WIRELESS BROADBAND ALLIANCE
DRIVING NEXT WIRELESS EXPERIENCE

IEEE

RAN & CORE CONVERGENCE COEXISTENCE IN ACTION

Tiago Rodrigues, GM

Vienna, 17th July 2019

About WBA

WBA's vision is to lead the development of

"Seamless and interoperable services experience on Wi-Fi within the global wireless ecosystem"

- Enable collaboration among service providers, technology companies and the organizations in the industry who share the vision

- Undertake programs and activities to address business and technical issues and opportunities for the member companies

Established **in 2003**

100+ MEMBERSHIP **COMMUNITY**

PROJECTS & **PROGRAMS**

3 ANNUAL **EVENTS**

PROMOTION AND **GO-TO-MARKET**

THOUGHT LEADERSHIP & **MARKET RESEARCH**

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Our Members

BOARD MEMBERS

OPERATOR MEMBERS

TECHNOLOGY PROVIDER MEMBERS

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WBA 2019 Roadmap

WBA WORK GROUPS & PROJECTS

NextGen Work Group	5G Work Group	IoT Work Group	Roaming Work Group	Testing & Interoperability Work Group
Wi-Fi 6 (802.11ax)	**RAN Convergence** (NGMN JTF, Roadmap)	**Wi-Fi & LoRaWAN Deployment Synergies**	**Roaming Evolution** (Federation, Interconnect)	**Captive Network Portal Standards for Wi-Fi**
In-Flight Connectivity	**Multipath Technologies**	**Connected Vehicle**	**NGH Live Initiatives**	**NGH Provisioning Standardization & Trial**
In-Home Wi-Fi, **Wi-Fi Sensing**			**Security & Privacy over Wireless Networks**	

WBA KEY ROLE AND BUSINESS PROBLEM BEING SOLVED

- **Fast-tracking Wi-Fi deployments for operators**
- **Wi-Fi as a prime technology for verticals**

- **Leading Wi-Fi and 5G RAN Convergence**
- **Positioning Wi-Fi on the forefront of 5G Services**

- **Augmenting Wi-Fi role in IoT**
- **New vertical value chains being opened for members**

- **Incubating new business opportunities**
- **Generating new revenue for Wi-Fi**

- **Achieving interoperable Wi-Fi services**
- **Vehicle to massify NGH/Passpoint**

> More Information regarding WBA projects Terms of Reference (https://www.wballiance.com/what-we-do/programs-projects/)

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WBA 5G Program

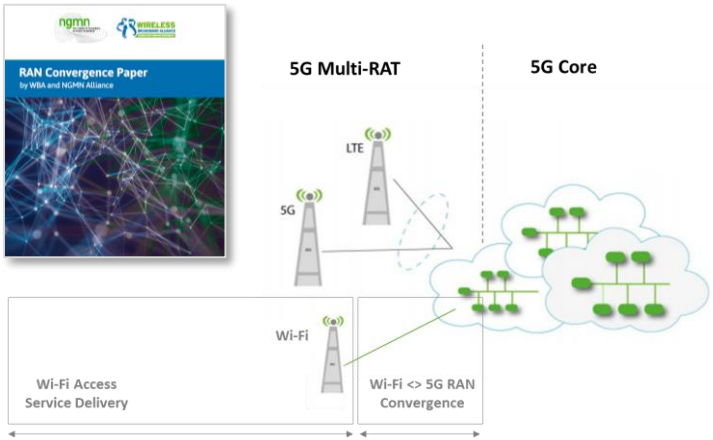
OBJECTIVE: Identifying main convergence and coexistence use cases for 5G & Wi-Fi. Developing white papers, guidelines, requirements and test plans.

