Roaming, Uplink aggregation
Uplink Streaming
Future IP-based Contribution Networks

5G-PMSE Equipment

PMSE Equipment Integration
UE Architecture
Interfaces, APIs

Enhanced Media Workflows

Codecs and Transport Protocols
Technology Stack
Software-Defined Networks

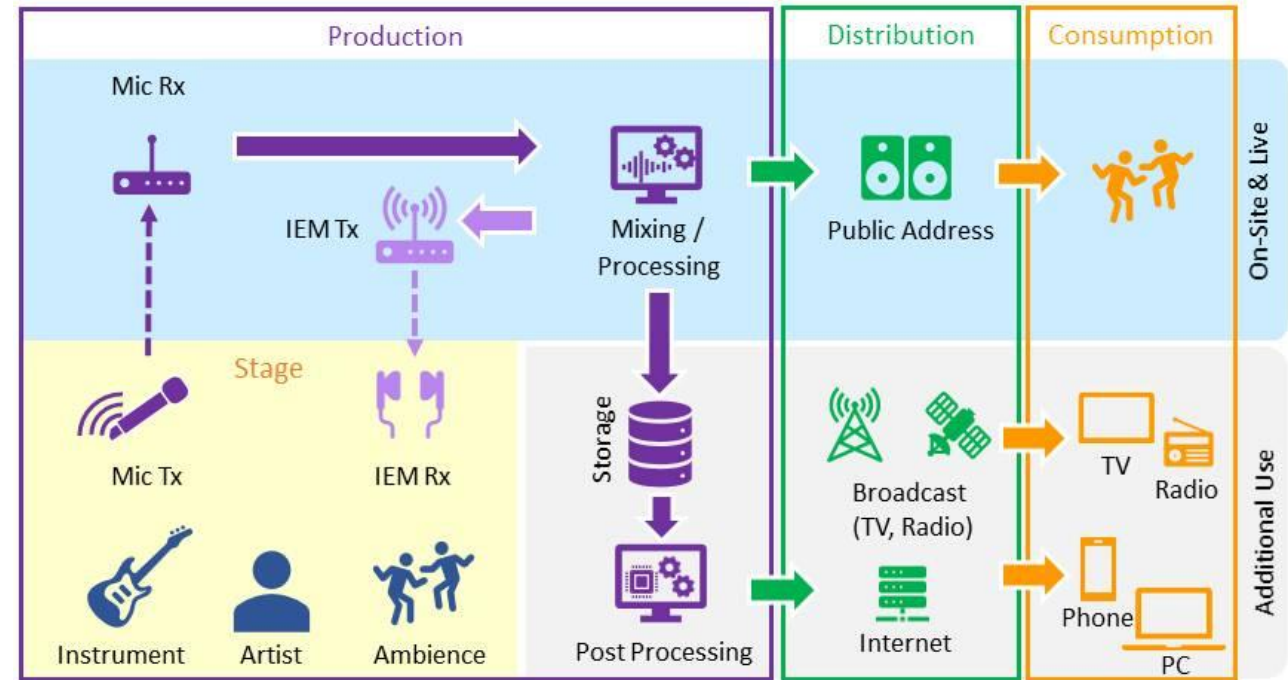
Technology Interworking

Fixed-Mobile Convergence
LTE / 5G & WiFi
IMT-2020 Technologies

Uplink Streaming
Non-Public Networks
Network Slicing
Local Breakout
QoS Flows
5G-PMSE
MEC
Software Networks

