

# 5G VERTICAL USER WORKSHOP

WEBINAR 24.11.2022



The 5G vertical users Workshop aimed at establishing a collaborative event for strategic dialogue between vertical industries (Connected Industries and Industrial automation, media industry, security, public safety and automotive) and 3GPP. The Webinar (*followed by 213 attendees*) was the opportunity to exchange and share requirements, outline issues and obstacles impeding progress, and look at upcoming future standards development.

Key issues such as efficiency and safety of the service, sustainability, user-friendliness, or creation of a viable ecosystem were addressed by the speakers. These requirements are considered to be essential to unlock the potential of 5G technologies, with the objective to enhance vertical industries.

## **Key Takeaways from Speaker's presentations**

### **5G-MAG (Roland Beutler, 5G MAG Vice Chair & 3GPP MRP Liaison Contact)**

#### Snapshot of 5G-MAG's member-driven activities

##### Driving Industry Consensus

- Use Cases, Requirements, Architectures and Features
  - High-level architectures for news-gathering, live production and music setups
  - 3GPP technologies for streaming over Unicast, Broadcast, Multicast, Edge
- Ecosystem and Regulatory aspects
  - Global 5G roll-out driving equipment and device ecosystems
  - Frequency bands suitable for media production scenarios, in particular for NPNs
  - Identification of suitable spectrum access frameworks (eLSA, CBRS, ...)

- 5G-MAG Explainers and Workshops
  - Workshops for industry engagement into 3GPP work items
  - 5G-MAG Explainers on NPNs (SNPN & PNI-NPN)
  - Linear TV and Radio with LTE-based 5G Broadcast
  - Work in progress around 5G Media Streaming, MBS and AV Codecs

#### Driving Standardization (ongoing work examples)

- 3GPP SA4 Work Item on NPN4AVPROD
  - Contributions by 5G-MAG members into TR 26.805 “Study on Media Production over 5G NPN Systems”; Annex A on 5G-MAG Workshops and Trials
  - 5G-MAG to follow up on recommendation guidelines
- ETSI 103 720 «5G Broadcast System for linear TV and radio services»
- 3GPP TS 26.512 - 5G Media Streaming (5GMS); Protocols
  - Bug fixing and detection of issues arising from spec implementation
- 3GPP TS 26.346: MBMS; Application Programming Interface and URL
  - Bug fixing and detection of issues arising from spec implementation

#### Driving Implementation

5G-MAG Reference Tools to:

- Implementation-driven specs
- Testing, validation, verification and direct feedback to SDOs
- Lower the complexity of spec implementation for developers

*(Reliable Video On-Demand over Mobile Networks with 5G Media Streaming, Reliable Personalized Live Radio over Mobile Networks with 5MBS, 5G Broadcast On-Demand with 5G Media Streaming, Premium and Targeted Content Insertion with 5G Media Streaming, DVB-I over 5G Media Streaming, DVB-I Hybrid Service over 5G Broadcast and 5G Media Streaming, Emergency Alerts and Media Services through 5G Broadcast, Contribution to LTE-based 5G Broadcast completion and Multicast-Broadcast Service (MBS) and satellite/NTN broadcast integration)*

## **TCCA** (Tero Pesonen, TCCA Chairman of Critical Communications Broadband Group)

- Coverage
- Availability
- Resilience
- Performance
- Scalability
- Functional suitability

## 5G-ACIA (*Xueli An, 5G ACIA WG1 Vice Chair*)

### Industrial 5G-Advanced Requirements

- Improved positioning accuracy (corresponding to 3GPP positioning service levels 6 and 7 in 3GPP TS 22.261)
- Enhancement of localization service output with accuracy of UE position
- Low-power high-accuracy positioning
- Manipulation-protected positioning
- Sidelink ranging (relative positioning)
- IIoT: Improved time synchronization (smaller 5G time synchronization budget)
- IIoT: Support of distributed TSN stream establishment
- IIoT, Sidelink: Support of direct device communication (sidelink) for Industrial IoT in standalone NPNs
- QoS monitoring: Access to Network Exposure Function (NEF) at the UE
- QoS monitoring: Access to Service Enabler Architecture Layer (SEAL) at the UE
- QoS monitoring: Further QoS monitoring enhancements
- Support of multi-modality/mixed communication services
  - 5G network assistance for coordinated transmission of multiple, related communication services with similar or different data characteristics (multi-modal/mixed, e.g. URLLC data, multiple audio/video, tactile information, sensor data) involving one or multiple UEs.
- Enhanced predictive analytics
  - Predictive QoS allows the mobile network to provide notifications about predicted QoS changes to enable in-advance adjustment of the application behaviour.
- Ambient IoT

## CHINA SAE (**Society of Automotive Engineers**) – (*Jinling Hu, Technology Committee Member CSAE/CAICV*)

### Intelligent and Connected Vehicles (ICV)

#### ICV Applications Specific Requirements

Robust and ubiquitous connectivity, high data rate and low-latency V2X capability are key to realize full automated driving.

