



Standards & Open-Source

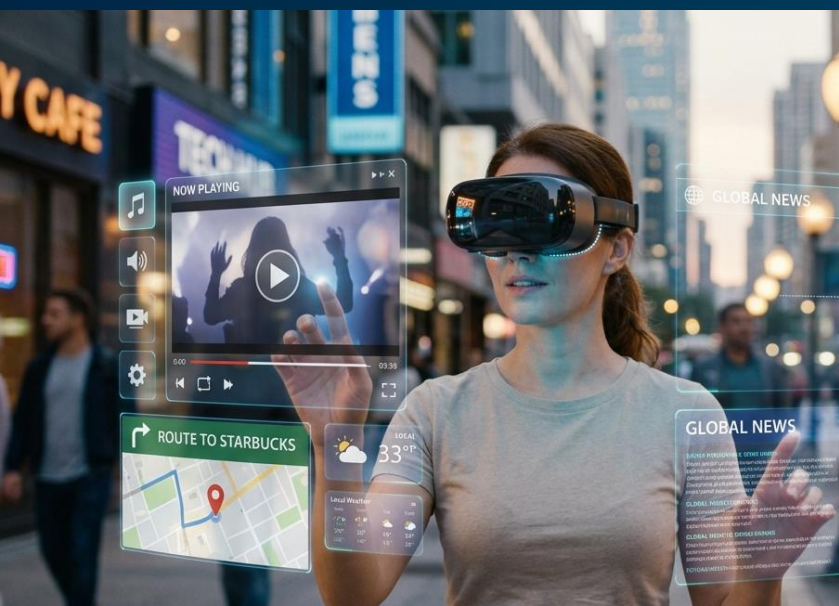
Enabling next steps of connected media experiences

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5G-MAG Chair



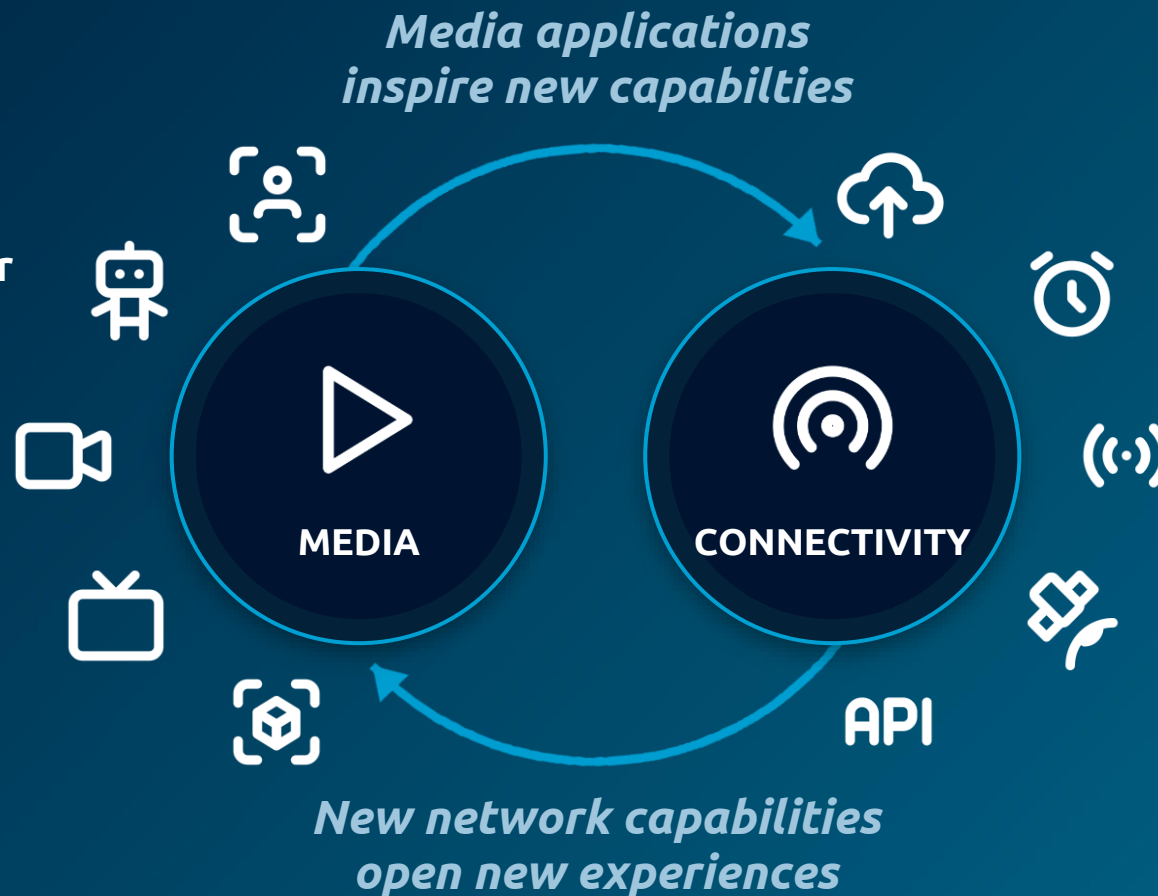
**STREAMING – PRODUCTION – BROADCAST – REAL-TIME COMMS – AVATAR – EXTENDED REALITY
5G/6G – NON-TERRESTRIAL NETWORKS – DATA COLLECTION – NETWORK APIs – COMPUTING - AI
CONNECTED DEVICES – VIRTUAL WORLD – VOLUMETRIC VIDEO – CODECS – PROTOCOLS - AUDIO**



