



# Wi-Fi 7 – unlocking the next level of Wi-Fi performance

**Andy Davidson**

Sr Dir, Technology Planning  
Qualcomm Technologies, Inc.



# New use cases bring demand for higher Wi-Fi performance

Extreme speeds

Extreme capacity

Consistent Low Latency



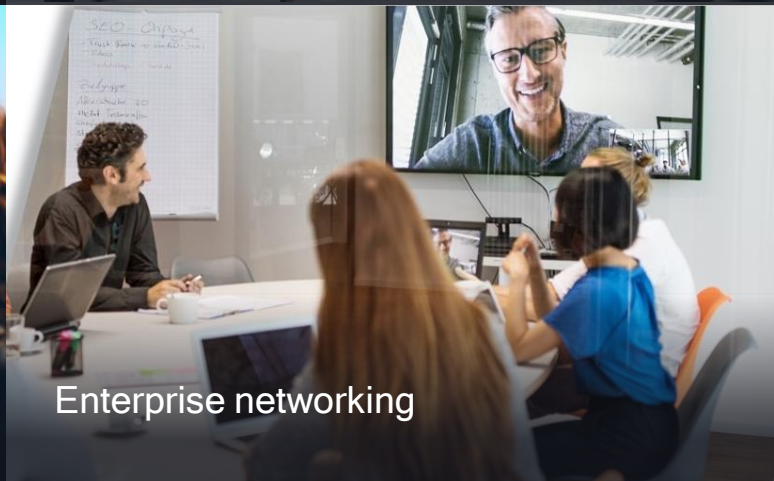
Crowded network



Venue connectivity



Cloud gaming



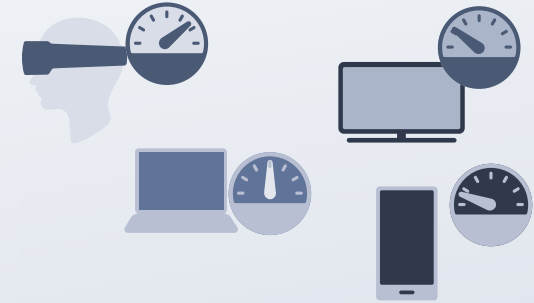
Enterprise networking



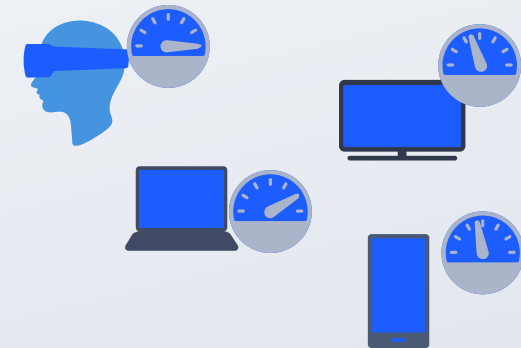
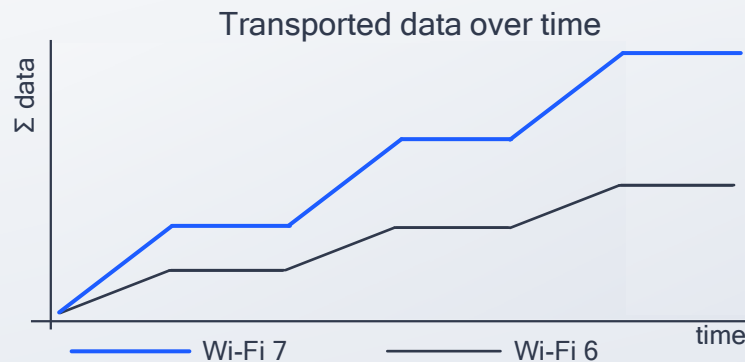
VR



AR/XR

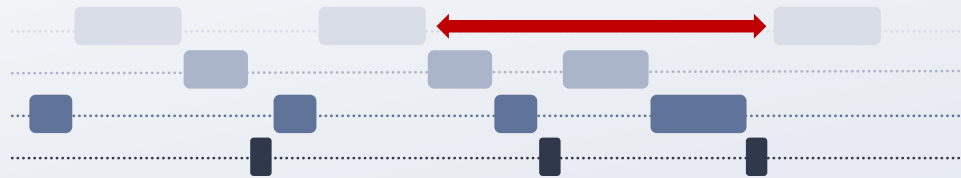


Overlapping traffic limits devices' channel access opportunities

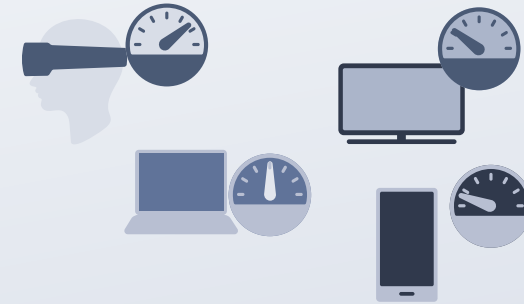


Higher speed devices transfer more data in each opportunity

Faster connections deliver required throughput even in congested networks



long latency events disrupt the UX

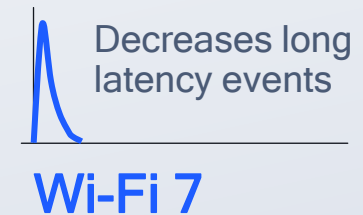
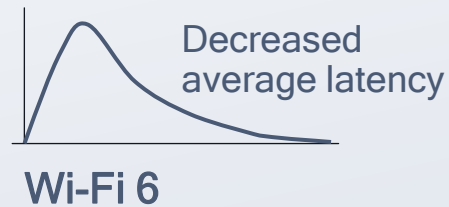
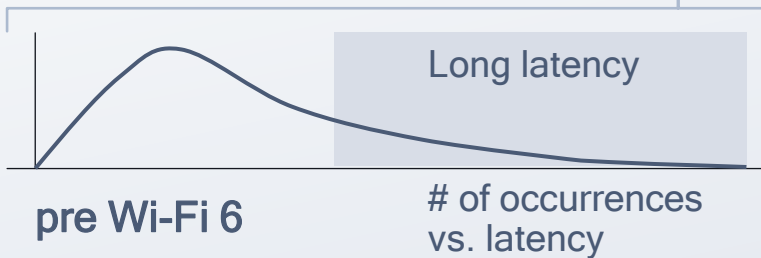