- V2X Direct Communication enhancement.
- Native requirements of high precise positioning.
- Vehicular environment specific consideration, such as antenna deployment.
- Joint communication and sensing:
  - Vehicular sensors to help communication
  - Communication waveform help sensing Joint communication and sensing.

## **Key Takeaways from the RoundTable Session**

**Question :** How can vertical industries be better represented in TSGs.

### **George Mayer ( 3GPP SA chair)**

- Standards are a part of the whole work.
- Vertical companies are important to 3GPP.
- Better representation by verticals is required.
- Involvement in 3GPP stage 2 and in stage 3 is lacking.
- Also, there is a lack of involvement of vertical industries in protocol development within 3GPP.
- Industries need to talk to themselves and to other vertical industries.

### **Roland Beutler 5GMAG**

- Requirements - 3GPP
- Cloud and MEC - 3GPP

Requirements on work cover; architecture, protocols this needs more involvement from vertical industries, but this has now started.

Having MRP's talking with one voice helps.

Conesus building is good and needed.

### **Tero Pesonen TTCA**

Prepare for the future releases is important.

One to one discussion in advance good to have.

Recognize consumer requirements is critical.

Co-operation with other verticals is important.

Determine common requirements (e.g. Sidelink.)

### **Xueli An 5GACIA**

Vertical customization to meet specific scenarios - But how we enable customization?

### **JinLing Hu CSAE / CAICV**

Hard to obtain connectivity requirements

MRP: more co-operation required

3GPP SA1 and SA2; CSAE may join as members.

**Question:** On supply chain, how to include all verticals, and we influence these industries with or without operator involvement.

### **Roland - 5GMAG**

MNOs are the key but they are not only ones, the vertical industries impact is small today with devices equipment providers, but not all of the work carried out in standards make it to products and market, this is most important.

**Georg** 3GPP SA Chair

Vertical industries have an influence and represents a diverse set of people.  
Mobile Network Operators are an established and coherent group.  
The roll out of features allows for implementations to be highly customized, so chip manufactures can comply with these options.

**TERO Pesonen** TCCA

Vertical industries need to develop common requirements, across vertical industries.  
TCCA communications with MNOs and have developed a common understanding.  
Cooperation with MNOs with manufactures, and provides a common framework.

**Georg Mayer** 3GPP SA chair

The maritime organizations are a part of 3GPP.  
Satellite industries cooperation is good with in 3GPP.  
Some features need to be standardized.  
3GPP products are being implemented.

**Maxime Flament** 5GAA CTO

Common requirements needed for satellites; as these are non-Public networks.

**Loinel Morand** 3GPP CT chair

Initial requirements will be different now in 3GPP, and are much better now.  
Good relationships developed between satellite industries and 3GPP.

**Maxime Flament** 5GAA CTO

Every vertical industry appears to require Sidelink.

**Tero Pesonen** TCCA

TCCA considers sidelink important; as it facilitates device to device communications, to be used as a last resort for of communications.  
Satellite communications is also important.  
Sidelink & 5G co-operation is need.  
All vertical industries seem to require side link (device to device communications)

**Xueli An** 5GACIA

Many more requirements and features are needed to be defined by 3GPP. But this is long process.  
We could look back at what is implemented, and reach a consensus as to what we want as requirements for 3GPP.

**JinLing Hu** CSAE / CAICV

Too many releases in 3GPP are too fast. New features every 2 years 3GPP moves too fast. Prefer end to end solutions. A possible solution could be due to the cycle of requirements, to could skip some of the 3GPP releases.

**Georg Mayer** 3GPP SA chair

3GPP does produce long time lines.

3GPP delivers what it promises exactly to this time line.

But we understand that for different vertical industries (e.g. automotive, they work on much longer time lines).

**Loinel Morand** 3GPP CT chair

3GPP have included phases that can have different features incorporated later, this gives the ability to add new and different features at a late timeframe. Also, a long approval can be added.

**Question:** There is a clear overlap between vertical Industries requirements; how to combine and bring to 3GPP.

**Roland - 5GMAG**

The question is what can we do today to bring to 3GPP and find common ground.

Vertical industries meet at 3GPP SA, privately, the meetings are run by verticals at 3GPP SA meetings, they are independent discussions with all verticals together.

**Xueli An** 5GACIA

This is a good idea; where vertical industries share together their requirements at 3GPP SA plenary.

**Tero Pesonen** TCCA

Critical communications welcome this initiative, where all vertical attend this meeting to discuss their requirements.

**JinLing Hu** CSAE / CAICV

Conducting good dialogue between vertical industries; this is a good idea.

And having this dialogue at 3GPP SA plenary is a good idea.

**Roland - 5GMAG**

We are happy to sit together and discuss our requirements.

At 3GPP SA plenary the discussions between all of the vertical industries together, can form a common set of requirements for 3GPP.

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