WHO WE ARE

Bridging standards and deployments — at the intersection of media and connectivity, for generations to come

-  **Fast tech evolution**
-  **Global ecosystem**
-  **Built better together**



Connected Devices
Streaming Platforms
Next Generation Codecs
Internet-based Protocols
eXtended Reality
Wireless Video
Real-Time Communications
Data and Analytics
Content Production
Satellite
Network APIs
Artificial Intelligence
Quality of Service
Latency
Energy Consumption
Synchronization
Spatial Media
...

WHAT WE DO

Based on open specifications, to address market needs

Together with our members we are running the loop from specifications to products keeping connected media applications and network technologies open, interoperable and deployable at scale.

SPECIFICATIONS DRIVING MEDIA + CONNECTIVITY

3GPP

ETSI

MPEG

IETF

...



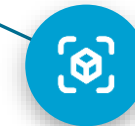
Based on Standards Specifications

Feedback & requirements to standards bodies

Software Acceleration Programme

Interop, validation, plugfests and hackathons

IMPLEMENTED AND PUSHED INTO ACTION



Understand it. Prove its value. Scale it.

Our work at a glance



Specification
Analysis



Implementation
Profiles & Blueprints



Standards
Engagement



Documentation &
Explainer Videos



Blueprints and documentation

Turn standards into
implementation-ready
documentation



Feedback, requirements and pain points

Deployment experience
and requirements
submitted SDOs



Liaison statements & inputs to SDOs

Engagement in standards
bodies on behalf of 5G-
MAG members

Some examples of our current areas of work

The full track at tech.5g-mag.com

Content Delivery at Scale

5G Media Streaming
5G Broadcast
5G Multicast and Broadcast Services
DVB-I over 5G

Multimedia Content Delivery
UE Data Collection and Event Exposure
Real-Time communications
Non-Terrestrial Networks

Immersive Experiences and Spatial Media

XR and MPEG-I Scene Description
Volumetric Video with MPEG V3C
Avatar Communications on MPEG ARF

Media Production and Contribution

Non-Public Networks
Uplink Media Streaming
Time Sensitive Communications
Connectivity Quality APIs

Research on future media and connectivity tech

6G Networks
AI traffic characterization
AI/ML Services
Beyond 2D

Powered by tech from...



WHAT OSS ENABLES

The Media Connectivity Software Accelerator

Our work at a glance



Early
Validation



Developer
Community



Accelerated
Deployment



Open by Design
and IPR-friendly



**Reference
Tools**

Reference
implementations and
technology enablers



**Testbeds and
Evaluation Tools**

Evaluation frameworks
for technology validation
with realistic conditions



**Application
Prototypes**

Use-case driven
implementations towards
real-world applications

WHAT WE DO

Some examples of our current projects

The full track at developer.5g-mag.com



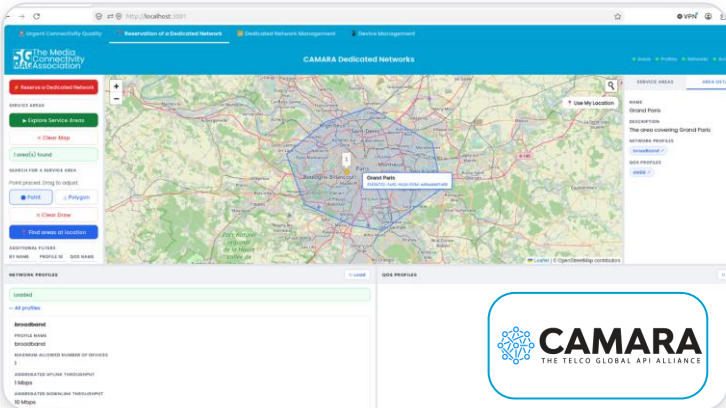
Reference Tools of 5G Media Streaming



Reference Tools of MPEG-I Scene Description



Reference Tools of MPEG V3C



Reference Tools of CAMARA Dedicated Networks



Reference Tools of 5G Broadcast



Reference Tools of UE Data Collection / CMCD

More information at developer.5g-mag.com

A note on the Open-Source Software Licenses

Protecting IPR. Enabling industry collaboration

What is the License Model?