Long delays or dropouts in calls

Frozen video calls

Unresponsive cloud gaming

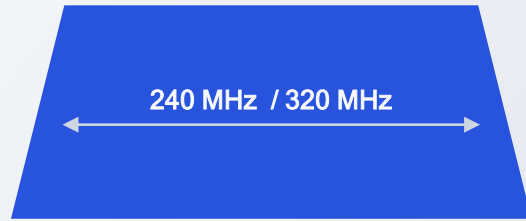
Nausea while using XR



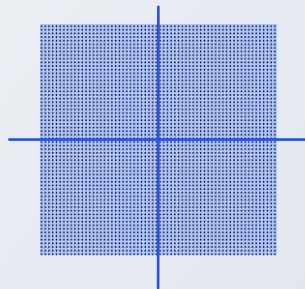
# Wi-Fi 7 meets stricter application latency requirements

## Faster connections

### Wider Channel Bandwidth

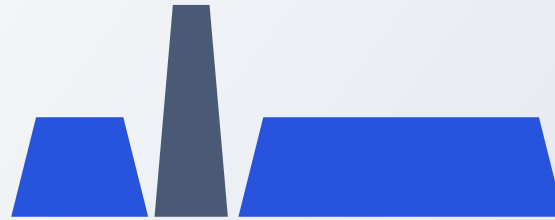


### 4k QAM



## Adaptive connections

### Interference Puncturing

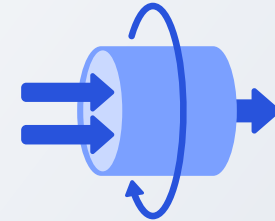


### Multi-RU OFDMA

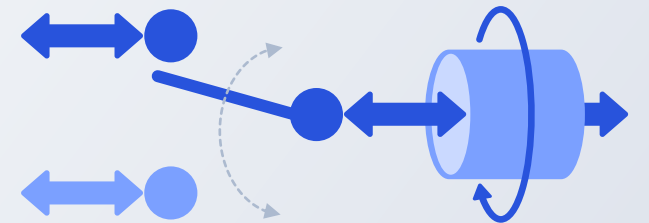


## Multiple connections

### Simultaneous Multi-Link



### Alternating Multi-Link

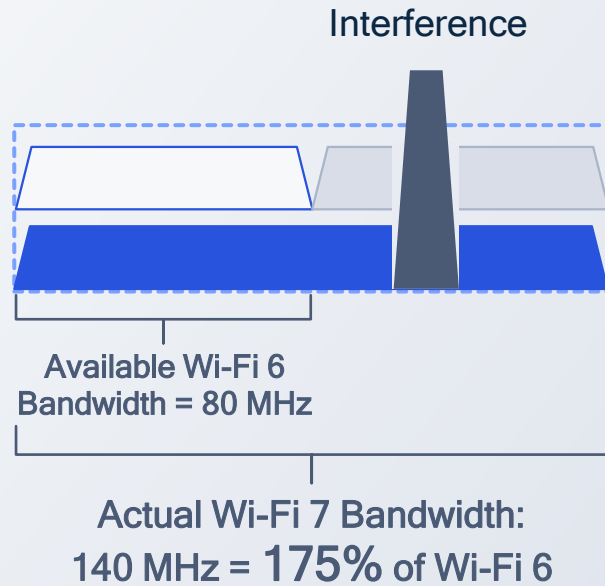


Wi-Fi 7 brings conventional improvements  
and innovative enhancements



## Adaptive Interference Puncturing

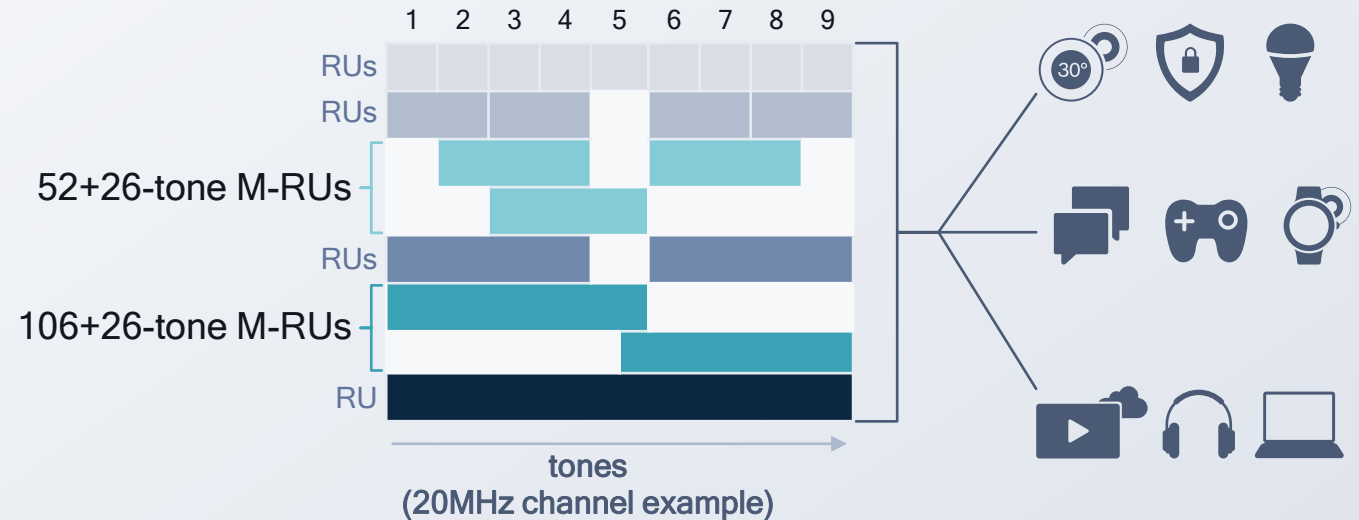
Create a wider channel around the interference rather than a narrower channel that avoids it



