

Metaverse Connectivity and the Evolution of Wi-Fi 6E

Importance of 6 GHz spectrum

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**Meta's mission is to give people
the power to build community
and bring the world closer
together**

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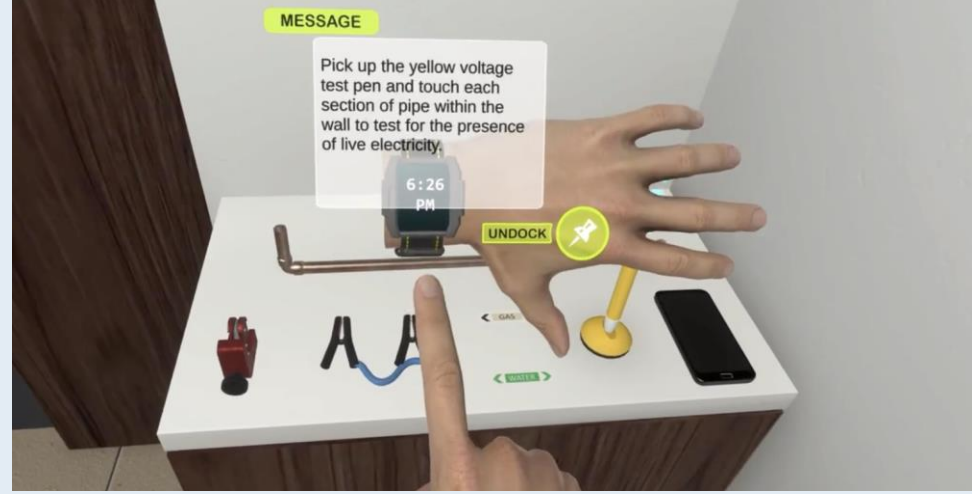
Technology has democratised connection and expression





