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5G PPP

The 5G Infrastructure Public Private Partnership

3GPP Release 19 & Verticals Industries Requirements



Webinar Highlights

Online Event

A 6G Vision/

20th July 2023
10:30 - 12:00 CEST

3GPP Release 19 & Verticals Industries Requirements

POST-WEBINAR REPORT



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SPEAKERS



Issam Toufik

Director of the 3GPP Mobile
Competence Centre at ETSI

Roland Beutler

5G MAG Vice Chair – 3GPP MRP
Liaison Contact (SWR)

Tero Pesonen

TCCA Chairman of Critical
Communications Broadband
Group

Michael Bahr

5G-ACIA WG1 Chair

Maxime Flament

Chief Technology Officer,
5G Automotive Association (5GAA)

Raffaele De Peppe

6G Industry Association – Vice
Chair & Vertical Engagement Chair

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Webinar Agenda

Objective of the workshop

The 5G Vertical Users Workshops series aim at establishing a collaborative event for strategic dialogue between vertical industries (Connected Industries and Industrial automation, media industry, security, public safety and automotive and more) and 3GPP.

The Webinar (followed by +120 attendees) offered the opportunity to exchange and share requirements, outline issues and obstacles impeding progress, and looks at upcoming future standards development.

**Claudio de Majo**

Research Analyst at Trust-IT Services

**Issam Toufik**

CTO at ETSI and Head of the 3GPP Mobile Competence Centre

**Roland Beutler**

5G MAG Vice Chair, 3GPP MRP Liaison Contact (SWR)

**Tero Pesonen**

TCCA Chairman of Critical Communications Broadband Group

**Michael Bahr**

5G-ACIA WG1 Chair

**Maxime Flament**

Chief Technology Officer, 5G Automotive Association (5GAA)

Final Roundtable moderated by

**Raffaele De Peppe**

6G Industry Association Vice Chair & Vertical Engagement Chair

SPEAKERS



Issam Toufik,

CTO at ETSI, began his talk by introducing 3GPP. 3GPP is a collaborative project between seven Standardisation Development Organisations (SDOs) representing different regions worldwide. To participate in the 3GPP, a company has to be a member of one of these seven Organisational Partners.

3GPP standards eco-system



3GPP Organizational Partners (OPs)

838 companies

- The 3GPP **Organizational Partners (OP)** - 7 Standards Organizations - from China, Europe, India, Japan, Korea and the United States.
- Participation in 3GPP by companies and organizations becoming Members of one of these 7 OPs.
- Inputs on market requirements may come in to the Project via 3GPP **Market Representation Partners (MRP)**.
- There is a lot of additional **external liaison** activity...SDOs, Industry bodies, projects...

Official Liaisons on specification work:

450 MHz Alliance, AISG, Bluetooth Broadband Forum (BBF), CableLabs, International Special Committee on Radio Interference (CISPR), CTIA, Digital Video Broadcasting (DVB) Project, Ecma, International Expert Group for Emergency Access (EGEA), Eurescom, COST 273, European Radiocommunications Committee (ERC), Fixed Mobile Convergence Alliance (FMCA), GCF, Global TD-LTE Initiative (GTD), GPS Industry Council, GSM Association, HomeRF Forum, ICB Forum, IEEE, Internet Engineering Task Force (IETF), IrDA, International Multimedia Telecommunications Consortium (IMTC), Internet Streaming Media Alliance, ISO-ITU expert group, ISO MPEG/JPEG, ITU-T SG2, JAIN tm (Java™ APIs for Integrated Networks), The Java Community Process (JCP), Liberty Alliance Project, Metro Ethernet Forum (MEF), NENA, NGMN (Next Generation Mobile Networks), oneM2M, OMA (Open Mobile Alliance), Open Networking Foundation (ONF), Open IPTV Forum, Object Management Group (OMG), PCS Type Certification Review Board (PTCRB), Portable Computer and Communications Association (PCCA), Presence and Availability Management (PAM) Forum, RSA Laboratories SDR Forum, Sun Microsystems Inc., Sterco, SynchML Initiative, Trusted Computing Group (TCG), TeleManagement Forum (TMF), TCCA, TIA / TR45, TIA / TR47, ITU, TV-anytime Forum, Voice extensible Mark-up Language (VXML) Forum, Wi-Fi Alliance, Wireless Broadband Alliance (WBA), WLAN Smart Card Consortium, Wireless World Research Forum (WWRF), World Wide Web Consortium (W3C)

3GPP Market Representation Partners (MRPs)

Next Generation Projects

5G Projects

Certification Bodies

A 6G Vision: 3GPP Release 19 & Vertical Industries Requirements webinar (July 20, 2023) 2

