The Media Connectivity Association

News from 5G-MAG's Standards and Software Activities

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Presentation for 3GPP SA4 – May 2026

5G-MAG - The Media Connectivity Association

WHAT

Building **Technology Solutions**

Internet-driven technologies, **5G/6G**, **cloud**, smart **networks**, **devices**, **codecs**, **protocols**,...

to support and enhance **Connected Media Applications**

content **delivery**, **conferencing**, live **events**, **entertainment**, **gaming**, **immersive** media,...

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HOW

Open Standards

scalability, **interop**, **trust**

Open-Source Software

adoption, **testing**, efficiency

Hands-On Work

tangible **outcomes**, no **admin**

Fostering Industry Collaboration

under a **neutral**, international, non-for-profit **industry association**

More information at 5g-mag.com/about

Based on Standards…

Empowering Connected Media Services & Apps with Open Standards

Connectivity Quality Management
Multicast & Broadcast Systems
Data Collection and Analytics

Computing & Storage Resources
Terrestrial & NTN Networks
Network APIs

Streaming and Content Delivery
Uplink Media and Content Production
Immersive Media Experiences
Conversational Real-Time Experiences

Internet-based Protocols
Advanced Video/Audio Codecs
Real-Time Communication

Connected Devices
Home, On-the-go, Automotive
Head-Mounted Displays

5G-MAG is a 3GPP Market Representation Partner (MRP)

3GPP™ A GLOBAL INITIATIVE
MPEG
CTA™ WAVE
KHRONOS GROUP
DVB
IETF
SVTA Streaming Video Technology Alliance
DASH Industry Forum
CAMARA THE TELCO GLOBAL API ALLIANCE

More information at 5g-mag.com/work

Based on Standards… Powered by Open-Source

Transforming Specs into Implementations via Open-Source Software

- Standards validation, interop, early prototyping and testing
- Shared development effort avoids duplication across companies
- Ready-to-use code in production environments and as benchmark
- Transparency, trust and collaborative enhancements

More information at developer.5g-mag.com

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Engagement in Technology & Standards

Our Current Topics

Streaming, Media Delivery and Data Collection

5G Broadcast for TV, Radio and Emergency Alerts

Multicast and Broadcast Services in 5G Networks

Non-Public Networks for Content Production

Network Capability Exposure through Network APIs

Non-Terrestrial Networks for Content Delivery

XR: 3D Scenes and Avatar Communications

Volumetric Video and Beyond 2D Video Experiences

Getting ready towards 6G Media

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Network Capability Exposure through Network APIs

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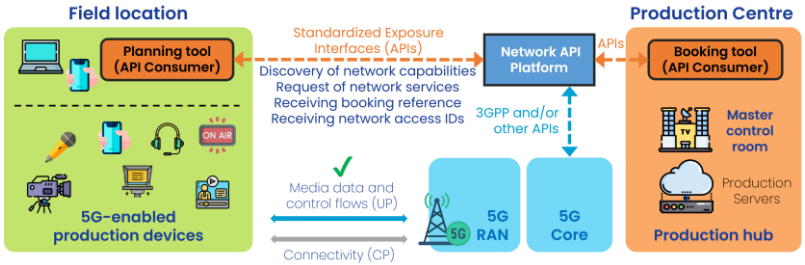
Network Capability Exposure through APIs

Overview of the Work and Technical Resources

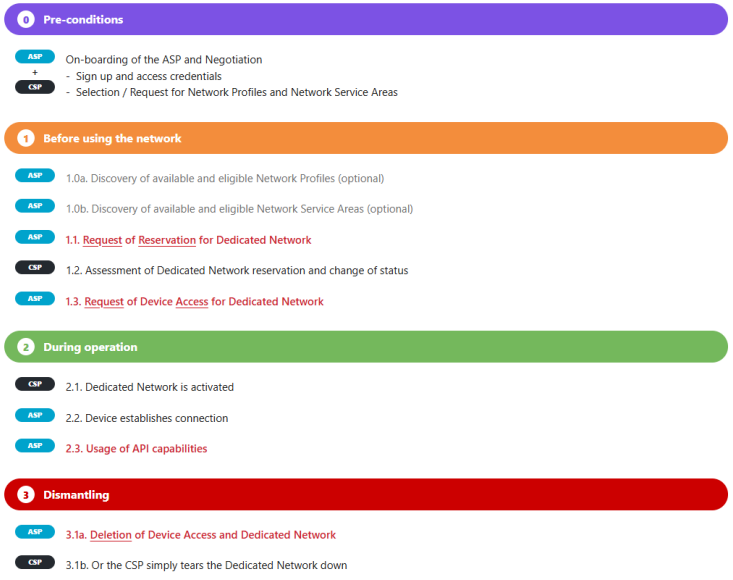
Exposure of Network Capabilities to Applications and Services