## Multi-Resource Unit (M-RU) OFDMA

Multiple RUs can be allocated to the same client

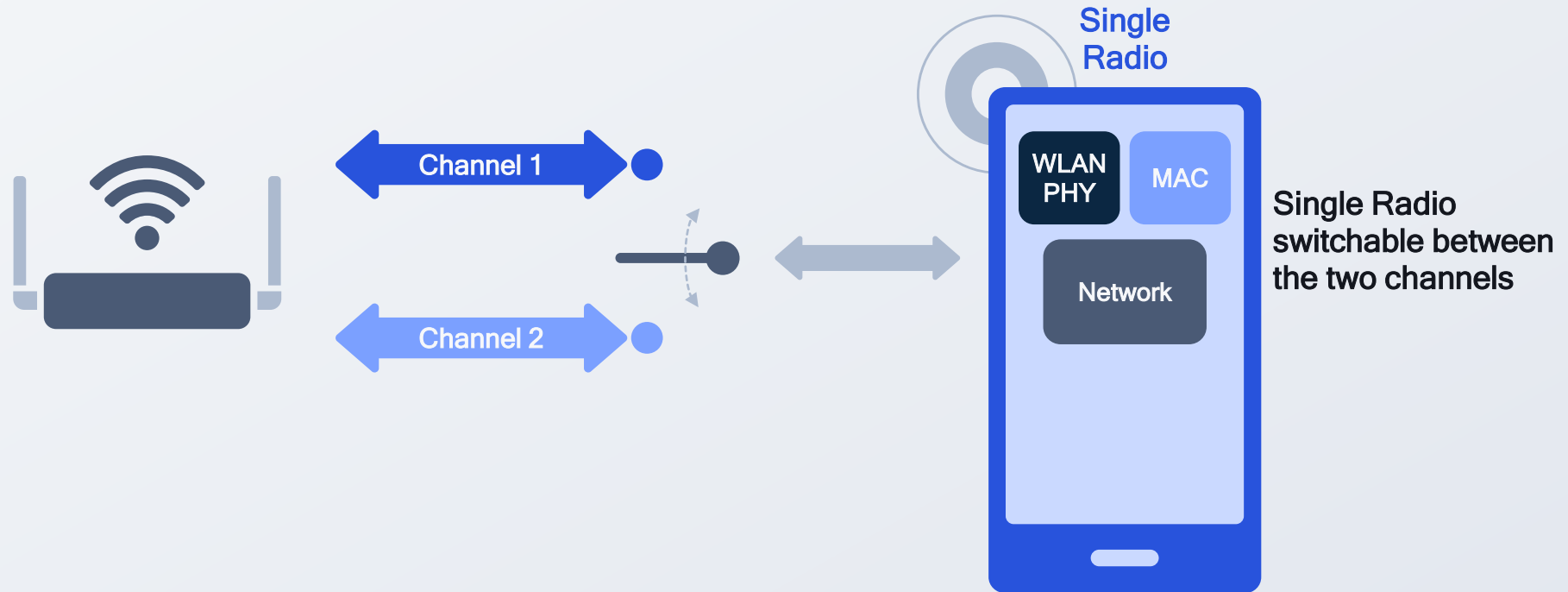
M-RUs increase AP flexibility to assign required throughput at minimum latency to more devices