LATEST PROJECTS

1. **5G Networks –** The Role of Wi-Fi and Unlicensed Technologies
2. **Network Slicing for 5G –** Wi-Fi Capabilities
3. **Unlicensed Integration with 5G Networks** - assessing the approaches on how to integrate Wi-Fi and 5G

CURRENT WORK

WBA & NGMN Joint Taskforce



End game: Highlight use cases and gaps which need to be addressed to realize convergence between 5G and Wi-Fi

NEXT STEPS

- **Multi-Access Edge Computing** - define a set of services and use cases for Wi-Fi and ensure that the MEC APIs are suitable
- **Multi-path Technologies** - Explore new technologies MP-TCP/QUIC and trial the aggregation schemes
- **Fixed Wireless Access** - Address possibilities of providing services for specific use cases
- **ATSSS, ANDSP -** Proof of concept for new policy mechanisms

LEADING MEMBERS*

BT, orange, intel, CISCO, BROADCOM, Accuris NETWORKS

*Not exhaustive

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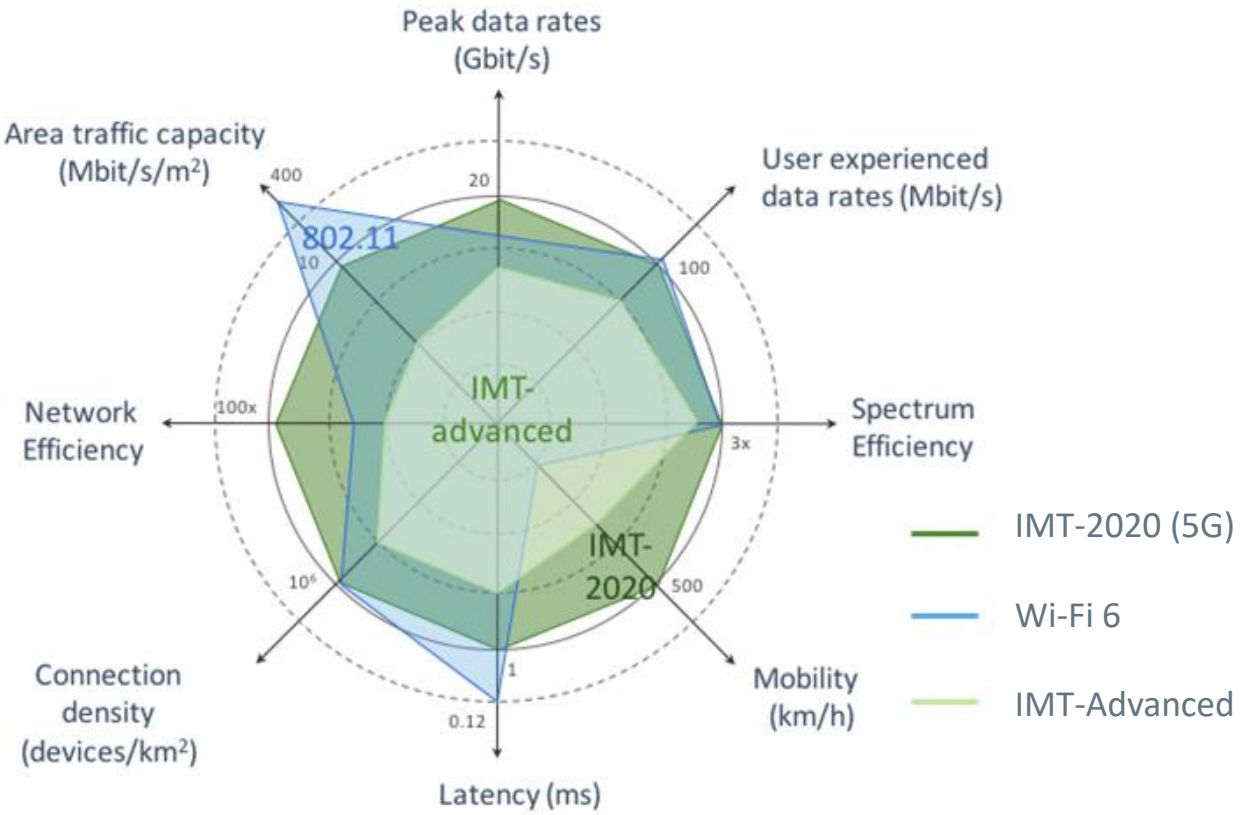
Accelerating 5G with Wi-Fi 6



