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# The 5G Era: Consumer Devices of the Future

Tuesday, 22 October 2019

13:00 – 15:00





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**Said Bakadir**

Director of Product Management  
Qualcomm

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Oct 22, 2019

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Qualcomm

# 5G + AI + XR - Transforming the Mobile Industry for the Next Generation of Immersive Compute

**Said Bakadir**

Director of XR Product Management  
Qualcomm Technologies, Inc.





# XR is the next mobile computing platform

Everything we've learned for smartphones will be used for XR



Laptop

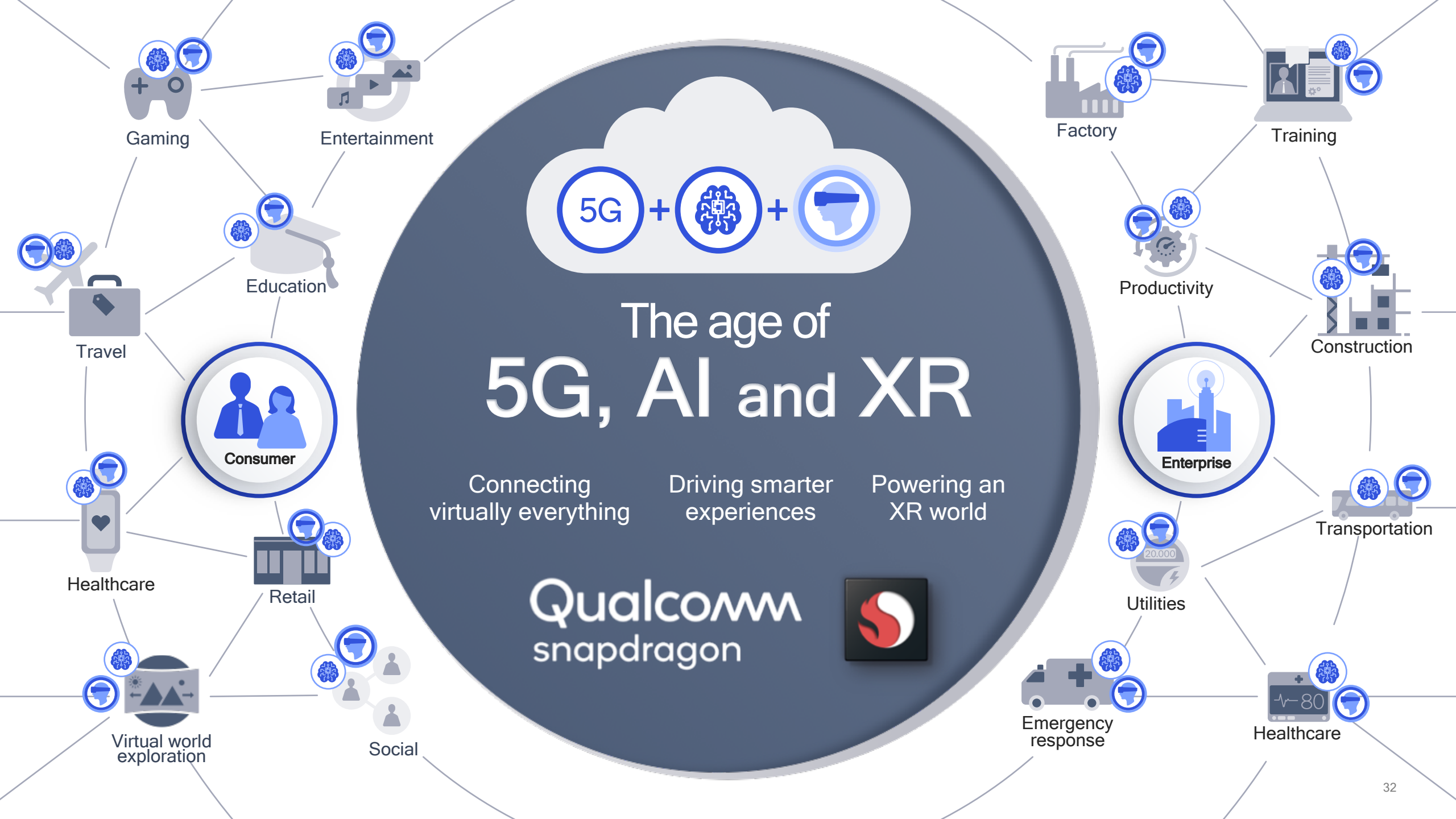


Smartphone



XR glasses





5G + AI + XR

# The age of 5G, AI and XR

Connecting virtually everything

Driving smarter experiences

Powering an XR world

Qualcomm  
snapdragon



Gaming

Entertainment

Factory

Training

Education

Productivity

Construction

Travel

Consumer

Enterprise

Transportation

Healthcare

Retail

Utilities

Virtual world exploration

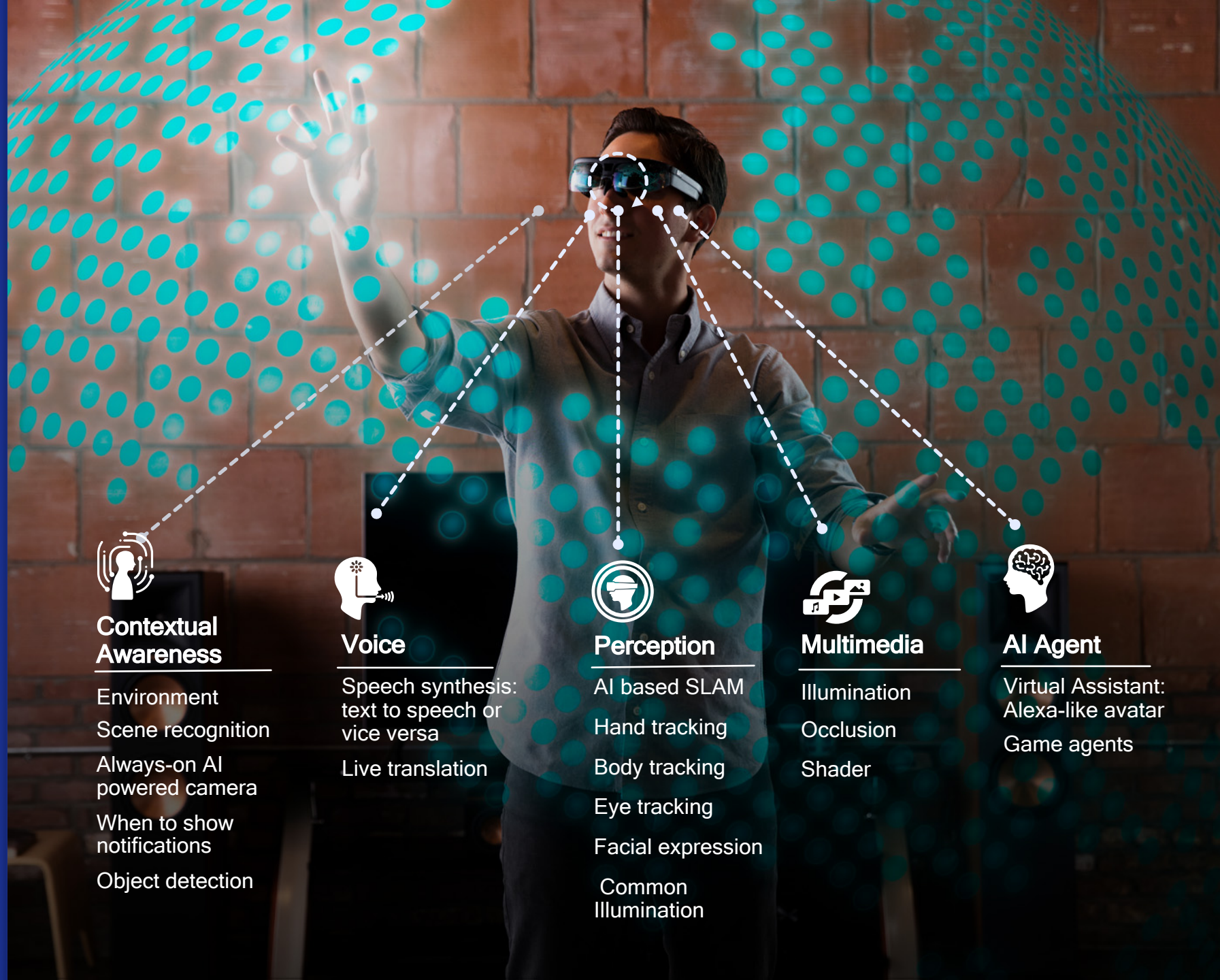
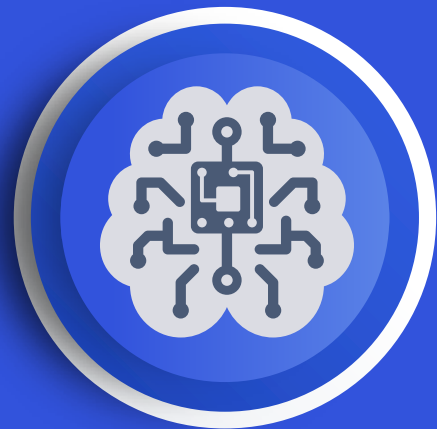
Social