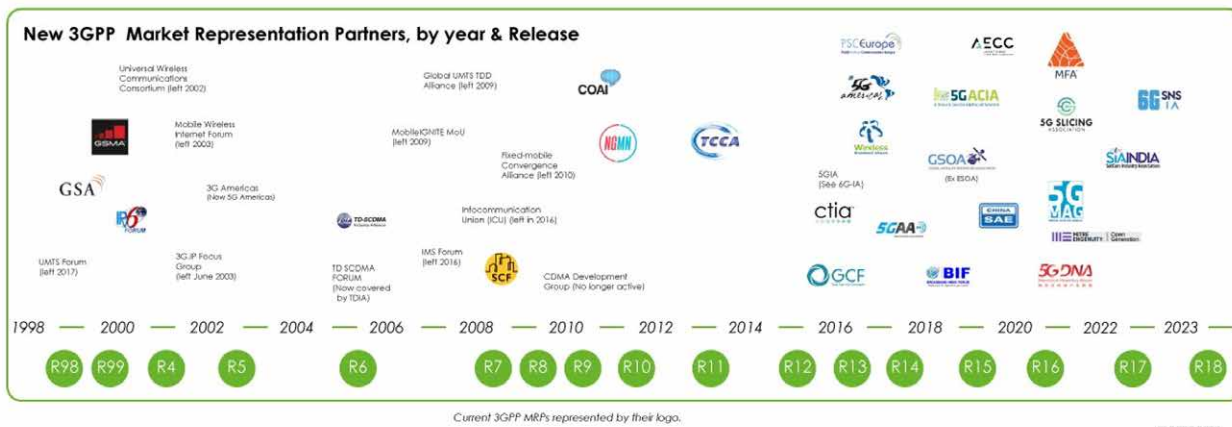
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3GPP also has another type of partnership: Market Representation Partners (MRPs). These are usually industry associations or consortiums that can bring to 3GPP the views of typical industries' requirements and needs. This is one of the main ways verticals cooperate with 3GPP and directly participate in the 3GPP by members from the vertical industries. Since 2016, when the study of 5G started, the number of MRPs has considerably increased, with diverse industry representation, including, among others, the automotive industry, industry automation, satellite, media, and critical communications.

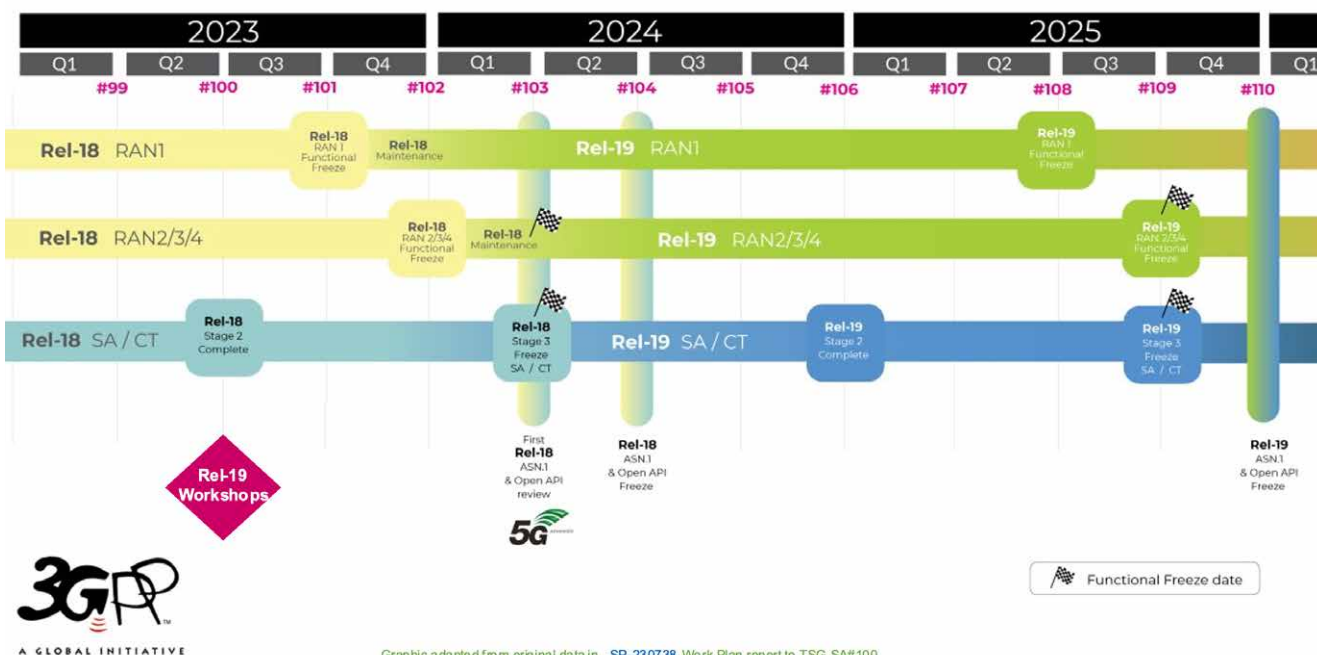
Market Representation Partners (MRPs)