- Selection of Reference Scenarios with a focus on Uplink Media & Media Production
- Definition of Workflows and Requirements for **Connectivity Quality Management**
- Assessment of available CAMARA APIs



CAMARA
THE TELCO GLOBAL API ALLIANCE

- Application Profiles
- ConnectivityInsights
- ConnectivityInsightsSubscriptions
- DedicatedNetworks
- NetworkSliceBooking
- QoSBooking
- QoSBookindAssignment
- QoSProfiles
- QoSProvisioning
- QualityonDemand



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XR: 3D Scenes and Avatar Communications

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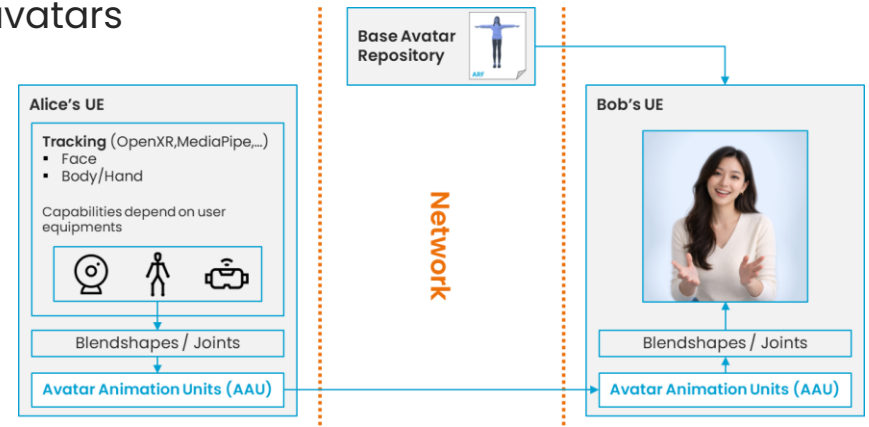
Creating immersive media experiences with open standards

- Structure and composition of 3D/XR Scenes including media
  - **MPEG-I Scene Description**: defines the structure and composition of a 3D scene, providing a framework for how different media assets are arranged, animated, and rendered.
- Avatar representation and communication
  - **3GPP TR 26.813** documents the technical landscape necessary for effective avatar communication
  - **MPEG Avatar Representation Format (ARF):** defines a standard for interoperable storage, carriage, and animation of humanoid 3D avatars



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Getting ready towards 6G Media

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Getting ready towards 6G Media

Overview of the Work and Technical Resources

Supporting standardization of technologies within the IMT 2030 timeframe

- Inputs to 3GPP process to define the scope of work for 6G

- Supporting 3GPP Study on Media Aspects for 6G System
  - **AI Traffic Characterization**
  - **QUIC-based streaming** (FS_QStream_MED) - S4-252112.zip
    - evaluate QUIC-based streaming technologies against traditional TCP-based approaches (HTTP/1.1, HTTP/2) for various media services in 5G/6G contexts.
  - **Real-time communication** (FS_Q4RTC_MED) - S4-252139.zip
    - investigate benefits and integration of QUIC-based media delivery protocols for Real-time Communication (RTC) within the 3GPP framework.
  - Usage of **Dynamically Changing Traffic Characteristics and Enhanced QoS Support** in Media Apps and Services - S4-251588.zip


3GPP TR 26.870 V0.2.1 (2026-02)
Technical Report

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Study on Media Aspects for 6G System
(Release 20)