Simulation footage

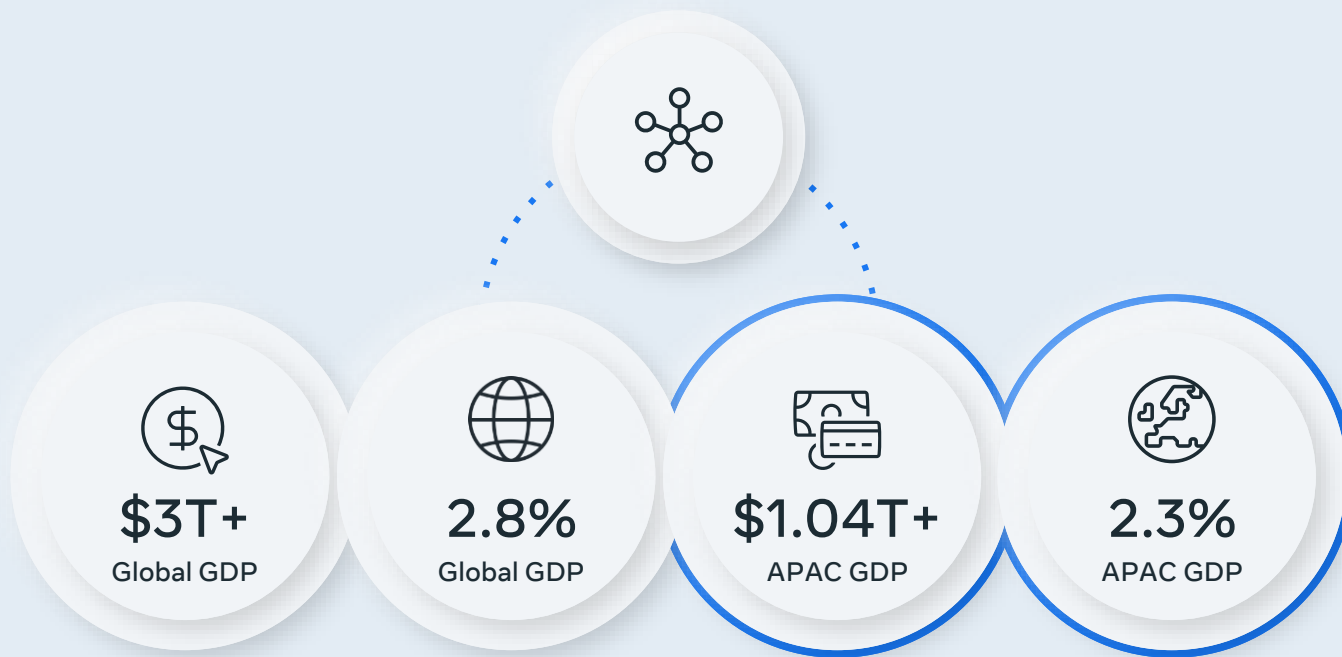
Immersive Learning



Emergency Preparedness





Economic Impact of the Metaverse




Source: Analysis Group, The Potential Global Economic Impact of the Metaverse (2022)

Meta won't build the metaverse - we are one of the many contributors

 **Satya Nadella**  · 3rd+
Chairman and CEO at Microsoft
5mo · 

The metaverse is here, and it's not only transforming how we see the world but how we participate in it – from the factory floor to the meeting room. Take a look.



Announcing a \$1 Billion Funding Round to Support Epic's Long-Term Vision for the Metaverse


April 13, 2021

Today Epic Games announced that it completed a \$1 billion round of funding, which will allow the company to support future growth opportunities. Epic's equity valuation is now \$28.7 billion.

This round includes an additional \$200M strategic investment from Sony Group Corporation, which builds on the already close relationship between the two companies and reinforces their shared mission to advance the state of the art in technology, entertainment, and socially-connected online services. Other investment partners include Appaloosa, Baillie Gifford, Fidelity Management & Research Company LLC, GIC, funds and accounts advised by T. Rowe Price Associates, Ontario Teachers' Pension


GAMES EDITORS' PICK

Fortnite's Travis Scott Concert Was A Stunning Spectacle And A Glimpse At The Metaverse


Paul Tassi Senior Contributor @
News and opinion about video games, television, movies and the internet. 


Apr 23, 2020, 07:35pm EDT


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Snapchat knows you want to see what you'd look like in the metaverse

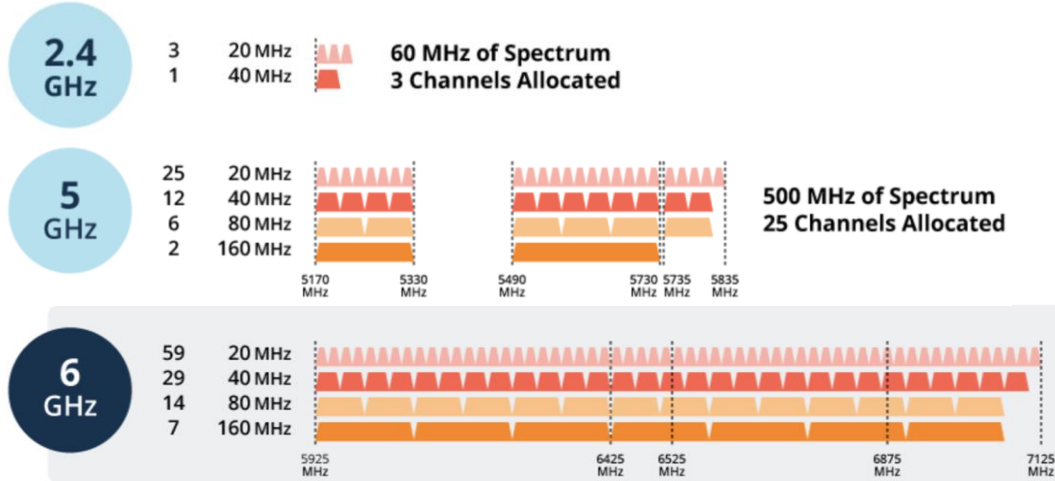
Amanda Silberling @asilberling / 5:11 AM GMT+11 · December 24, 2021 



 Image Credits: Snapchat

Snapchat released an **Avatar lens** AR filter today, which makes you look like a Sims character. Or, in more modern parlance, it makes you look like what you'd look like in the metaverse. To use the

What is 6 GHz?



- ✓ 1200 MHz new greenfield spectrum for Wi-Fi
- ✓ Wider channels enable Gigabit capacity
- ✓ Wider channels enable lower latency and reduced power
- ✓ Only opportunity for new spectrum for Wi-Fi !