Source: WBA 5G Work Group

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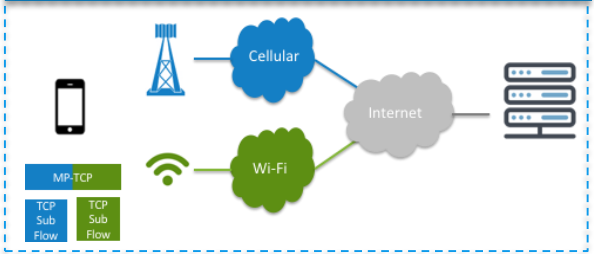
5G Program – 2019 / 2020 Highlights

Wi-Fi integration into 5G Networks

1. Above the Core
MP-TCP/MP-QUIC/MAMS
(Native Device Functionality)

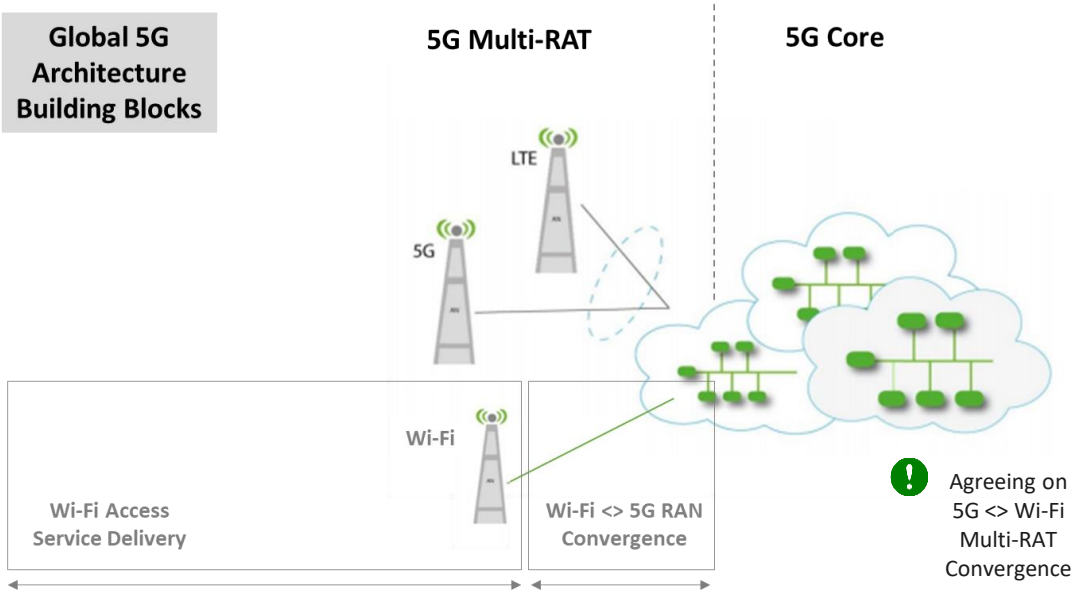


2. Core Centric
TWAG/ePDG | Wi-Fi Calling

3. Access Centric
R13/14 | LWA/LWIP

WBA & NGMN Joint Taskforce Scope

Global 5G Architecture Building Blocks



WBA Role:
- Use of an access-neutral mechanism
- End-to-end service delivery over Wi-Fi
- Verticals test plans and trials
- Network Manageability and Policy Control
- Enablement of Wi-Fi Only Devices

WBA Role:
- Traffic Routing across Multiple Accesses
- EAP authentication framework
- Non-3GPP Interworking Function (N3IWF)
- ATSSS for traffic routing

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WBA Wi-Fi 6 Program

OBJECTIVE: Fast-tracking Wi-Fi 6 (802.11ax) leveraging Carrier-Grade capabilities. Deliver industry guidelines and end-to-end live trials with multiple ecosystem players.