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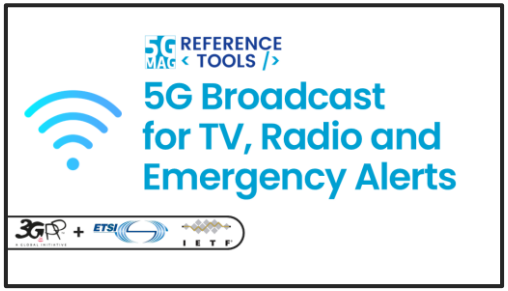
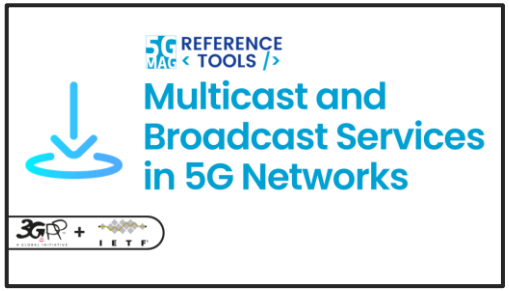
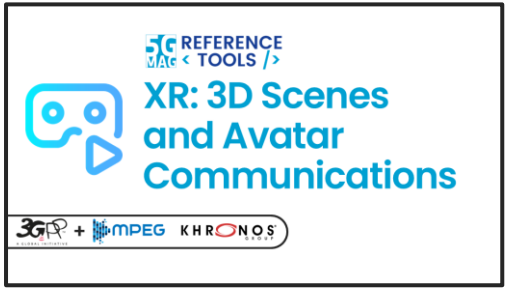
Efforts in Bringing Specifications to Life

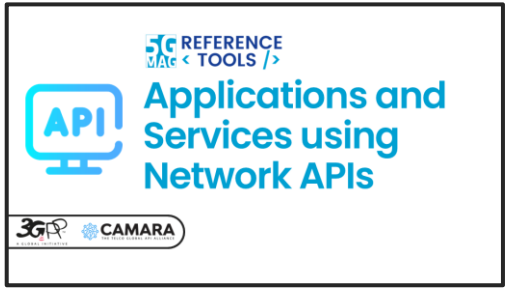
5G-MAG Reference Tools' Projects

Application domains of the 5G-MAG Reference Tools Software Projects









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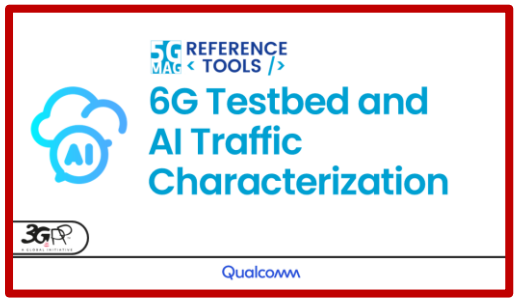
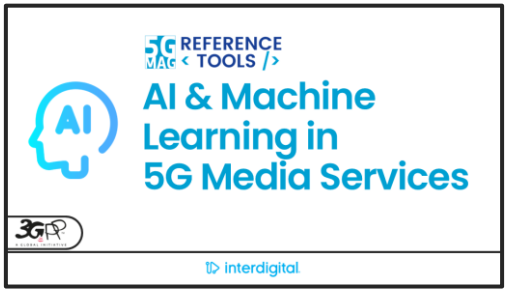
5G-MAG Reference Tools' Testbeds