Emergency response

Healthcare

# What does AI mean for XR?

AI improves XR experiences on device



## Contextual Awareness

- Environment
- Scene recognition
- Always-on AI powered camera
- When to show notifications
- Object detection



## Voice

- Speech synthesis: text to speech or vice versa
- Live translation



## Perception

- AI based SLAM
- Hand tracking
- Body tracking
- Eye tracking
- Facial expression
- Common Illumination



## Multimedia

- Illumination
- Occlusion
- Shader




## AI Agent


- Virtual Assistant: Alexa-like avatar
- Game agents




 Predictive intelligence

 Holographic AI Agent

 Ultra reliable, low-latency wireless connection

 Low latency motion tracking

 Hand tracking

 World tracking and registration for augmented objects



# AI Agent for guided XR instruction

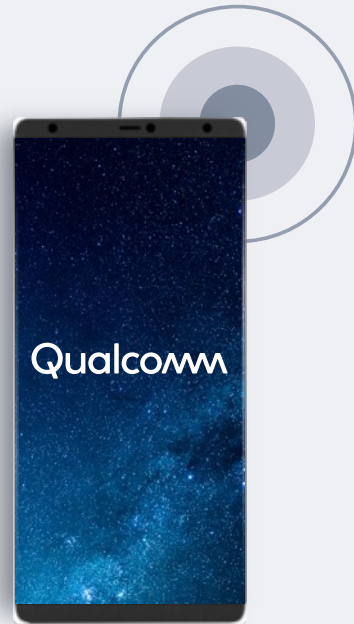


# Evolution of mobile innovation...



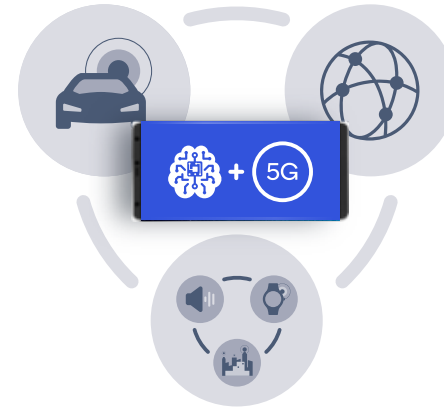
**Digitized mobile communications**

Analog to digital



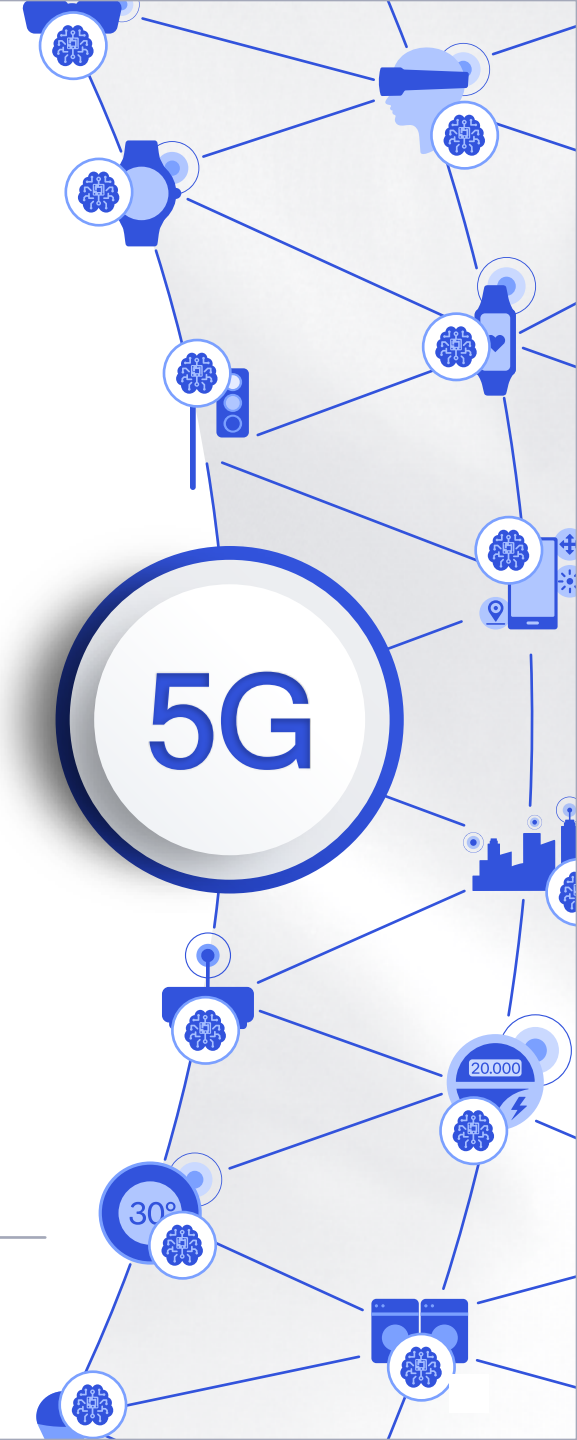
**Redefined computing**

Desktop to smartphones



**Transforming industries**

Connecting virtually everything at the wireless edge



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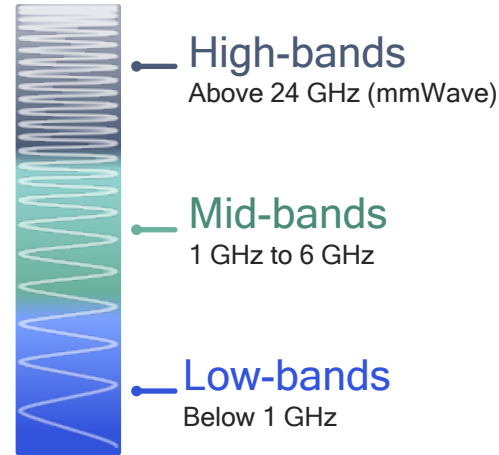
Transforming how the world connects, computes and communicates