- 5G bringing new level of interest
- Several representing the interests of verticals



3GPP has already finalised several 5G releases. Release 15 and 16 were submitted as part of IMT 2020. Release 17 was built on top of these two releases to address vertical needs and enhance existing features. Currently, 3GPP is working on Release 18, the first release of 5G advanced. Release 18 also introduces new features and use cases and further enhances existing features. Release 18 will be finalised in March 2024.



Conversely, the work in Release 19 started last June, with the first dedicated workshop, although some 3GPP groups (e.g., SA1 and SA6) had already started working on it beforehand.

The finalisation of release 19 is expected on September 2025.

3GPP's Release 19, set for September 2025, focuses on meeting vertical industries' diverse needs. Release 19 workshops began in June 2023, covering AI, IoT, energy efficiency, and more, involving contributions from over 80 companies. The release aims to enhance 5G performance and pave the way for future 6G advancements.

Release 19 normative WIDs so far

1000026	Integrated Sensing and Communication	Sensing	S1
1000028	Mobile Metaverse Services	Metaverse	S1
1000029	Indirect Network Sharing	NetShare	S1
1000031	FRMCS Phase 5	FRMCS_Ph5	S1
1000030	AI/ML Model Transfer Phase 2	AIML_MT_Ph2	S1
1000024	Satellite access Phase 3	5GSAT_Ph3	S1
1000032	Uncrewed Aerial System Phase 3	UAS_Ph3	S1
1000033	Energy Efficiency as Service Criteria	EnergyServ	S1
990049	PS Data Off for IMS Data Channel Service	IMSDCDataOff	S1
1000036	Sharing of administrative configuration between interconnected MC service systems	MCShAC	S6
1000037	5GMSG Service phase 3	5GMARCH_Ph3	S6
1000038	Railways specific Enhancements to Mission Critical Services	enh4FRMCS	S6
1000039	Enhanced Mission Critical Architecture	enhMC	S6
970002	Lawful Interception Rel19	LI19	S3LI

In this context, several subjects in Release 19 are directly or indirectly related to vertical, such as railway-specific and mission-critical work items, and satellites, one of the hot topics of the moment. Overall, from TSG RAN, about 480 contributions from more than 80 different companies were registered during the June 2023 workshop, while 65 from TSG SA. RAN's main topics included accomplishing 5G increased performance to address immediate commercial needs and providing a bridge to 6G. Some of the RAN topics discussed during the Release 19 workshop included: AI/ML Interface, AI/ML for NG-RAN, Ambient IoT, MIMO and Duplex Evolutions, Network Energy Saving, NTN Evolution, XR Evolution, and channel modelling, including integrated sensing and communications. Conversely, SA's topics of interest included Satellite Access, Ambient IoT, AI/ML enhancement, Multi-access (Dual 3GPP + ATSSS Enh), Energy Efficiency / Energy Saving as a Service, XRM and Metaverse, IMS and NG Real-Time Communications (RTC) enhancements.

[Learn more about 3GPP](#)



Roland Beutler,





5G MAG Vice Chair, 3GPP MRP Liaison Contact (SWR), brought the perspective of the media industry in relation to Rel. 19 along the entire chain of media production, distribution, and consumption. 5G-MAG is the place where the media industry and the ICT sector join forces to foster and enable the use of 5G technology for media use cases.

5G networks is expected to provide a pathway for the media industry to offer advanced services, including multicast broadcast delivery, on-demand streaming, and immersive experiences like xR/VR, ultimately culminating in the creation of the metaverse.

