**IEEE 802 Plenary Session Workshop Submission – Wireless Broadband Alliance (WBA)**

**Abstract**: RAN And Core Convergence / Coexistence In Action: How The Combination Of Wi-Fi And Cellular Complements The 5G Experience

Wi-Fi plays an integral role in the development of 5G networks. Wi-Fi 6, or 802.11ax, will improve transmission speed, roaming, load balancing and network density. Additional efficiencies and benefits will be created by combining Wi-Fi with 5G’s sub-6Ghz and mmWave capabilities.

Wi-Fi also is having a significant impact on how 5G is defined in terms of both technical and business perspectives. Technically, 5G 3GPP NR-U has followed the lead of Wi-Fi in adopting the use of an extensible authentication protocol (EAP) framework, along with the broadening of associated identity concepts. The business case for 5G has followed Wi-Fi’s focus on new non-consumer, vertical value propositions.

WBA has worked several years to assess unlicensed integration scenarios with 5G networks, introducing three broad approaches:

* **Access-Centric Solutions** integrate Wi-Fi into the cellular access stratum. These approaches look to opportunistically use Wi-Fi access networks to enhance the core 3GPP access proposition.
* **Core-Centric Solutions** integrate Wi-Fi into the cellular non-access stratum core network. These approaches look to define the Wi-Fi access network as a peer of the 3GPP access network and, as such, enable integration into 3GPP core systems.
* **Above-The-Core Centric Solutions** integrate Wi-Fi above-the-core network using IETF-defined multipath protocols. These approaches look to leverage the Wi-Fi access network as a peer of the 3GPP core network without the limitations created by requiring integration into a 3GPP core system.

Recently, WBA and the Next Generation Mobile Networks Alliance (NGNM) have been working to drive the convergence of multi-technology radio access networks (RANs) and core networks. The collaboration represents the first time the leaders of these two communities have joined forces, and they will attempt to answer fundamental questions, such as: How can Wi-Fi complement and extend the 5G experience in areas not covered by cellular?

Underpinned by practical input from mobile network operators (MNOs), multiple system operators (MSOs) and wireless internet service providers (WISPs), the work focuses on creating a new network architecture for 5G/Wi-Fi convergence.

The two organizations are addressing critical issues, such as coexistence between 5G NR unlicensed spectrum (NR-U) and Wi-Fi on unlicensed bands. By doing so, WBA and NGNM aim to close the gaps between both technologies, delivering a pragmatic starting point for service providers to exploit the synergies between 5G and Wi-Fi.

But for that to happen, different radio access technologies (RATs) in unlicensed, shared and licensed spectrum have to coexist and work together in the same local service area. Wi-Fi – and especially Wi-Fi 6 – will play a critical role in extending high-quality, low-latency wireless connectivity, especially indoors. As a result, spectrum extension in the 6Ghz band and fair sharing becomes key.

Consequentially, WBA will share in first-hand a global industry survey conducted to identify the key data points on 6 GHz band utilization plans and the impacts the impacts of 6GHz spectrum being made available for Wi-Fi 6

In this session, Tiago Rodrigues, WBA General Manager, will share the results of these work streams and advocate a future of collaboration and integration between Wi-Fi and cellular technologies.