# Designing a unified, more capable 5G air interface



Enhanced mobile broadband



Licensed/shared/unlicensed

Diverse spectrum



Diverse deployments

**10x**  
Decrease in end-to-end latency

**10x**  
Experienced throughput

**3x**  
Spectrum efficiency

**100x**  
Traffic capacity

**100x**  
Network efficiency

**10x**  
Connection density

# 5G rollout happening faster than 4G

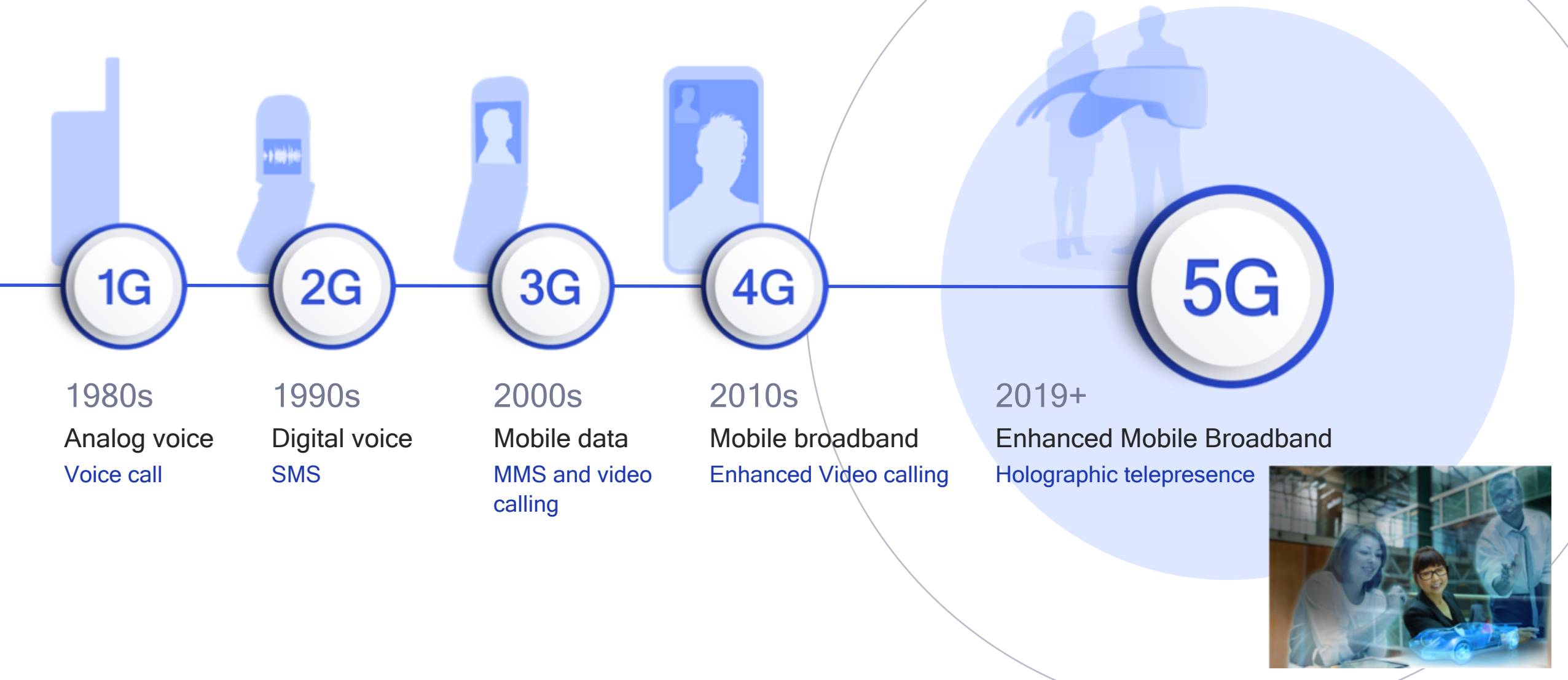


Source: IHS Report Jan '19, Qualcomm Technologies data

Year 1 announcements underscore tremendous momentum with 5G



# Evolution of social communications building on decades of breakthrough technologies





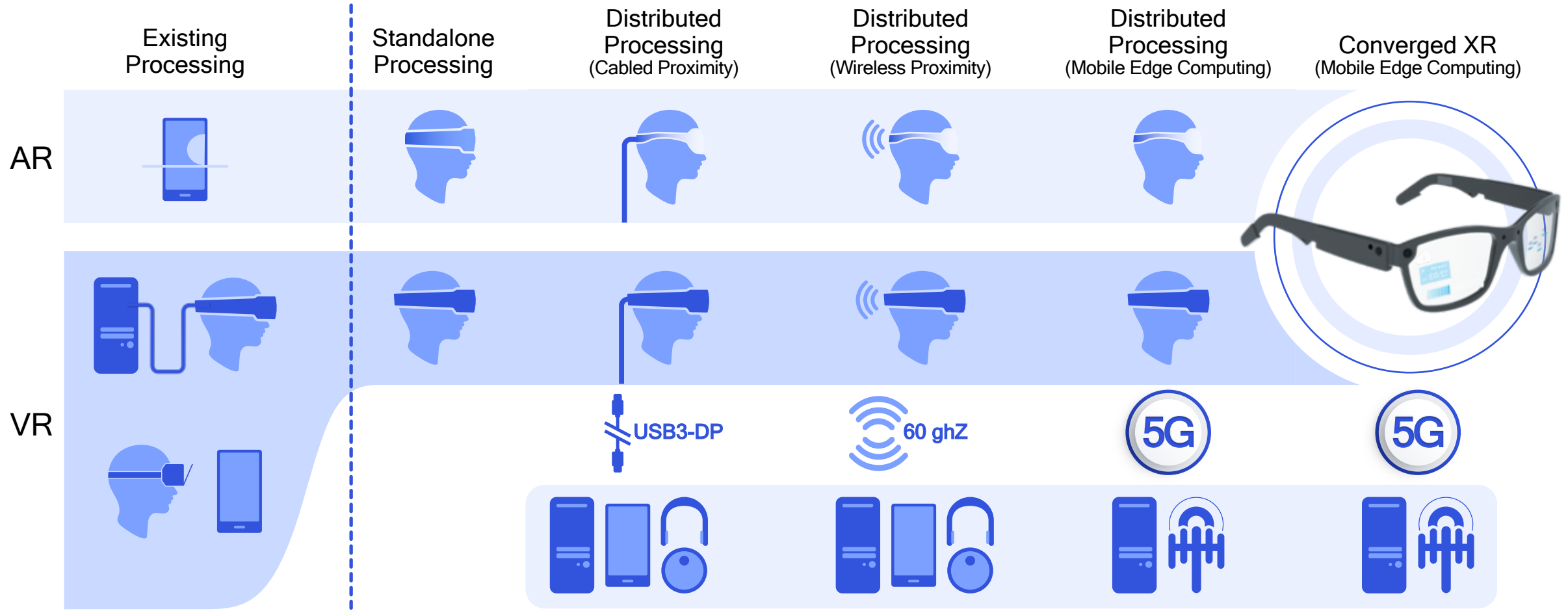
# Holographic Telepresence





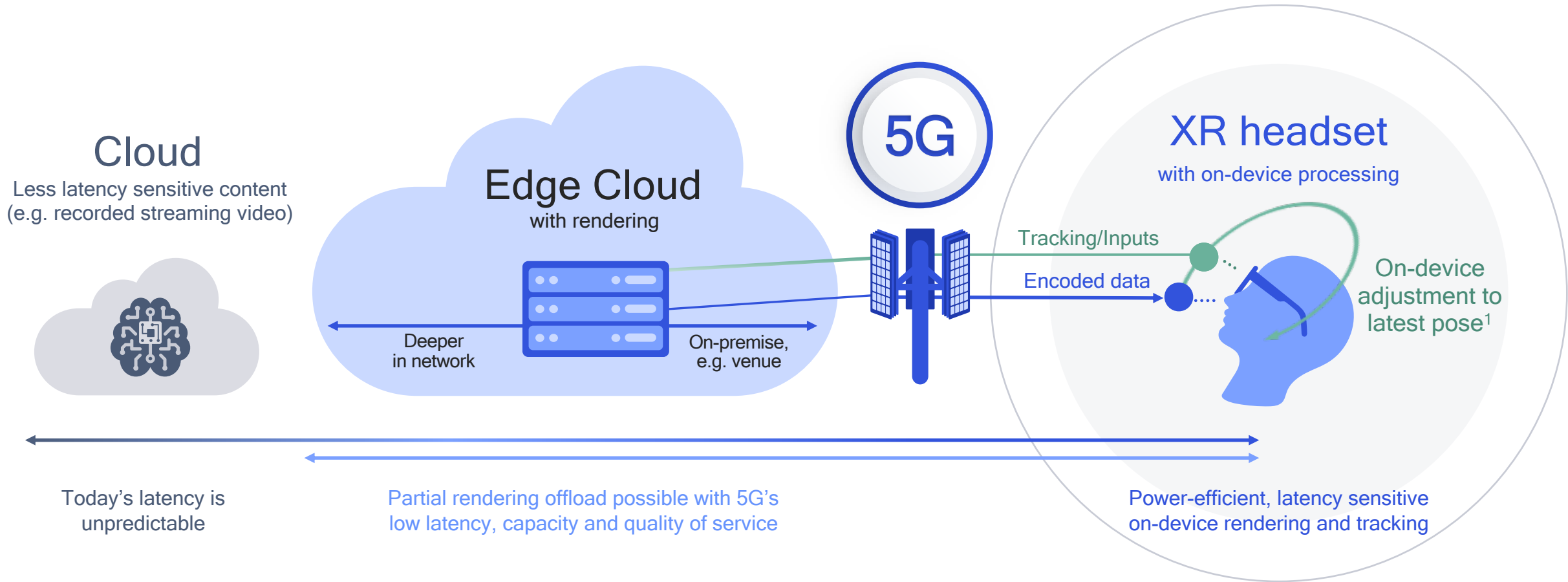


# Building the vision of converged XR



# Boundless XR over 5G - Distributed Intelligence

The public or private 5G edge will augment on-device processing

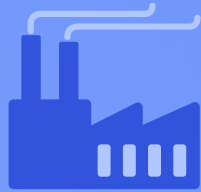


1. Asynchronous time warp reduces Motion to Photon (MTP) latency by using on-device processing based on the latest available pose. MTP below 20 ms generally avoids discomfort – has to be processed on the device