Activity Hub
hub.5g-mag.com

<https://> AREAS OF WORK

<https://> WORK ITEMS

- 
Live Media Production and Contribution
 Uplink streaming, local area networks, NPNs, edge
- 
5G Broadcast System for TV, Radio & Emergency Alerts
 LTE-based 5G Broadcast in dedicated broadcast networks
- 
Enhancing Live and On-demand Streaming
 5G Media Streaming features for service providers and operators
- 
Multicast-Broadcast Delivery Modes in 5G Networks
 5G Multicast-Broadcast Services to efficiently scale network traffic
- 
Advanced Media Services
 Beyond 2D TV: Interactivity, multiview, VR, volumetric video, free viewpoint
- 
XR, Metaverse and Immersive Media
 Enabling future user experiences without limits

Areas of Work and Topics

Member- and contribution-driven work
hub.5g-mag.com

One of the primary objectives of 5G-MAG is to fully unlock the potential of non-public networks for production with a focus on, “nomadic” and remote production. To this end, to the use of more than one non-public network is envisaged, which calls for seamlessly switching under a dual traffic steering access path for enhanced reliability and flexibility. Moreover, KPIs to ensure live broadcasts are to be met, i.e. first of all guaranteed bit rate, and controllable latency. Finally, AI and machine learning have found their way into the media sector, 5G-MAG strives to ensure seamless integration of these technologies in media production and distribution workflows.

5G-MAG inputs to 3GPP Rel-19 Workshops



- **Proposals related to 3GPP SA4 Rel-19 will have to wait until December 2023**
- **Documents available at our website**
 - <https://www.5g-mag.com/standards#membersviews>

While the original 5G broadcast requirements are being finalised in Rel. 18, open issues still need to be addressed. To meet particular regulatory constraints, solutions are needed to enable the transmission of 5G broadcast and DTT frames on the same carrier. Furthermore, concurrent reception of 5G broadcast signals while making use of the on-demand capabilities of the UE is crucial for content providers. Only then can the full range of content and services be provided to customers' satisfaction. A general issue for further developments in 3GPP is reducing the barriers to getting new technologies into consumer devices as much as possible. Finally, sustainability constitutes an overarching topic in the media industry along the entire chain from production, distribution to consumption on user devices.

Learn more about 5G MAG



Tero Pesonen,

Chair of TCCA's Critical Communications Broadband Group (CCBG) and TCCA Board Vice-Chair discussed the role of the critical communications sector in helping to ensure that 3GPP's open standards include the specific and unique requirements of critical users. Critical communications encompass public safety, emergency services/first responders, major planned and unplanned event management, critical infrastructure, national border protection, energy utilities, transport, safeguarding, and other similar scenarios. TCCA's main high-level requirement linked to 5G networks is guaranteeing service in a range of different environments – from underground metropolitan areas to remote rural areas, densely forested environments, and offshore.



Critical Communications requirements

COVERAGE

AVAILABILITY

RESILIENCE

PERFORMANCE

SCALABILITY

CONNECTION IS THE LIFELINE

24/7/365

Instant service

FUNCTIONAL SUITABILITY

Critical communications for all professional users

This means ensuring service levels must be delivered to meet the requirements of each market sector. In the context of 3GPP’s Rel.19, guaranteed terrestrial network coverage, capacity, and instant connectivity are the generic requirements. Work is also ongoing to deliver device-to-device connectivity in critical situations such as a lack of broadband connectivity or power outages.

66 *Critical communications ensure coverage and connectivity in various environments, focusing on device-to-device connectivity in critical situations. Collaboration with other verticals is vital for improving satellite connectivity, security, IoT, UAV, and reliable service delivery.*



Top level priorities

Coverage and Capacity	Resilience	Services	Odd balls
<p>Terrestrial network</p> <ul style="list-style-type: none"> • Avoidance of not-spots • Data rates at the cell edge • Uplink improvements <p>NTN improvements</p> <ul style="list-style-type: none"> • Downlink budget • Coverage indication <p>Device-to-Device</p> <ul style="list-style-type: none"> • Multihop 	<ul style="list-style-type: none"> • Black out/power outage handling • Time as a Service – GNSS back-up 	<ul style="list-style-type: none"> • Mobility enhancements <ul style="list-style-type: none"> • Reduced handover interruption • MCX roaming (with QPP support) • Enhancements to network based positioning • AR/XR enhancements • RAN5 MCX testing enhancements 	<ul style="list-style-type: none"> • V2X sidelink sub 1GHz spectrum harmonisation for D2D • HPUE usage in Europe, band 68?

Critical communications for all professional users

Further discussions include enhancements to network-based positioning services, and developments in AR/XR technologies that could benefit critical users and the citizens and communities that they protect.

It is essential for vertical sectors to collaborate to ensure continuous improvements and developments across all these areas. Potentially common topics include satellite connectivity, Sidelink communication (device-to-device), security and resilience, considerations for the use of the IoT and UAVs, and of course, the allocation of spectrum.

If you want to be part of the conversations and help to influence the future of critical communications, then please consider joining TCCA and participating in our annual Critical Communications World event – contact admin@tcca.info for further details.