LATEST PROJECTS

1. **Enhanced 802.11ax - Overview, Use Cases, Features, 5G Context**

2. **Wi-Fi 6 Deployment Guidelines & Scenarios**

CURRENT WORK

Wi-Fi 6 Trials: Real-world end-to-end testing of key features and new services to raise confidence and adoption in the technology

Deployment Scenarios	Use Cases
Enterprise - Industrial 4.0	High-density connectivity / latency
Transportation hub	Improved roaming behavior
Residential/MDU	Multi stream live video monitoring (facilities / campus)
Smart Cities/Rural	Real time energy monitoring
Transportation hub	IoT sensor networks
Public Venues	Ultra-reliable low latency communications / critical sensors
University Campus	Augmented reality for trouble shooting
Stadium	Gaming / Health devices > improved latency for key target
Entertainment	Virtual classroom/venue - UHD video intercampus
Public Wi-Fi	

NEXT STEPS

- **Wi-Fi 6 readiness call to action**: Leveraging most relevant use cases, the "Wi-Fi End-to-end Trials" will confirm this technology evolution is set to deliver systems that are ready to support key 5G requirements
- **Wi-Fi 6 & Next Generation Hotspot (HS2.0 and WRIX) & QoS**: Deliver a framework for the technology to act as standalone solution for any service providers

LEADING MEMBERS*

boingo, intel, CISCO, सी-डॉट C-DOT, BROADCOM, COMMSCOPE, CableLabs, aruba a Hewlett Packard Enterprise company, HUAWEI, Qualcomm

*Not exhaustive

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Wi-Fi 6 Trial with Mettis

World 1st Wi-Fi 6 Industrial IoT Trial with Mettis Aerospace

METTIS AEROSPACE
FORGING THE FUTURE TODAY

https://www.youtube.com/watch?v=AktJll-gRCw

Unique opportunity to leverage end-to-end live networks for fields trials and CoEx testing

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Wi-Fi 6 Program Timelines

PHASE 1 - WHITE PAPER

- Decoded Paper Overview
- Features
- Use cases

PHASE 2 - DEPLOYMENT GUIDELINES

- RF planning & design
- Seamless Mobility
- KPIs
- Case studies
- Convergence Deployment Scenarios

PHASE 3 - TRIALS

Enterprise - Industrial 4.0
Public Carrier Wi-Fi
Transportation hub

Residential
Smart Cities
Rural

University Campus
Stadium
Entertainment

2018										2019												2020				
M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M

802.11ax program started

Wi-Fi 6 (802.11ax) Decoded paper published

Wi-Fi 6 Deployment Guidelines Published

Wi-Fi 6 Trials Started

Wi-Fi 6 Trials Execution

Wi-Fi 6 Trials Results Report

TODAY

Test Plan to be continuously updated and maintained

Wi-Fi Alliance Wi-Fi 6 Certification

WBA is calling equipment providers, device manufacturers and operators to get involved to drive the Wi-Fi 6 Trials

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WBA Policy Work Group Scope & 6 Ghz Context

Business objectives

- Influence regulatory bodies for better Wi-Fi (more spectrum, better security and user experience).
- Validate business opportunity of Coordinated Shared Spectrum technologies

Outcomes: Industry guidelines, white papers, respond to regulators and authorities

Regulatory activities:

ISED (Canada) – Radio LAN Devices Operating on 5150-5250 band;

TRAI (India) – Open Wi-Fi Pilot;

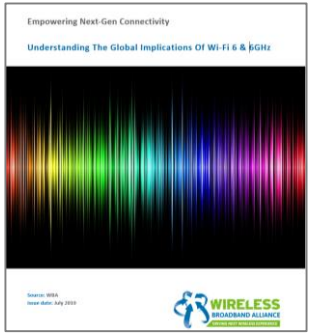
IMDA (Singapore) – 5G Mobile Services and Networks;

FCC (US) – Mid-Band Spectrum NOI

OFCOM (UK) – Framework for Spectrum Sharing

NEW "Understanding The Global Implications Of extending unlicensed spectrum to the 6GHz for Wi-Fi 6"