Adaptive connections enable higher speed and lower latency

# Wi-Fi 7 Single Radio Multi-Link

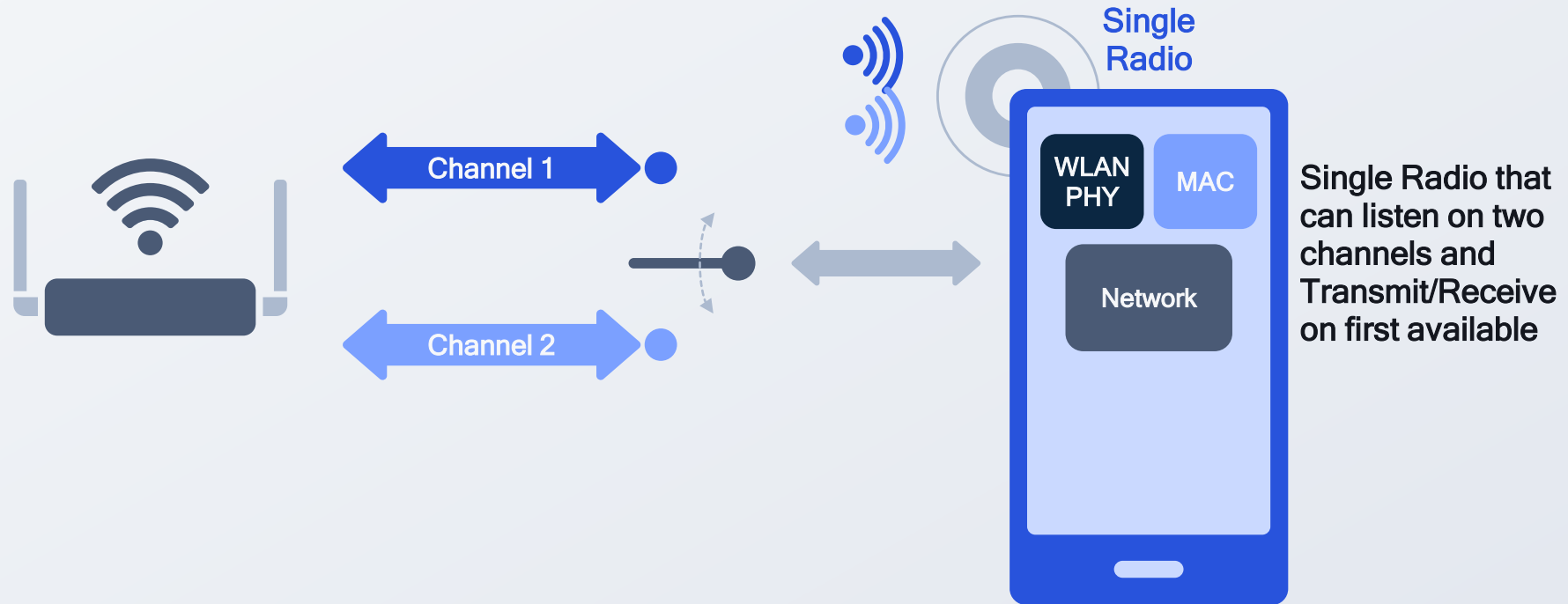
Connect to the AP on two channels, with only one active at a time