[Lean more about TCCA](#)



Maxime Flament,

Chief Technology Officer of 5G Automotive Association (5GAA), started his talk by highlighting that physiologically vertical sectors will always lag in adopting 3GPP technologies. For example, it took eight years for the automotive industry (from 2008 to 2016) to adopt 4G after Rel. 8, although today, more than 85% of new European vehicles sold are now equipped with 4G connectivity. This adoption lag should always be considered for the next 3GPP releases. As to 5GAA and Rel. 19, proposals by all members, new features and requirements and study items were gathered, ordered by priority, and published by ranking. The first priority is adopting NTN satellite connectivity, sidelink enhancements, sidelink positioning enhancements, and predictive quality of service or application and network adaptation. Integrated sensing and communication (ISAAC) are also important to investigate within the automotive sector.

5GAA list of proposals according priority ranking

5GAA features and requirements proposals	5GAA Priority ranking
NTN Satellite Connectivity High Level Requirements	1
Sidelink Enhancements	2
Sidelink Positioning Enhancements	3
Predictive QoS for Application and Network Adaptation	4

5GAA study item proposal
Integrated Sensing and Communications (ISAC)

Regarding priority topics, seamless and ubiquitous automotive user experience by NTN integration seems to be the top priority through different services looking at narrowband and wideband broadband aspects. Another aspect is that 3GPP's NTN UE characteristics are not completely fit for purpose for the automotive, as the current handheld antennas limit data rates for NTN and VSAT antenna are too large for the automotive sector. Subtopics include mobility enhancements TN and NTN and vice versa to ensure service continuity, FR 1 bands targeting narrowband and wideband data rates, and higher bands for broader data bands.

As for sidelink enhancements, broadbands need to be interoperable through wider bandwidth and co-channel sharing systems. Also, as sidelink positioning enhancements, it is essential to enhance the sidelink and carrier aggregation further, introducing some of the features defined in Rel. 19. Unfortunately, the desired performance goals have not been met due to limited bandwidth in the ITS band. Reconsideration of the positioning is needed to address this issue. Non-3GPP technology like Ultra-wideband is being used for positioning in the automotive industry. However, use cases with demanding latency and reliability requirements need to be considered. Therefore, support for a wider positioning bandwidth using unlicensed and licensed bands is requested. Moreover, further investigation is needed into mechanisms for QoS prediction and network pre-adaptation to improve network performance. Input on improving the accuracy of QoS predictions is also welcomed. There are significant opportunities in the automotive sector regarding integrated sensing and communication (ISAC), especially as vehicles are already equipped with multiple sensors. Different approaches for various network coverage scenarios are being studied, along with frequency bands to support specific features.

One of the current 3GPP priorities in the automotive sector is achieving seamless and ubiquitous user experience through NTN integration across various services, considering narrowband and wideband broadband aspects. Sidelink enhancements are also important, as well as sidelink positioning. Support for a wider positioning bandwidth using unlicensed and licensed bands should be addressed.

Outcome of 3GPP RAN and SA Workshops from 5GAA perspective

- 3GPP RAN delegates welcomed input from 5GAA as a Market Representation Partner for the automotive vertical.
- Some 3GPP delegates repeatedly pushed back V2X sidelink topics and questioned underperforming V2X sidelink deployment.
- It is normal that 5G verticals are lagging behind in terms of market adoption, but it should not be an argument to lower standardization support.
- 5G verticals should be more proactive to adopt 3GPP technologies AND provide more explicit market prospects (e.g. Roadmaps, announcements, product monitoring, market dashboard.)

Lessons learned from the recent Release 19 workshop include the need for proactive adoption of 3GPP technologies by 5G verticals and providing explicit market prospects, roadmaps, and product announcements to showcase progress in the market. It's essential to continue advocating for strong standardisation support for 5G verticals, despite potential delays in market adoption.

[Learn more about 5GAA](#)



Roundtable



A roundtable followed, moderated by **Raffaele De Peppe**, 6G Industry Association – Vice Chair & Vertical Engagement Chair.

Q1. 3GPP content for Release 19 will be finalised this year in 3GPP SA and RAN.

❓ In this context, what features do you consider essential for Release 19?

Tero Pesonen remarked that one particular feature from the critical communication side is the multi-hop and site link. However, all RS related to coverage, capacity, reliability, and energy saving are also relevant. This leads to a whole lot of overlapping features with different industries.

Roland Beutler pointed out that MRP's organisations from different vertical sectors must align interests and requirements to increase the momentum, influence and impact of 3GPP. This can allow vertical organisations to understand priority topics and ensure representation when the key work items will be selected.