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Collaboration  
within the XR  
ecosystem



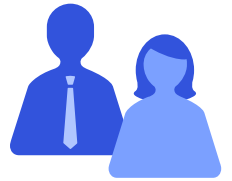
ODMs,  
OEMs



Platforms,  
Technology  
Platform  
Content



Operators



consumer

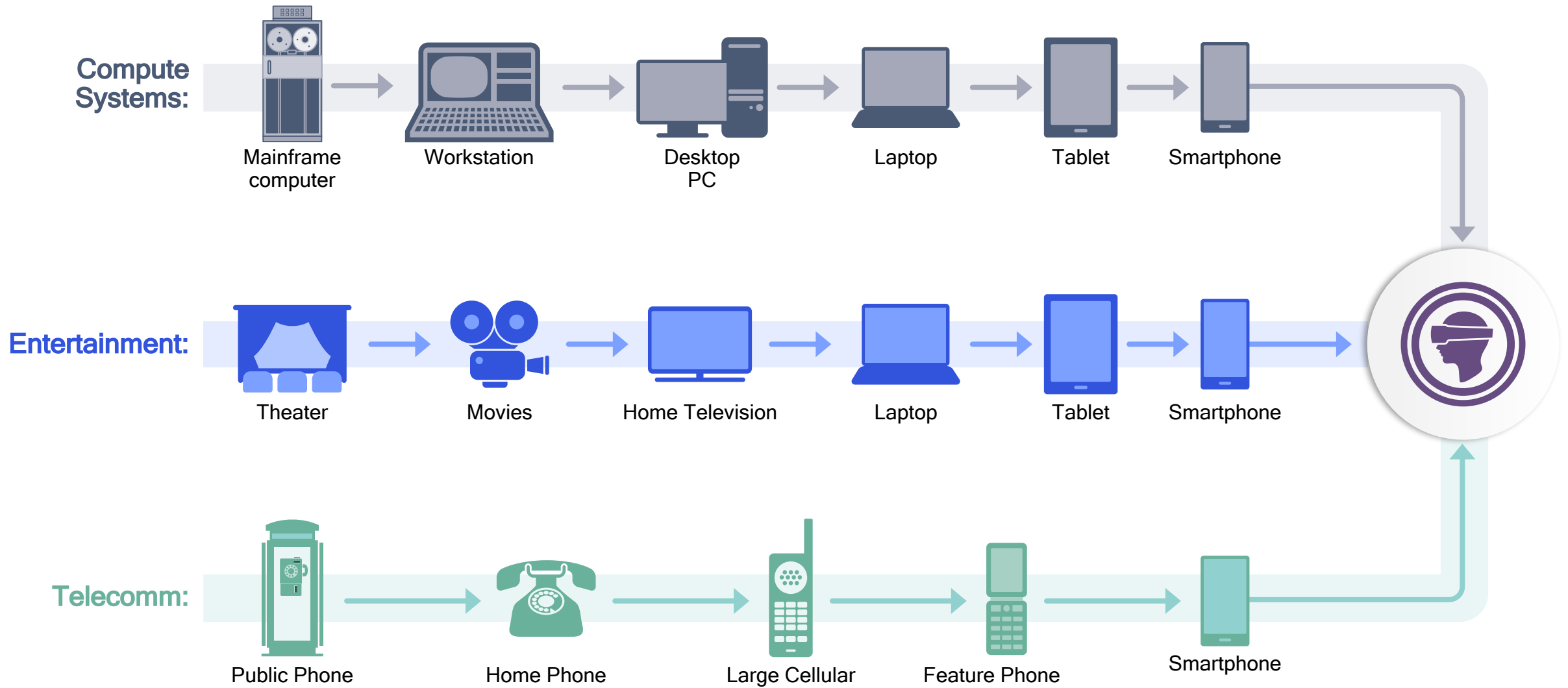
End  
Users

enterprise








# The path to convergence





# Thank you

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