Use Cases

Very Low Power (VLP) Mobile Indoor/Outdoor



- Augmented/Virtual/Extended Reality (AR/VR/XR)
- UHD Video Streaming & Multicasting
- High Speed Tethering/File Sharing
- In-Vehicle Entertainment

Low Power Indoor (LPI) Fixed Indoor Only



- Residential Multi-AP/mesh networks
- High-density enterprise networks
- Indoor public venues
- Industrial IoT

Standard Power (SP) Fixed Indoor/Outdoor



- Multigigabit per second outdoor coverage (stadiums, LinkNYC, parks)
- Multigigabit point-to-multipoint rural connectivity
- Low-latency Wi-Fi calls, and next-gen experiences with AR/VR/XR

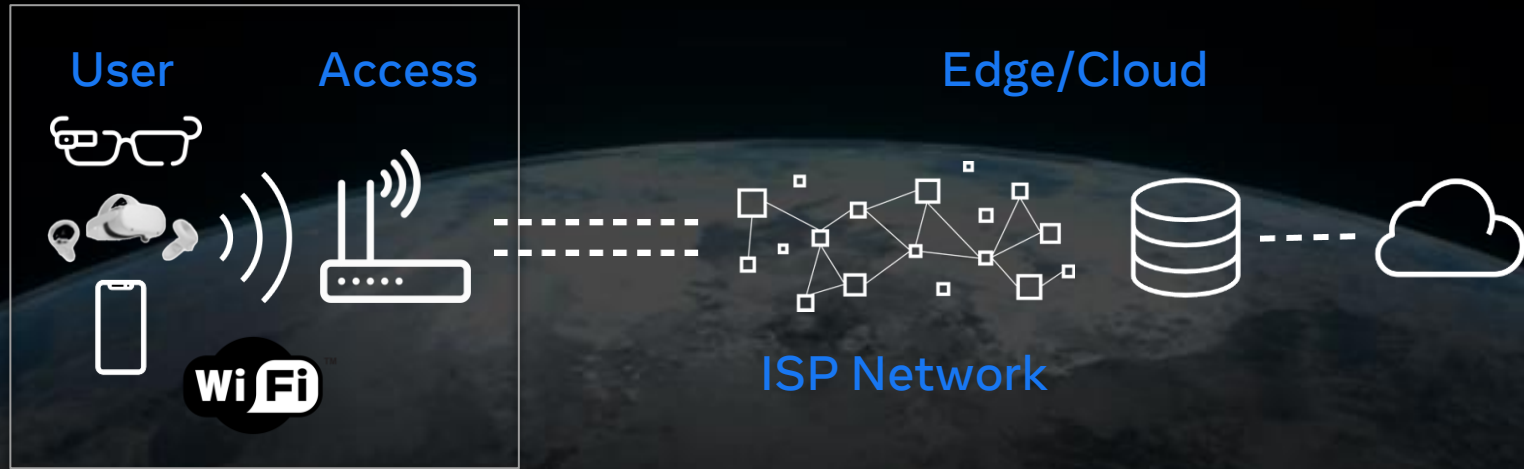
What does 6 GHz have to do with the Metaverse?