Switch channel to adapt to network congestion or client concurrency

# Wi-Fi 7 Alternating Multi-Link

Connect to the AP on two channels, both active but use one at a time

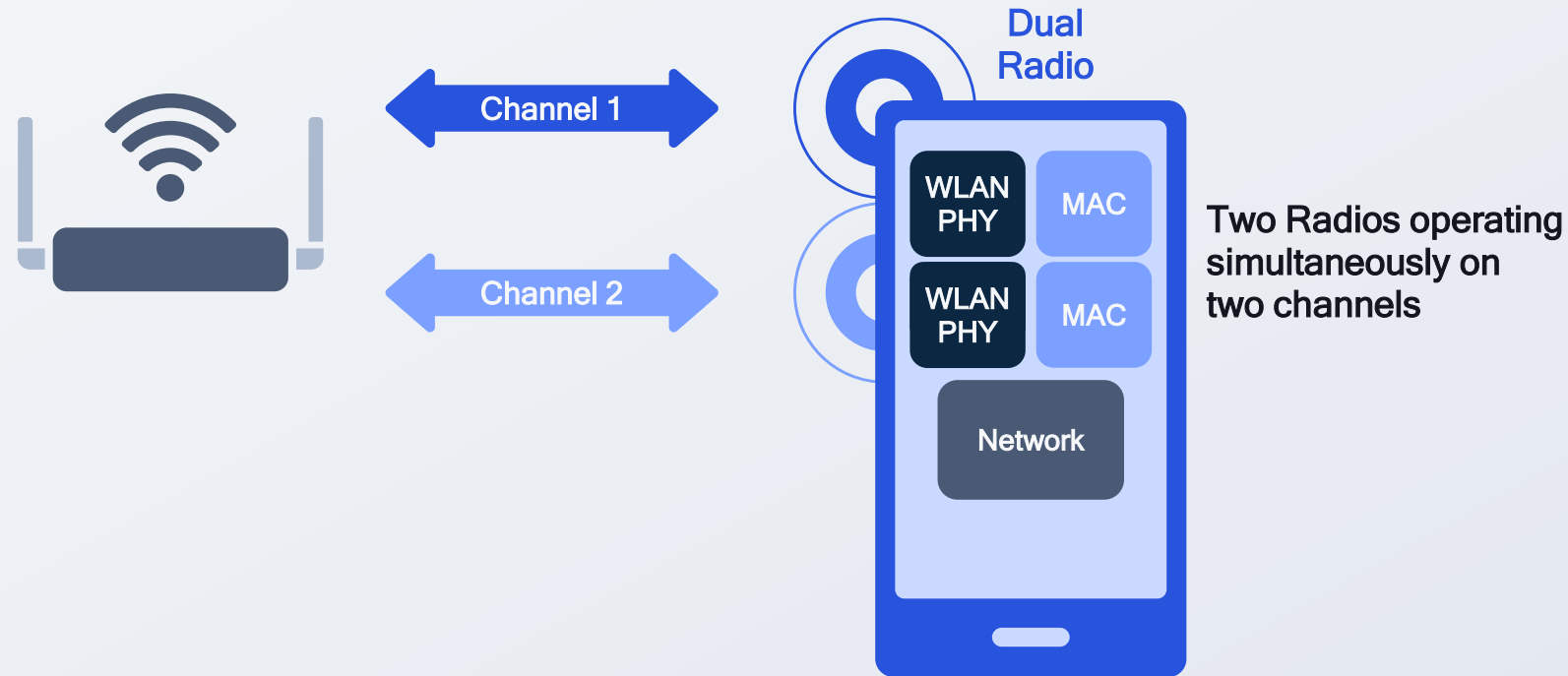


Use first link available to avoid congestion and lower latency



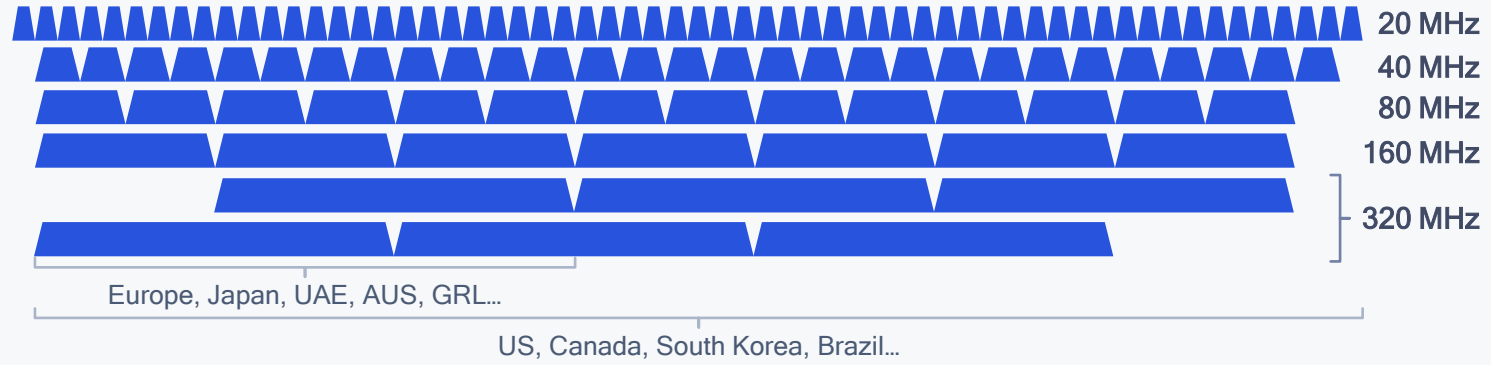
# Wi-Fi 7 Simultaneous Multi-Link

Connect to the AP on two channels, use simultaneously enabling maximum throughput

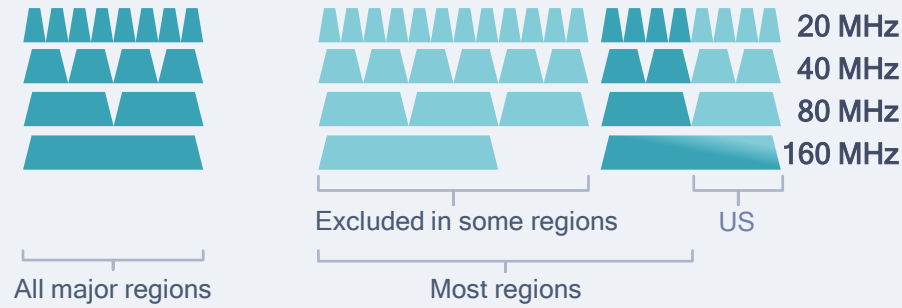


Use both links as available to avoid congestion,  
minimize latency and maximize speed