Issam Toufik added that 3GPP will likely undergo several rounds of discussion to narrow its scope and define priorities. In this context, energy efficiency and sustainability are essential topics across verticals. Another critical issue is bringing more intelligence into the network with improvements in AI and ML. Third is ubiquitous coverage and seamless mobility through MTN. All these subjects are equally important to all verticals, creating significant commonalities. Coordination and groundwork between different verticals are key to aligning ahead 3GPP Rel. 19.

Maxime Flament remarked that although horizontal topics such as energy saving and AI/ML are important, specific verticals might want to express more specific priorities. It is, therefore, crucial for verticals to align their priorities, considering that often 3GPP's delegates are not deeply involved in the vertical business in the market and might not understand some features and technologies adoption needs.

Tero Pesonen concluded that verticals should work together and support each other to ensure that 3GPP features truly speak to them and that standardisation work does not go in vain due to missing information or lack of alignment.

? What trends in society/technologies are so relevant that 3GPP has to consider them?

e.g. AI, industrial automation, autonomous vehicles, energy efficiency, global security, quantum technologies, broadcasting and media, edge computing, satellites, metaverse, etc.

Roland Beutler pointed out that such trends could be approached from different angles. For example, in the case of the cloud, most companies are already using it, so it is a ready technology whose access modes and APIs are already available. The same applies to AI and ML. Rather 3GPP should focus its core business on basic topics such as infrastructures, radio links, and networks. Also, rather than dashing off into new domains, 3GPP should strive to develop solid and deployable standards in previously explored domains rather than overtaking itself by continuously developing new features to standardise.

Tero Pesonen highlighted that although some services might be impactful, 3GPP is not the application layer. In this context, it is up to verticals to understand the possibilities posed by new technologies and the changes in standards needed to fulfil given requirements. For example, in the case of critical communications, super rapid network configuration changes in the management in a disaster situation might impact 3GPP.

Roland Beutler concluded that verticals fundamentally contradict how 3GPP used to work for quite a long time. All standardised technologies targeted economies of scale, one chip to be sold worldwide in the same devices everywhere. In contrast, today, verticals come from different angles and represent niche markets. Thus, although they might share KPIs like latency, their understanding might differ. In this context, it is essential to understand the minimum common denominator in this process.

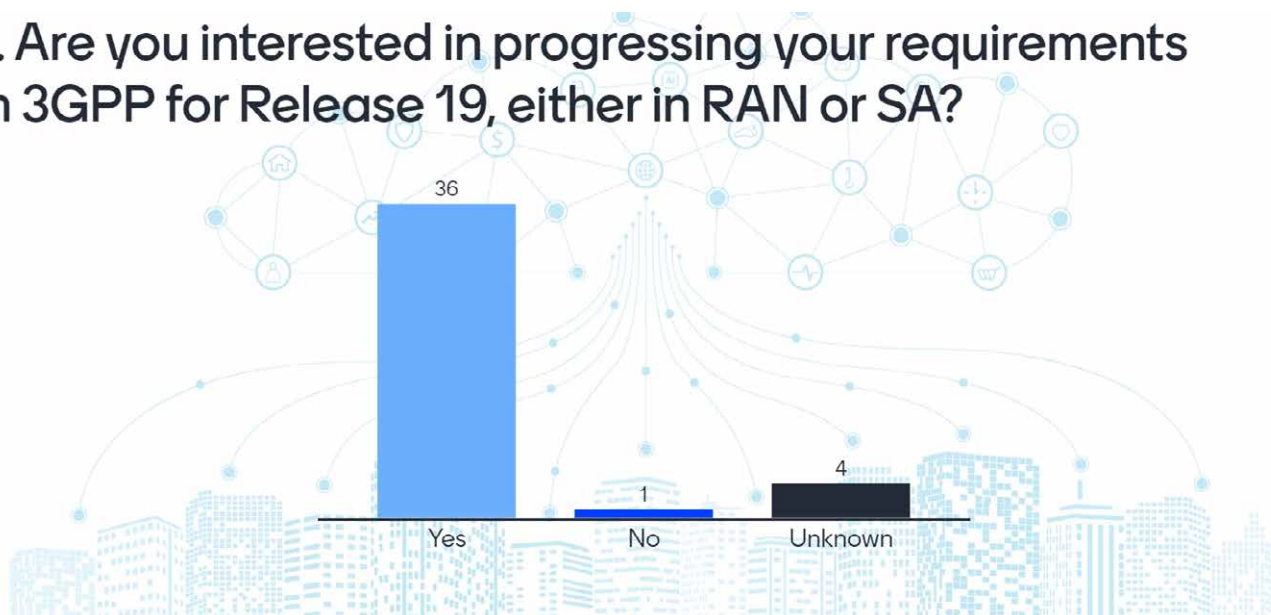
? How can 3GPP be improved to address vertical industries' requirements? How can vertical industries work together?