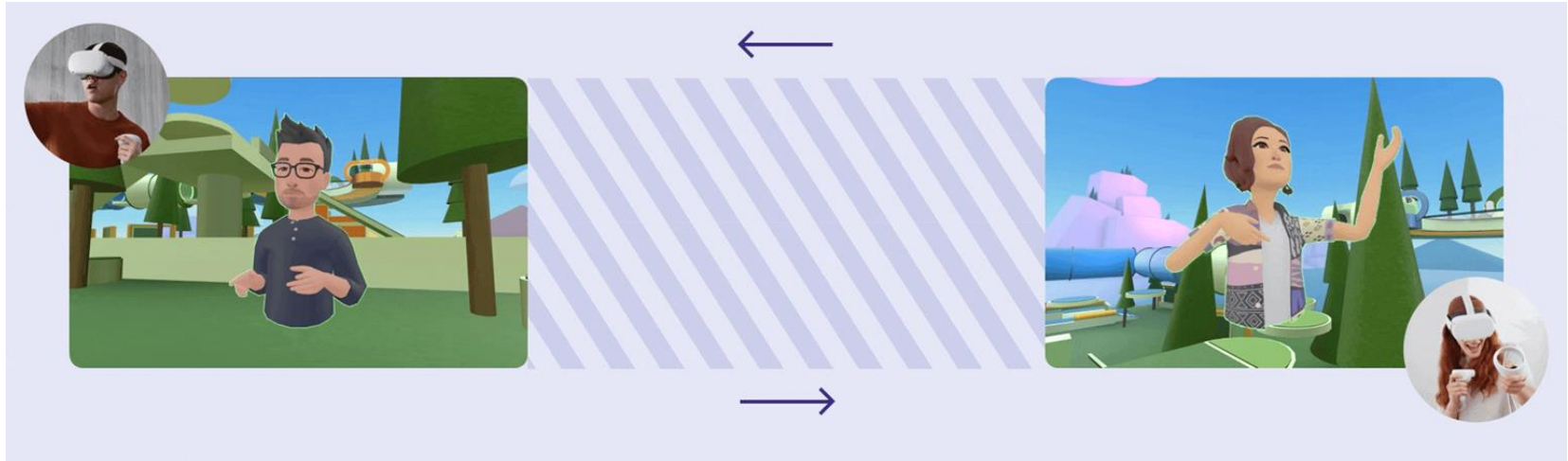
**Better
Connectivity**
is key to build
Connections
Across worlds



Improving the Metaverse experience will require looking at the E2E network holistically and **6 GHz Wi-Fi is a key component**



Predictable Low Latency and Jitter



Predictable low latency and jitter is a must for smooth AR and VR experiences

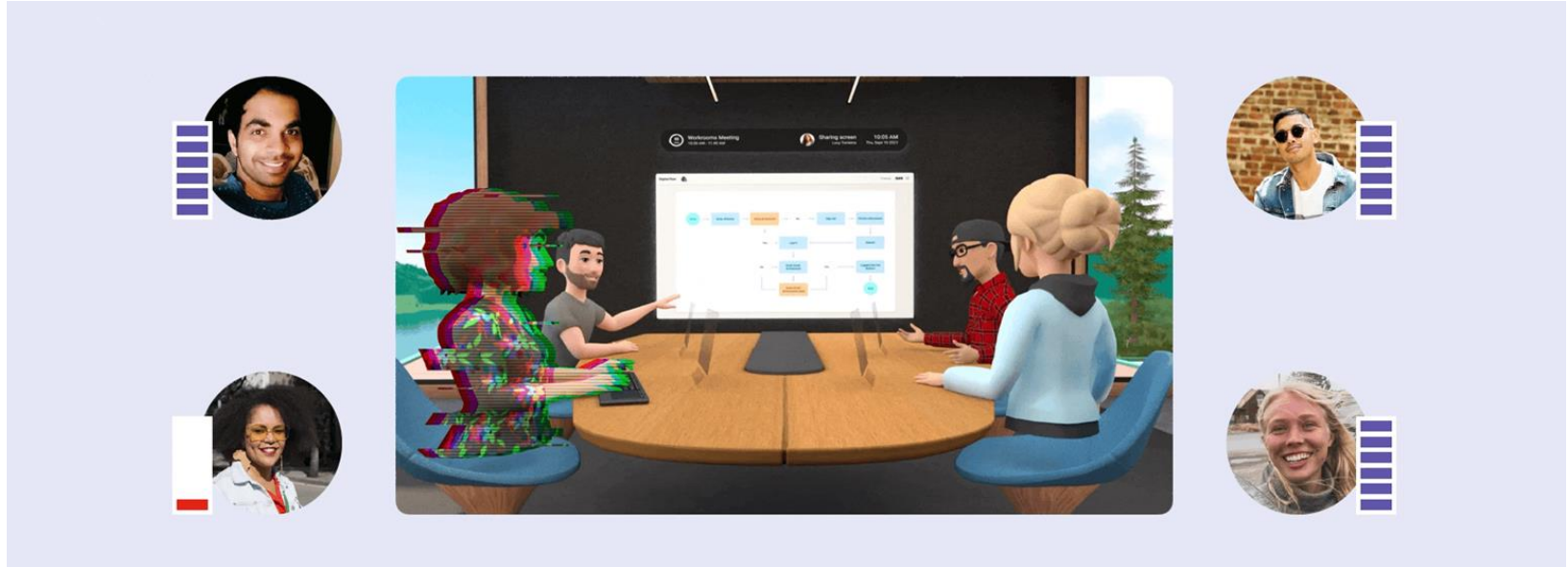
This not only improves end-to-end performance, but is necessary to protect against motion sickness.