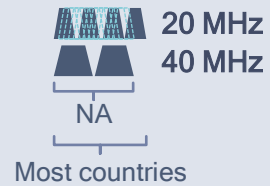
6 GHz<sup>1</sup>



5 GHz<sup>1</sup>

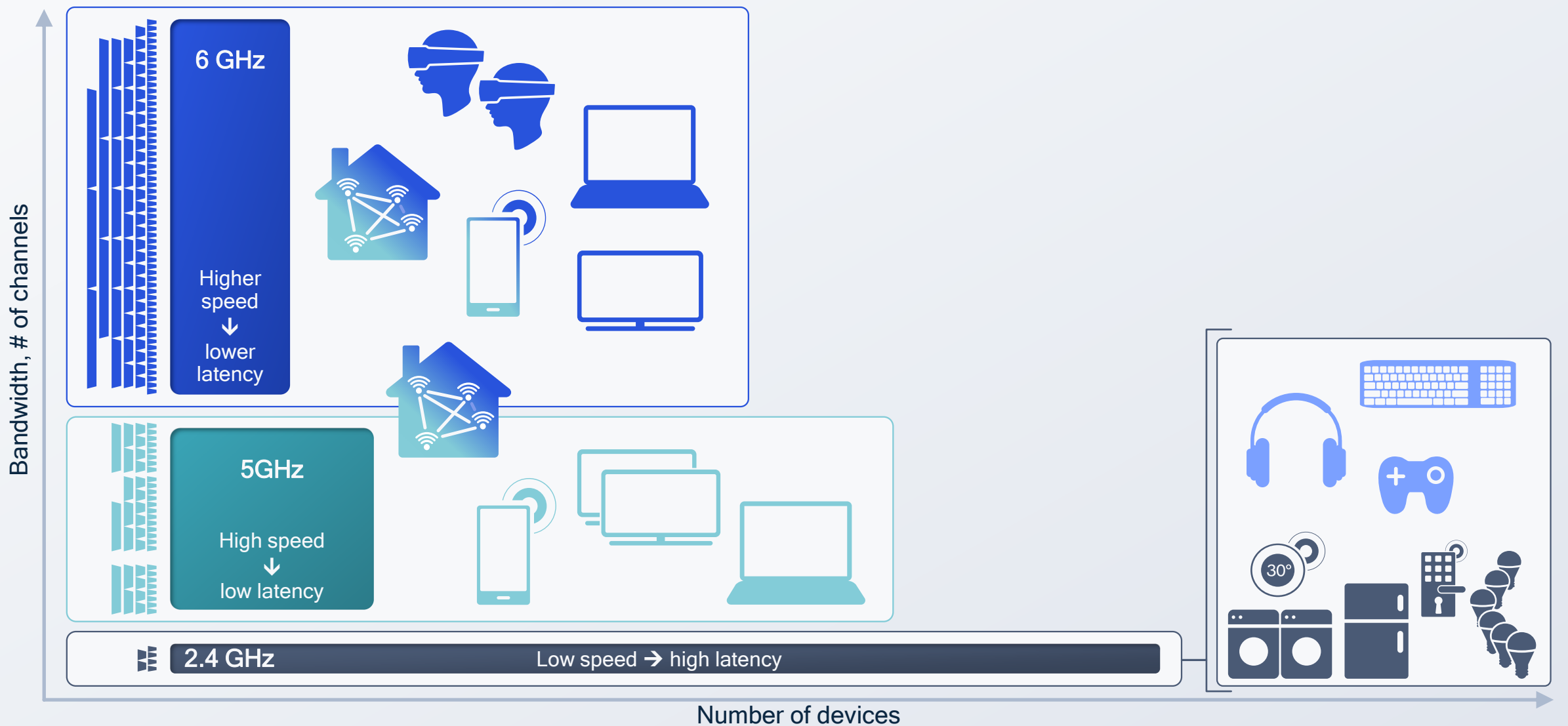


2.4 GHz

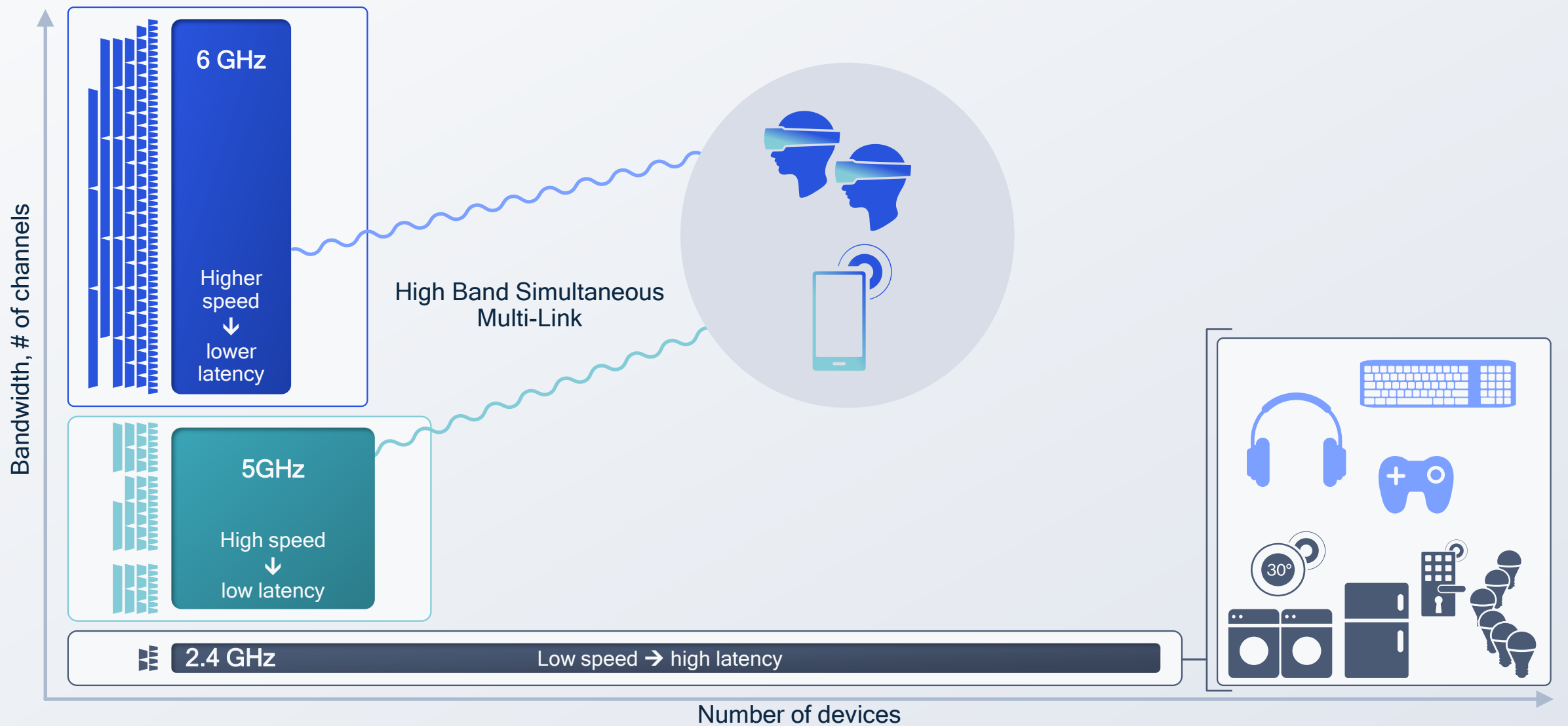


<sup>1</sup>Available spectrums are subject to change

Spectrum availability for Wi-Fi varies around the world

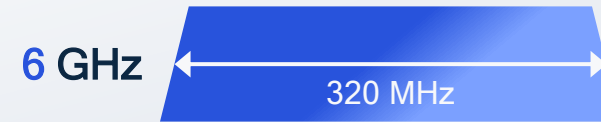
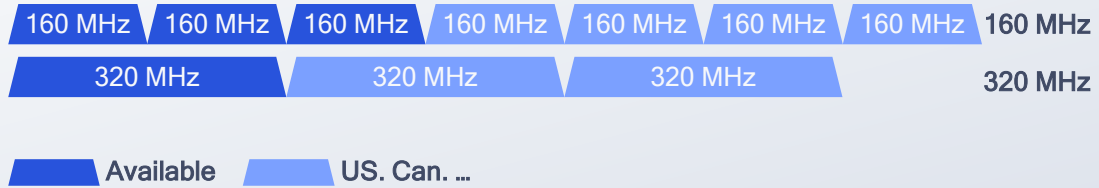


High band connections deliver required service and frees-up the low band for IoT and Bluetooth