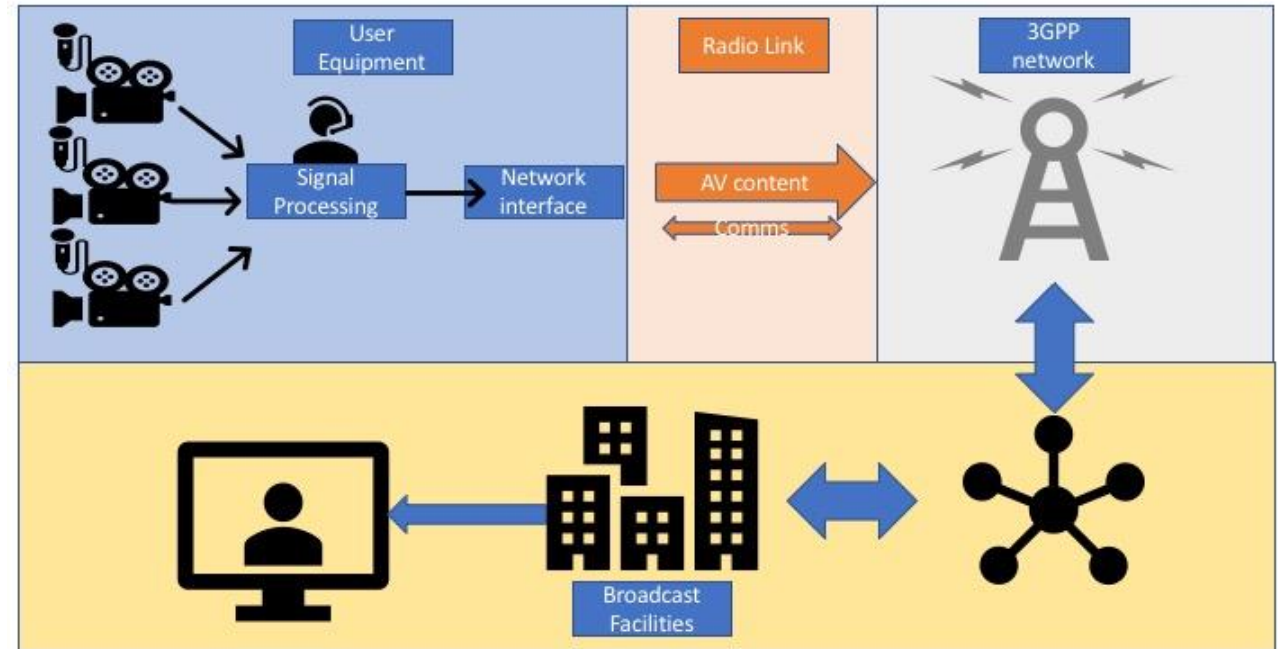
Live Audio Production

- Challenge: Mouth-to-Ear Latency for IEM
- Local network connectivity
- Devices addressable within the Local Network
- Reliability
- Synchronicity
- Local Audio Processing



Multi-Camera Wireless Production

- Wireless extension of an IP studio
- High Bandwidth
- Timing and Synchronization
- Network Slicing
- Media Orchestration
- Local video processing:
 - Mixing
 - Pre-visualisation



Multiple Camera Single source Use Case

Newsgathering

- Cellular Connectivity
 - Smart and automatic resource allocation across multiple carriers (carrier aggregation, dual connectivity,...)
- Use of smartphones