Testbeds and Evaluation Frameworks





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5G MAG REFERENCE TOOLS

6G Testbed and AI Traffic Characterization

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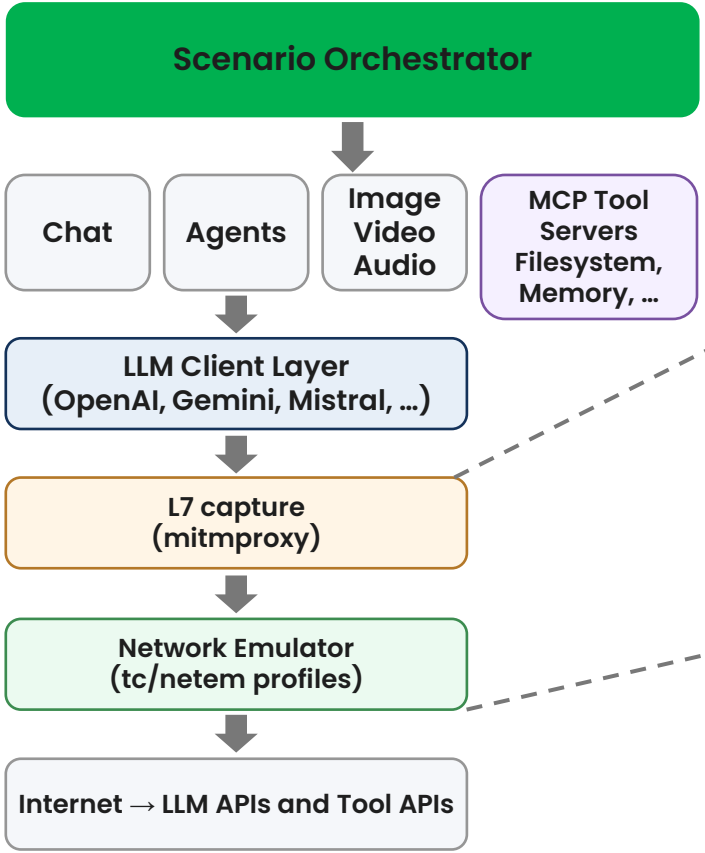
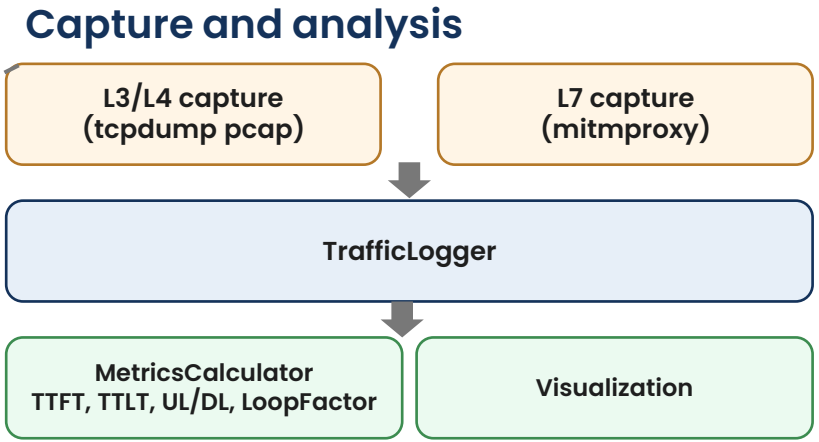
Qualcomm

6G Testbed and AI Traffic Characterization

Overview on the 5G-MAG Reference Tools





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netemu/ – Network Emulation Library

- A lightweight Python wrapper around Linux traffic control (tc/netem) used to emulate realistic network conditions.

Features:

- Emulates delay, jitter, packet loss, and bandwidth limits
- Supports bidirectional shaping via IFB devices
- Includes 27+ predefined profiles, aligned with 3GPP concepts (e.g., 5QI-like mappings)
- Context-manager design for automatic setup and cleanup
- Can be used independently of the AI testbed

6G Testbed and AI Traffic Characterization

Overview on the 5G-MAG Reference Tools

aitestbed/ - Key capabilities:

- **11+ AI scenario types**, including:
  - Chat-based LLM interaction
  - Agentic AI using Model Context Protocol (MCP) tools
  - Image generation
  - Multimodal (text, audio, image, video)
  - Video understanding
  - Real-time AI via **WebSocket** and **WebRTC**
- **8+ LLM providers**, including OpenAI, Gemini, DeepSeek, vLLM, and real-time variants
- **60+ metrics**, such as:
  - Time to First Token (TTFT)
  - Time to Last Token (TTLT)
  - Latency percentiles
  - Uplink/downlink traffic ratios
  - Token throughput rates
  - Agent loop factors
- **Multi-layer traffic capture:**
  - L3/L4 via `tcpdump`
  - L7 via `mitmproxy`
- **Structured logging** using SQLite for post-analysis and reproducibility.

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