Issam Toufik highlighted that three GBPs did evolve over the past few years. Many current developments in 5G support the implementation of vertical use cases. In this context, it is essential to understand the main problems vertical sectors face. Also, new communication strategies are needed to help newcomers understand 3GPP's language and processes. Also, already experienced vertical sectors should help understand the main issues and share success stories, if applicable. This could teach new lessons and help avoid facing the same challenges and problems for newcomers. Internal mentoring programs among verticals are probably the best way to go.

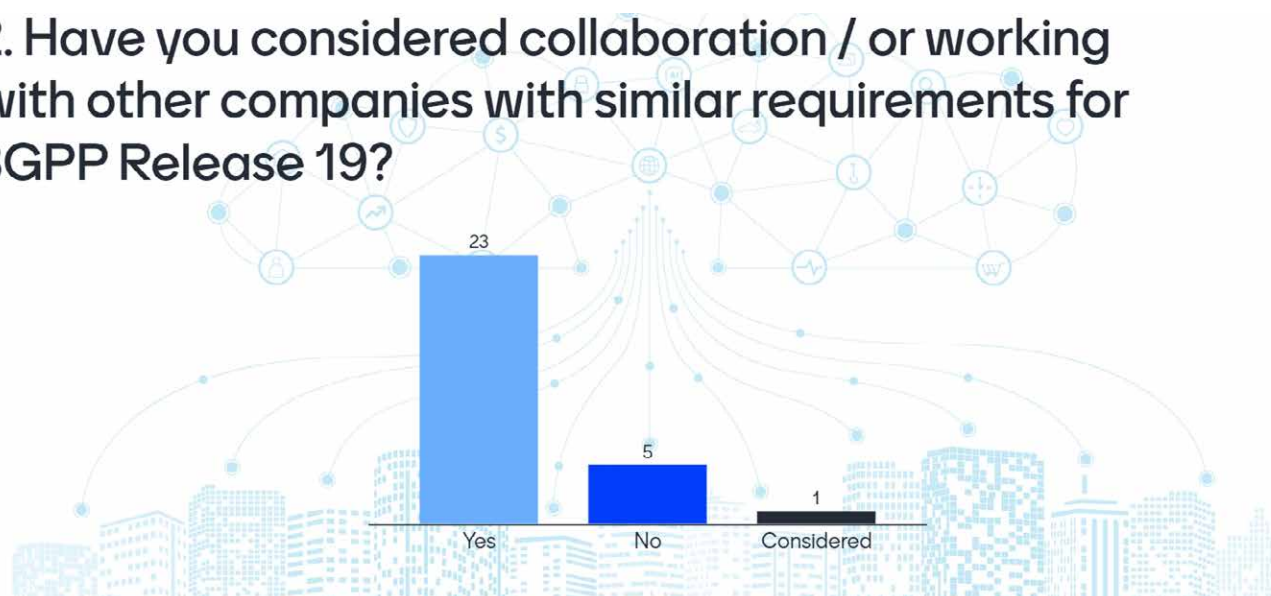


Appendix – Poll Questions

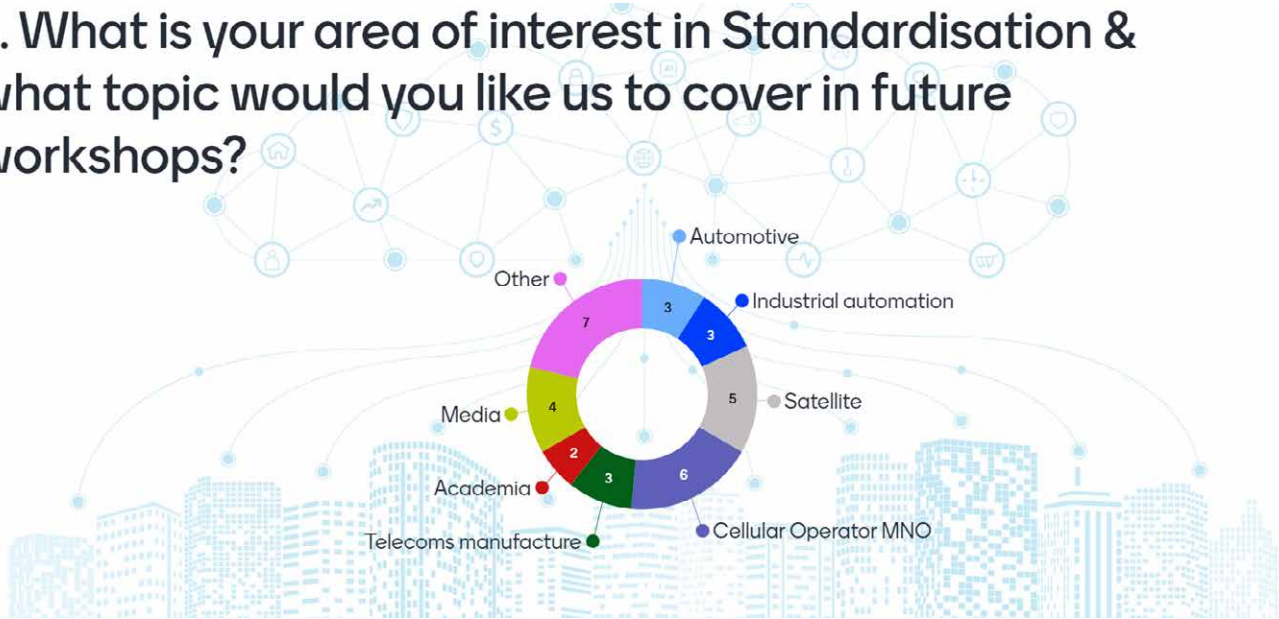