Sustainable Throughput



Currently, without more and larger channels that 6 GHz spectrum provides, the traffic requirement can not be supported if too many users join the network and/or ramp up their traffic over the same channel.

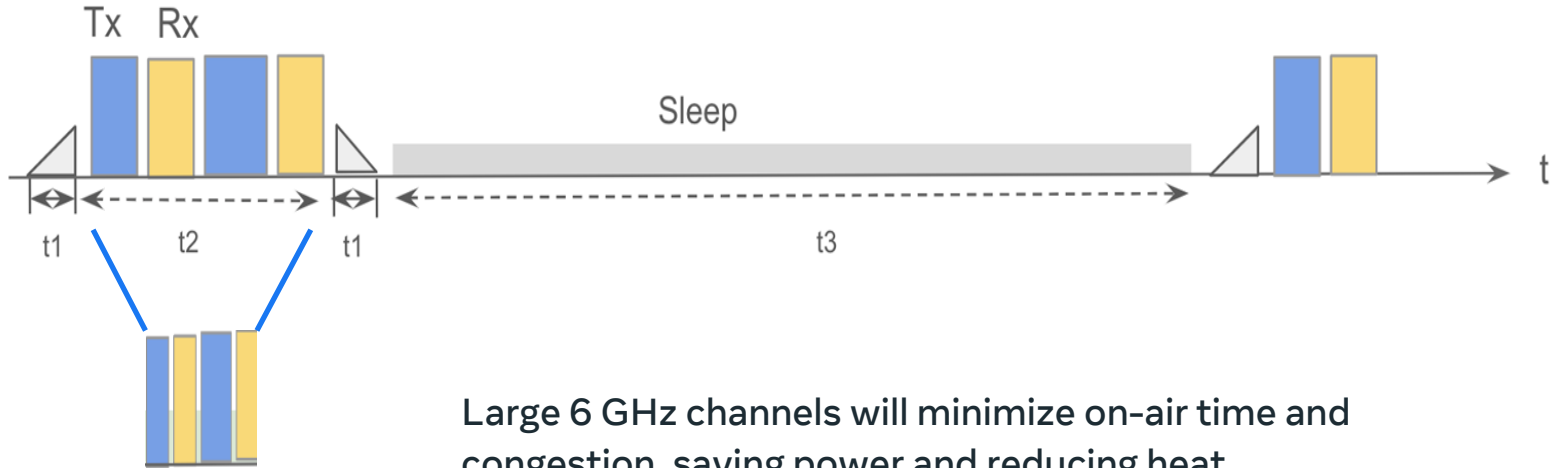
Robust Quality of Experience



Throughput, latency (average and jitter) need to be kept in control even in presence of network congestion

Why 1200 MHz?

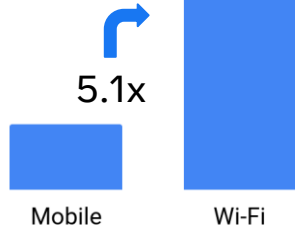
Low Power Consumption and Thermals



Large 6 GHz channels will minimize on-air time and congestion, saving power and reducing heat.

Power and thermal will also be key as we drive extremely integrated form factors. Larger channels not only increases throughput but allows power consumption optimization by reducing duty cycle.