1. The 5G-MAG Public License v1.0, is a modified version of Apache 2.0 which allows:
 - **Free Non-Commercial Use:** You can freely use, copy, modify, and distribute the code for non-commercial purposes, including study, academic research, testing, and validation.
 - **Commercial Exploitation:** You are permitted to use the reference tools and software within commercial services, trials, and live deployments, but:
 - **FRAND Patent Licensing:** If you use the software commercially, the built-in patent clause ensures that any essential contributor patents are made available to you under **FRAND** (Fair, Reasonable, and Non-Discriminatory) terms.
2. Repositories with software derived from other licenses keep their own license according to their own terms.

How to Contribute?

1. Sign an Individual or Corporate Contributor License Agreement (CLA)
2. Anybody can become a contributor (no need to be 5G-MAG member to contribute code)
3. 5G-MAG members get priority in support from the 5G-MAG Project Office and additional development resources may be provided. 5G-MAG members define priorities and where to dedicate resources
4. Membership of 5G-MAG remains open to the industry to boost and scale your software project by joining forces.



The Media Connectivity Software Accelerator in facts

Our work at a glance

~15

project areas across
media and connectivity

+60

repositories, open on
github.com/5G-MAG

12,000+

clones: developers
pulling the code

Weekly

developer calls and
rolling releases

1

thriving **DEVELOPER COMMUNITY** of standards experts, developers and implementers

Four pillars — each lowering cost and accelerating time from spec to deployment



Software projects



Testbeds/interop



E2E demos



Feedback to standards



Software Projects

Turn standards into open, implementation-ready code. Anyone can build on it — no proprietary stack needed to evaluate or deploy.



Evaluation Platforms & Testbeds

Reproducible test environments and benchmark frameworks. Common tools mean comparable results and faster interop at plugfests.



End-to-End Demos & Use Cases

User-facing demonstrations that abstract technical complexity and make the value proposition tangible for operators, broadcasters and industry.



**For MPEG WG3-systems consideration:
Enable OSS from the start of every
project**

OSS arrives after the standard is frozen — with additional costs at every stage



Duplicated
prototypes



Late interop bugs



Slow deployment



Evaluation is expensive

Each organization builds its own prototype to evaluate a draft spec. Duplicated effort, inconsistent results, slow feedback into the standard.



Interop is delayed

Without shared code, interop testing starts from scratch at plugfests. Bugs found late are expensive to fix — including specification errors.



Deployment is delayed

The gap between a frozen spec and a production-ready implementation can be years. Early adopters carry the full cost alone.

A shared software project and evaluation platform is a shared starting point — not a competitive advantage



Shared baseline



Early validation



No duplication



Faster
deployments



For standards bodies

Draft specs validated against running code before they freeze. Ambiguities and gaps surface early, when they are cheap to fix.



For industry members

Reduced costs. No need to build evaluation stacks from scratch. Prototype on a common baseline and invest in differentiation, not duplication.



5G-MAG in practice

60+ repos, 12,000+ clones. Software projects and testbeds for 5GMS, 5G Broadcast, MPEG-I, DVB-I — available before commercial products exist.

Shared code accelerates plugfests — end-to-end demos make the value visible



Faster plugfests



E2E demos



Evidence back



Interoperability

When all implementers start from the same software project, plugfest preparation time drops and root-cause analysis is faster. Bugs found early are cheap.



Early deployment & demos

End-to-end demos and trials let operators/service providers experience a service before commercial products exist — and feed evidence back into the standard.



5G-MAG in practice

Weekly dev calls, rolling releases, CI/CD pipelines. End-to-end testbeds across 5G Broadcast, MPEG-I, network APIs — demonstrating value, not just specs.

Treat OSS and evaluation platforms as portfolio deliverables — not optional extras



In the work plan



Early engagement



Tangible value



Plan it at project launch

Every new WG3 project should define its software project and evaluation platform track from day one. Use existing platforms outside WG3. e.g. dash.js



Engage implementers during drafting

Companies should invest in these development. Involve OSS communities while the spec is being written. Running code surfaces issues that text review cannot.



Make the value tangible

End-to-end demos and benchmark platforms are the evidence that standards work. They lower cost for the whole ecosystem — members, non-members, startups, academia.



Join the effort

Help shape what connected media looks like next and scale your projects with the industry.

Become a member →

www.5g-mag.com/membership



GitHub



5g-mag.com