1. Are you interested in progressing your requirements in 3GPP for Release 19, either in RAN or SA?



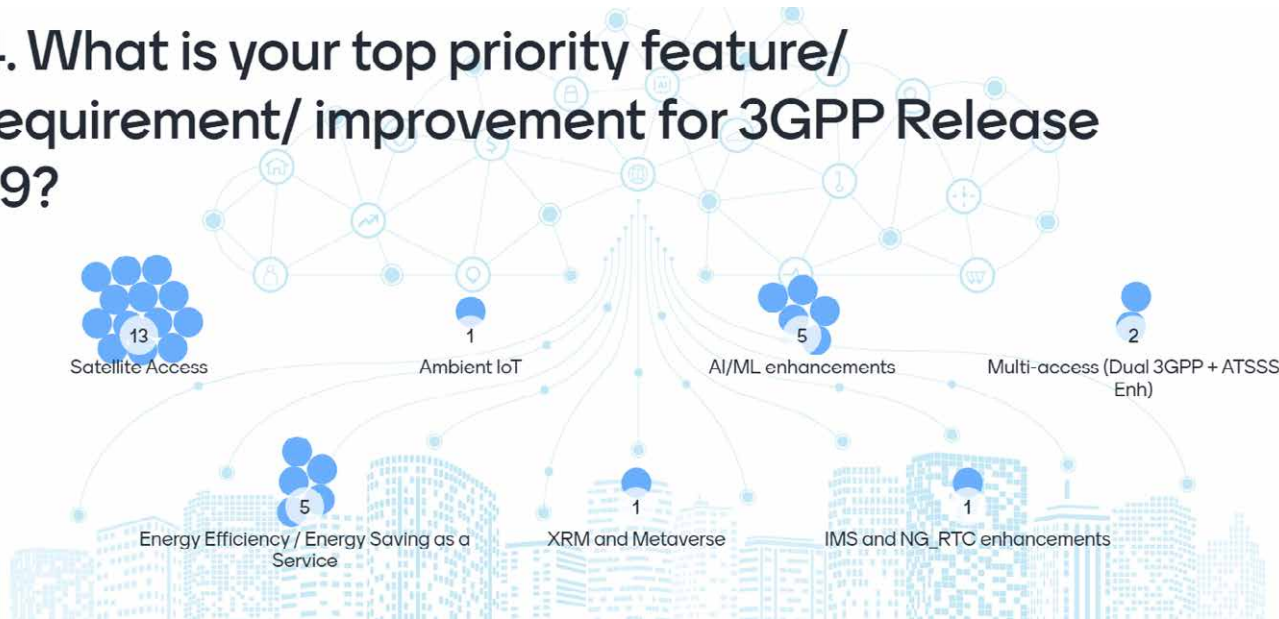
2. Have you considered collaboration / or working with other companies with similar requirements for 3GPP Release 19?



3. What is your area of interest in Standardisation & what topic would you like us to cover in future workshops?



4. What is your top priority feature/ requirement/ improvement for 3GPP Release 19?



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6GStart

The logo for 5G PPP, featuring the text "5G PPP" in a bold, sans-serif font. The "5G" is in blue and "PPP" is in black. The logo is set against a white rounded rectangular background.

5G PPP

The 5G Infrastructure Public Private Partnership



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