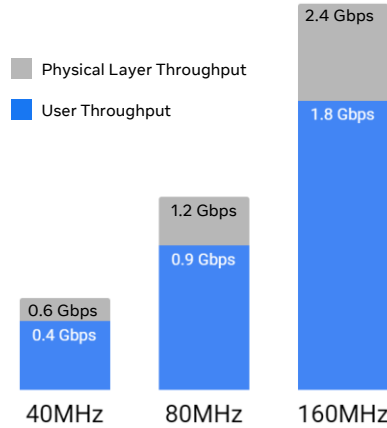
Why 1200 MHz? Wider Channels + Higher throughput + Lower Latency



Wi-Fi is critical to connectivity

Wi-Fi carries **5.1 times more internet traffic than mobile***. In most cases It provides the critical first link from device to the rest of the network and can be the limiting factor to Quality of Experience (QOE)

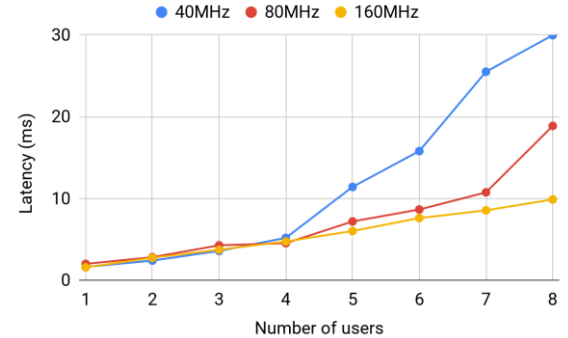
*Source: Analysys Mason
Wireless network data traffic trends 2021-2026



Wider channels enable Gigabit capacity

Higher Wi-Fi throughput enables Gigabit capacity to flow all the way through to the end user devices.

Data rates at MCS11 (1024QAM, 5/6 coding), 2 spatial streams, 0.8μs guard interval



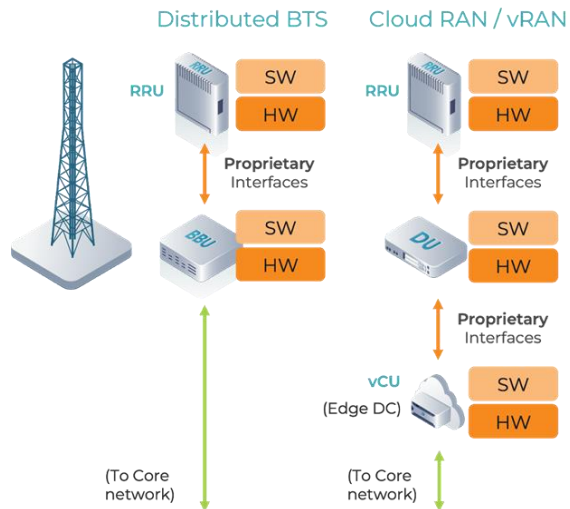
Wider channels enable lower latency

Wider channels reduce latency in multi-user environments such as Enterprises or the classroom.

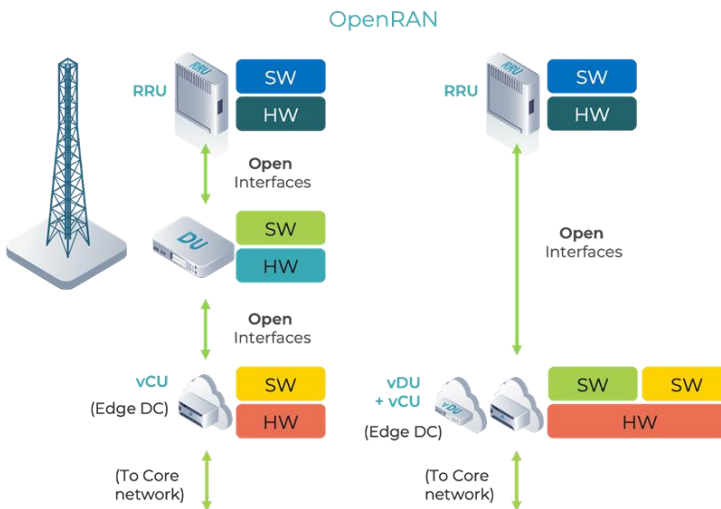
Chart shows P90 one way Latency, 10Mbps per user, as measured during lab testing by Meta

OpenRAN technologies contribute to address the barriers for progress in connectivity

FROM: Single-vendor, fully integrated RAN



TO: Multi-vendor, disaggregated interoperable RAN



- Build a more **sustainable supply chain**
- Accelerate **innovation** in connectivity
- Improve network **economics**

Thank you!



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