Download here



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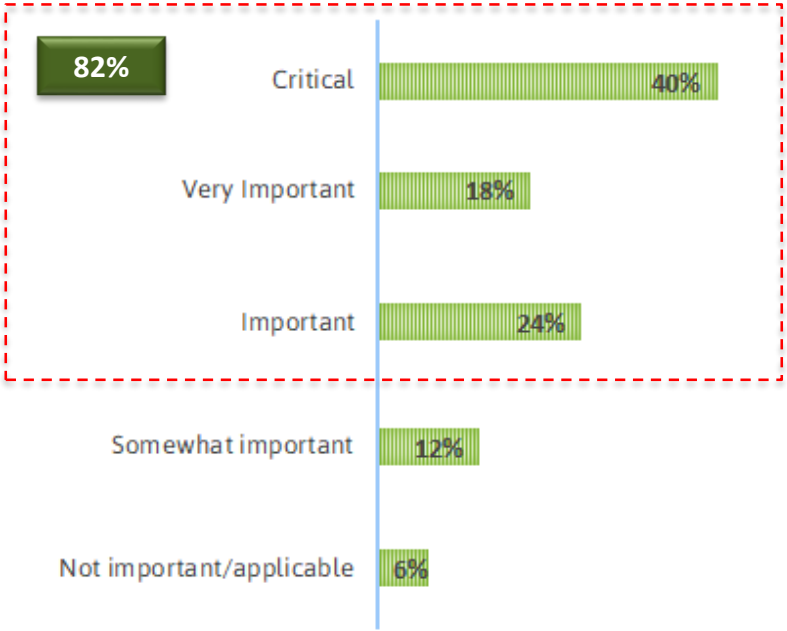
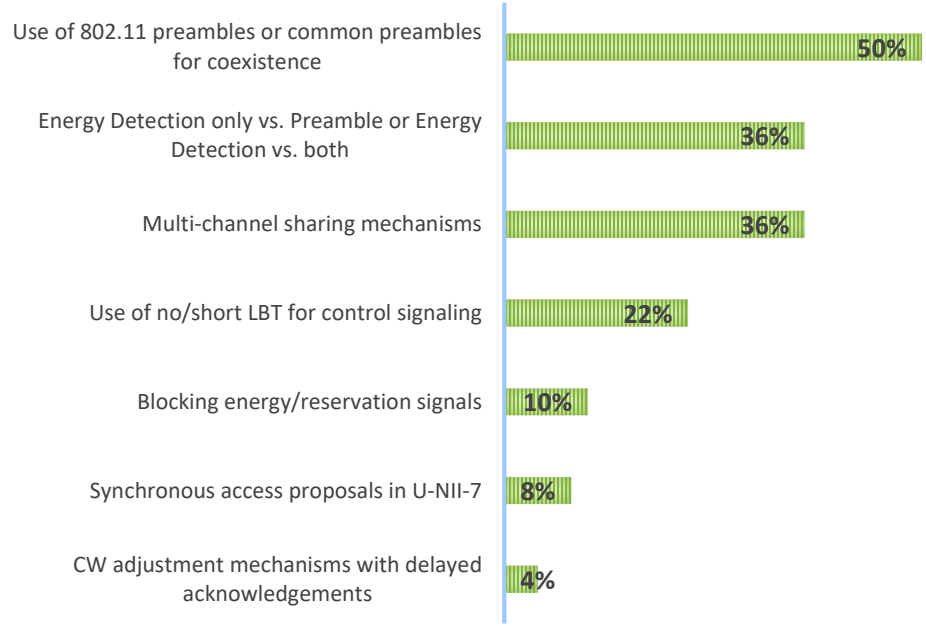
Wi-Fi 6 & 6 Ghz Industry Feedback

How important is the availability of additional spectrum on 6GHz to your Wi-Fi business and rollout?



What are currently the most relevant (top of mind) items in terms of Coexistence ?



72% indicate most important use case is "no legacy devices affecting airwaves"

Co-Existence mechanism is a must have for 81% of the respondents

77% of respondents want more spectrum for unlicensed

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Source: WBA 2019 6Ghz & Wi-Fi 6 Survey

Wrap-up & Call to Action

Key Takeaways

1. Wi-Fi 6 will play a relevant role in 5G Era
2. Now is the moment to embrace and deploy Wi-Fi 6
3. Extension of unlicensed spectrum to 6 Ghz will re-enforce Wi-Fi relevance

Immediate Opportunities

Join Wi-Fi 6 Trials

Join Wireless Global Congress in Frankfurt

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THANK YOU

Tiago Rodrigues
tiago@wballiance.com

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