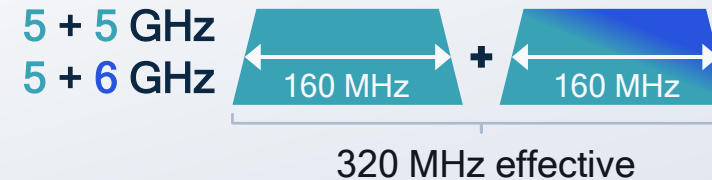


HBS Multi-Link provided multi channel access capabilities

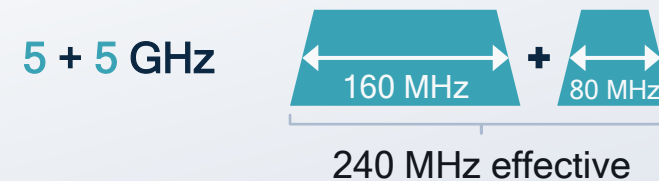
### Regions with 6 GHz available



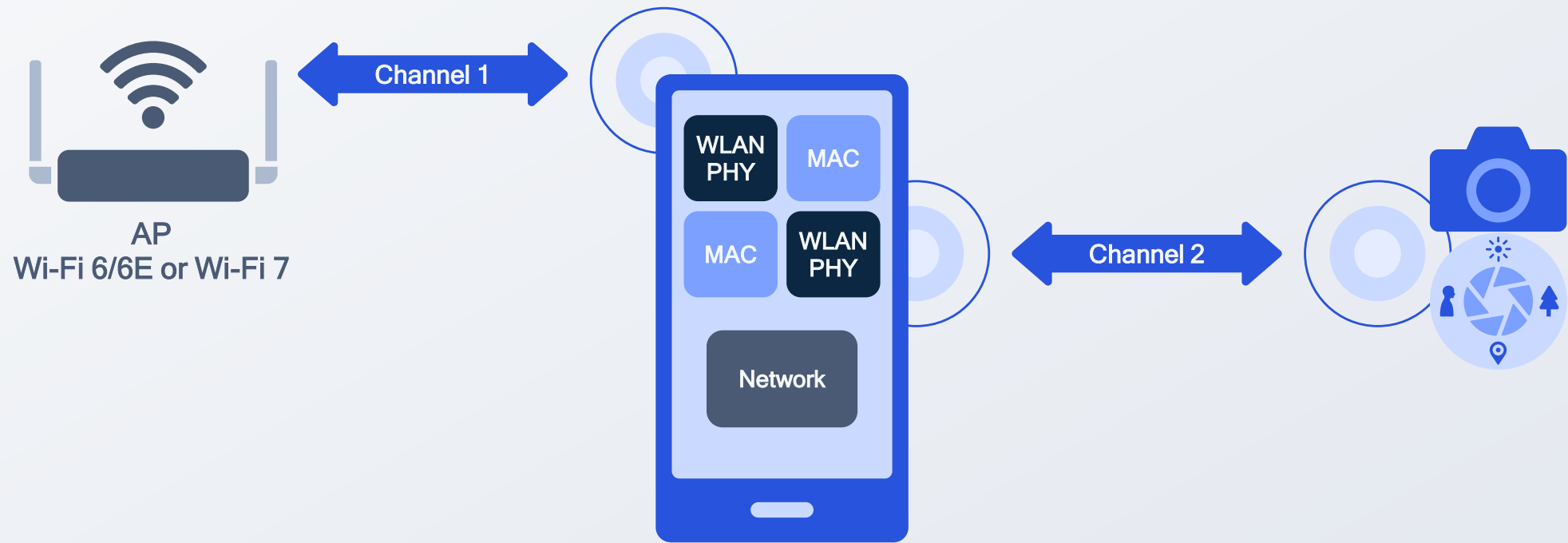
### 5 GHz Most of the world + US



### Regions with one 160 MHz channel @ 5 GHz



Wi-Fi 7 HBS ML offers many paths to Extremely High Throughput - Globally



HBS Multi-Link enables multiple connections  
unlocking advanced use cases

5/6 GHz

5/6 GHz

LAB 337

**Reminder**  
Next meeting in the lab.

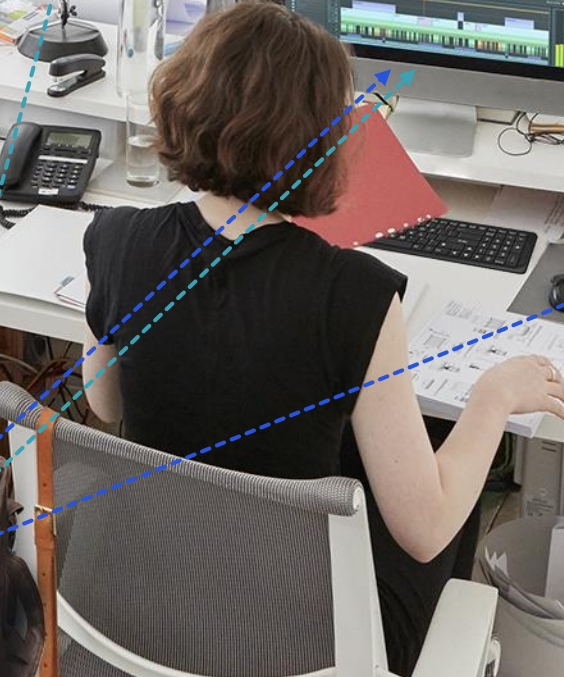
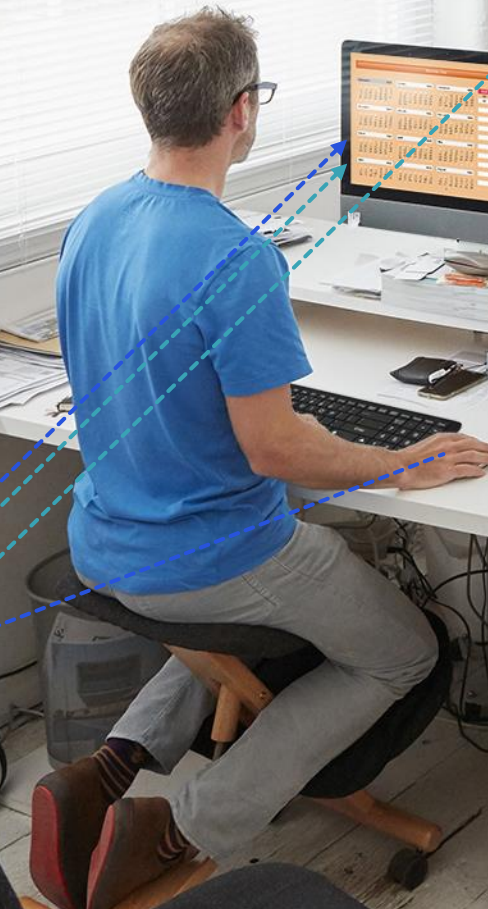
**Grant Cox**  
My Grant has a few open slots at the powerplant.