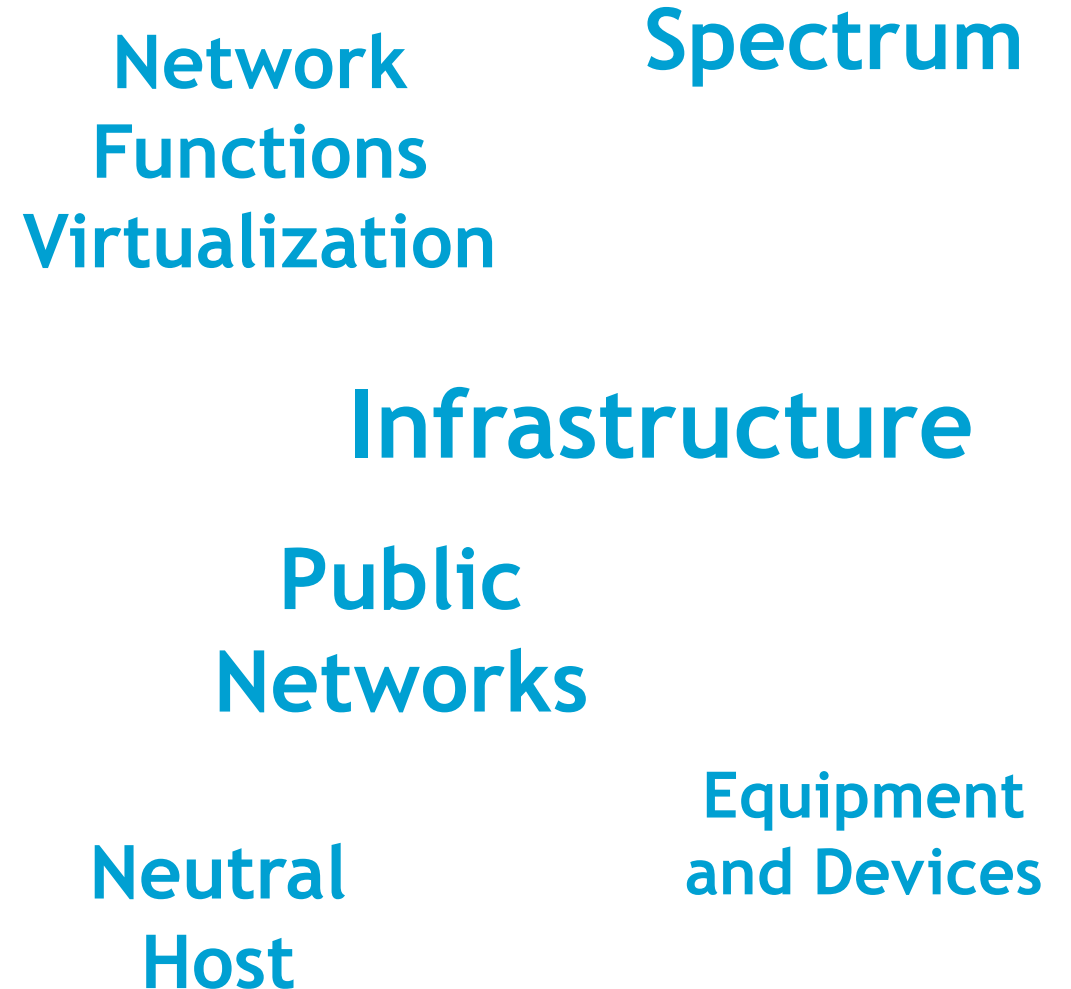


Technology and Standards are not enough

- Commercial Aspects
 - Business Models - Commercial Arrangements
 - Equipment / Manufacturers
 - Global Deployment and Trials
- Regulation, Policy and Spectrum
 - Spectrum bands defined for 5G
 - Spectrum harmonisation
 - Local Spectrum Access
 - Dynamic Spectrum Sharing

Understanding the 5G ecosystem

- New players and roles
- Decoupling of
 - Infrastructure,
 - network operation,
 - spectrum
- Network Exposure
- Integration with the cloud



Interested in
future
production
and
distribution
of media?

Let's work
together!



ateme



BBC

b.com



cellnex



EBU
OPERATING EUROVISION AND EUROAUDIO

EI TOWERS



france.tv

EPT



BTS
IEEE Broadcast
Technology
Society



mbi

MEDIA
BROADCAST

MEDIEN
GRUPPE
RTL
DEUTSCHLAND



nitel



ONEMedia

ors
group

plus
Poikomtel S.A.

PROGIRA

Rai



RTÉ



rtve

Saankhya Labs

SENNHEISER

swisscom

SWR

Qualcomm



[@5GMAGnews](https://twitter.com/5GMAGnews)



[linkedin.com/company/5g-mag/](https://www.linkedin.com/company/5g-mag/)

Contact us

Jordi J. Giménez - Head of Technology

gimenez@5g-mag.com

Eva Markvoort - Head of Finance and Administration

markvoort@5g-mag.com



MEDIA ACTION GROUP

www.5g-mag.com

A bridge between Media and 5G

Download our www.5g-mag.com/explainers



5G-MAG EXPLAINER

Non-Public 5G Networks for Content Production

Non-Public Networks (NPNs) are a feature of 5G technology designed for localized non-public use. For media organizations, NPNs may offer the possibility of deploying fixed and nomadic networks, where fixed networks would cover small areas like studios or extend to the entire premises as a so-called campus network.

What are Non-Public Networks?

Media production facilities are increasingly adopting IP-based infrastructure. The ubiquity of IP networks and technologies enables increasing efficiency and effectiveness in production, process automation, and greater flexibility. Content production and contribution could leverage 5G as a highly reliable wireless technology to enhance existing or enable new workflows in the areas of newsgathering, remote production and live event coverage as well as in dedicated production facilities.

NPNs are a key enabler for the deployment of media production scenarios. They are currently under standardization in 3GPP, with the first functionalities specified in Release 16. NPNs offer the possibility of providing 5G network services to organizations without entirely relying on public mobile networks. The latter may not be able to support certain applications, for example those requiring very low latency, highly robust services or business-critical data privacy – meeting such requirements may not be the primary business focus of public mobile network operators.

5G MAG MEDIA ACTION GROUP

5G-MAG EXPLAINER

Deploying stand-alone Non-Public 5G Networks for media production

Non-Public Networks (NPNs) offer a variety of deployment configurations and options. Depending on the requirements of media organizations and the type of production or contribution scenario, stand-alone NPNs or NPNs with varying degrees of integration with public networks may be considered.

What is a stand-alone NPN?

A stand-alone Non-Public Network (SNPN) is an isolated network whose radio access network (RAN) and core network functions and services do not rely on a public mobile network. SNPNs may be deployed as fixed or nomadic networks, managed either by the entity making use of the NPN or a third party. They have full control and management capabilities for the network functions and services provided by the SNPN.

For media organizations, SNPNs can support specific media production and contribution requirements that may not be met by public mobile networks, which usually target general public usage.

The SNPN, based on 3GPP-defined technologies, has its own dedicated NPN ID and can host specific vertical industry devices (e.g. PSME equipment). All network functions are deployed inside the SNPN and isolated from public networks. This setup does not exclude the possibility of accessing public services through a firewall or establishing roaming agreements with public network operators if required.

Main characteristics

- Full customization of key parameters for media production (e.g. low latency, high-throughput, uplink-downlink ratios, high reliability, real-time monitoring, etc.)
- Device subscription data, communication data flows, and operation and management data are referred to the SNPN
- Privacy and security for media-related data, accessible only under authorization
- Deployment is possible, with full autonomy
- Deployment as SNPN operator
- Media organization

5G MAG MEDIA ACTION GROUP