Jay\_Lee@work.com  
Online



Jay Lee  
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.







Industrial operation



Whole home mesh systems



Wireless ISP



Stadium and outdoor venues



AFC increases performance and enables new use cases for 6 GHz spectrum

63x higher power indoors

Outdoor operations

Weatherized enclosure

# AFC: High-performance and outdoor operation



**63x** higher power indoors

## AFC system requirements



AFC enabled device



AFC cloud



Geolocation



Management



Conditionally approved for operation by FCC\*

Countries evaluating AFC like solutions:

Brazil, Saudi Arabia, Australia, South Korea, Japan, Europe,...

\*FCC conditional approval is to enable standard power for unlicensed devices in the 6 GHz band

# Qualcomm Technologies' standards and technology leadership

Inventing breakthrough technologies

\$81+ billion  
in cumulative R&D

140,000+  
Patents, patent applications



Leveraging 30+ years of cellular and  
20+ years of Wi-Fi technology leadership

Leading expertise and long history of world-firsts in prototypes  
and technology demonstrations



Driving the evolution of Wi-Fi technology in

- 802.11 working groups through quality contributions and leadership positions in working/task groups
- Wi-Fi Alliance (WFA) through contributions and leadership



+6.5 Billion

Wi-Fi products shipped since 2015<sup>2</sup>

#1 In global  
Wi-Fi  
shipments<sup>3</sup>

Qualcomm Technologies is paving the way  
for the future of wireless connectivity

1. Company data as of Q4 FY22; R&D is cumulative expenditures since 1985

2. Internal data

3. ABI Research, Wireless Connectivity Technology Segmentation and Addressable Markets - 3Q 2022 (MD-WCMT-189)



# Qualcomm Technologies' Wi-Fi 7 scalable product platforms & turnkey solutions

## Qualcomm® FastConnect™ 7800 Mobile Connectivity System full featured Wi-Fi

5.8 Gbps<sup>1</sup>  
Peak Wireless speed

  
2ms<sup>1</sup> sustained latency



## Qualcomm® Immersive Home Wi-Fi 7 purpose built for the home

  
Mesh Multi-Link

  
Tri-Band 6 and 10 streams



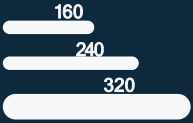
## Qualcomm® Networking Pro Series professional-grade networking, engineered for massive deployments

500+   
Users<sup>1</sup>  
User capacity per channel

  
Quad-Band up to 16 streams



### Common features

  
Wider Channels

  
HBS Multi-link

  
4k QAM

  
Adaptive interference puncturing

  
Adaptive Channels

  
OFDMA

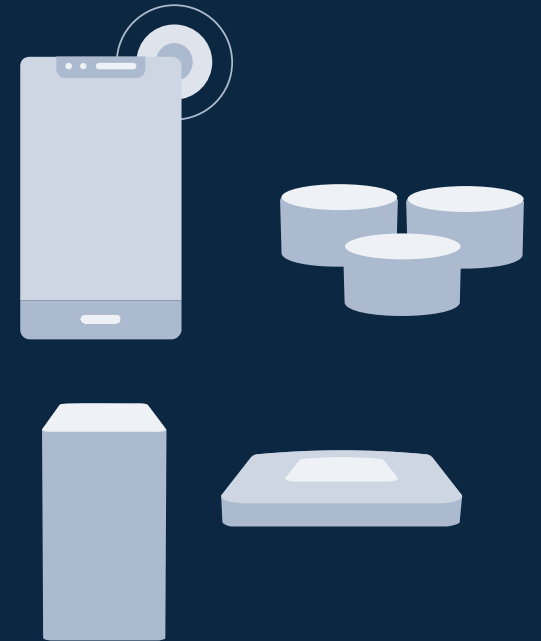
  
AFC

Qualcomm FastConnect, Qualcomm Immersive Home platforms and Qualcomm Networking Pro Series platforms are products of Qualcomm Technologies, Inc., and/or its subsidiaries  
1. Internal data

# Wi-Fi 7 market penetration will grow rapidly



Wi-Fi 7 CAGR (2023 - 2027) = 87%



# Summary

## Wi-Fi 7



Designed to provide faster connections, consistent lower latency and improved network robustness

## High-Band Simultaneous Multi-Link



Designed to support wire-like performance

## Qualcomm Technologies' AP and client platforms



Hardware and software optimized turn-key solutions

# Wi-Fi 7 – unlocking the next level of Wi-Fi performance



# Thank you

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