

Qualcomm

Hugo Swart

Vice President, Head of XR
Qualcomm Technologies, Inc.

The digital transformation has begun

The Wrigley Building

Tribune Tower

NBC Tower

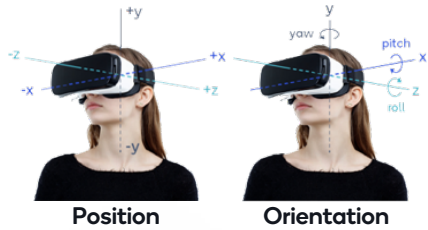
9 pm Boat Tour
Starts in 52 minutes

Starbucks 150 ft
75 ft Right on Michigan

Eddie's Steakhouse
Upscale restaurant \$\$\$
★ ★ ★ ★ ★ 277 reviews
Open now - 11:30pm

E. Wacker Rd

Influencing XR growth and adoption for over a decade



2010

Head tracking and graphics APIs

Next-generation Qualcomm® Snapdragon™ platform

Snapdragon VR reference design

OEMs use reference design to develop their next VR headset

Today

Virtual Reality

transports
us to other
worlds



Augmented Reality

augments
the world
around us





Snapdragon powers key XR platforms



Vuzix M400



Google Glass Enterprise Edition 2



Microsoft HoloLens 2



Realmax Qian



Realwear HMT-1



Lenovo ThinkReality A6



ThirdEye X2



Nreal light



Ximmerse Rhino X



Shadow Creator Action One



Rokid Glass



Shadow Creator Jimo

30+
devices launched



Pico G2 4K



Oculus Go



HTC Vive Focus Plus



3Glasses X1



Pico Neo



Oculus Quest



HTC Vive Cosmos



Lenovo Mirage Solo



Shadow Creator Shadow VR



iQiyi QiYu 2S



Xiaomi Mi VR



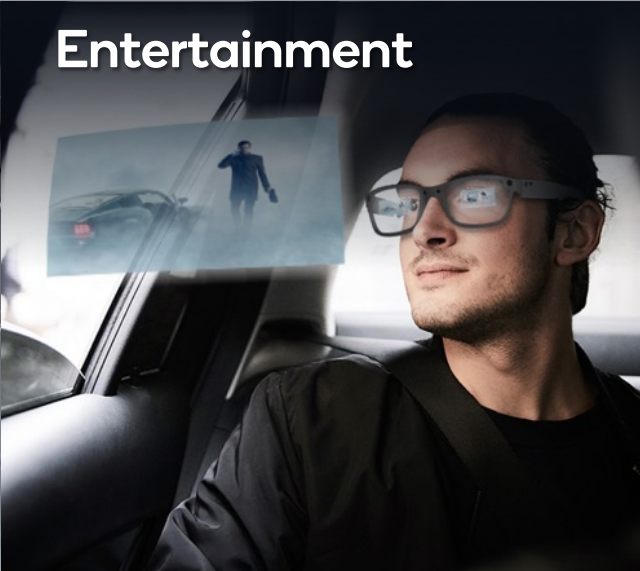
DPVR P1 Pro

XR transforms our experiences

Manufacturing



Entertainment



Gaming



Healthcare



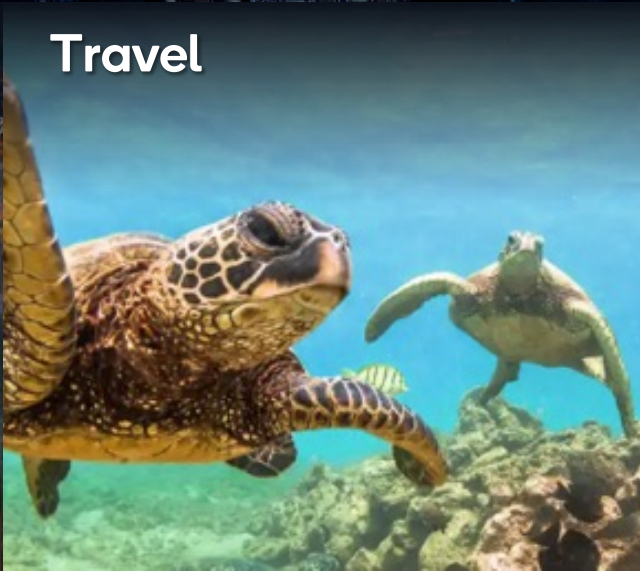
Education/Training



Industrial



Travel



Retail



**XR any
way you
want it**

Standalone XR

All-in-one processing



XR any way you want it

XR Viewers

Cabled proximity processing



USB3-DP



Neckwear



Puck



5G Smartphone



XR any way you want it

Boundless XR

Distributed processing – Wi-Fi



60 GHz



PC



XR any way you want it

Boundless XR

Distributed processing – 5G



MEC



Consumer



Enterprise



Operator



Qualcomm

Andrea Hogan

Senior Director, Partner Marketing
Qualcomm Technologies, Inc.

When we break through,
**the ecosystem
leaps forward**





Changing the world for consumers



Enterprise XR

for a connected workforce



The image shows two surgeons in a blue-lit operating room. They are wearing blue scrubs, surgical masks, and blue bouffant caps. Both are wearing AR/VR headsets. In the center, a glowing 3D model of a human heart is displayed, surrounded by various data points and lines, suggesting a virtual reality or augmented reality surgical planning environment. The background features large, circular surgical lights.

Companies scaling XR solutions

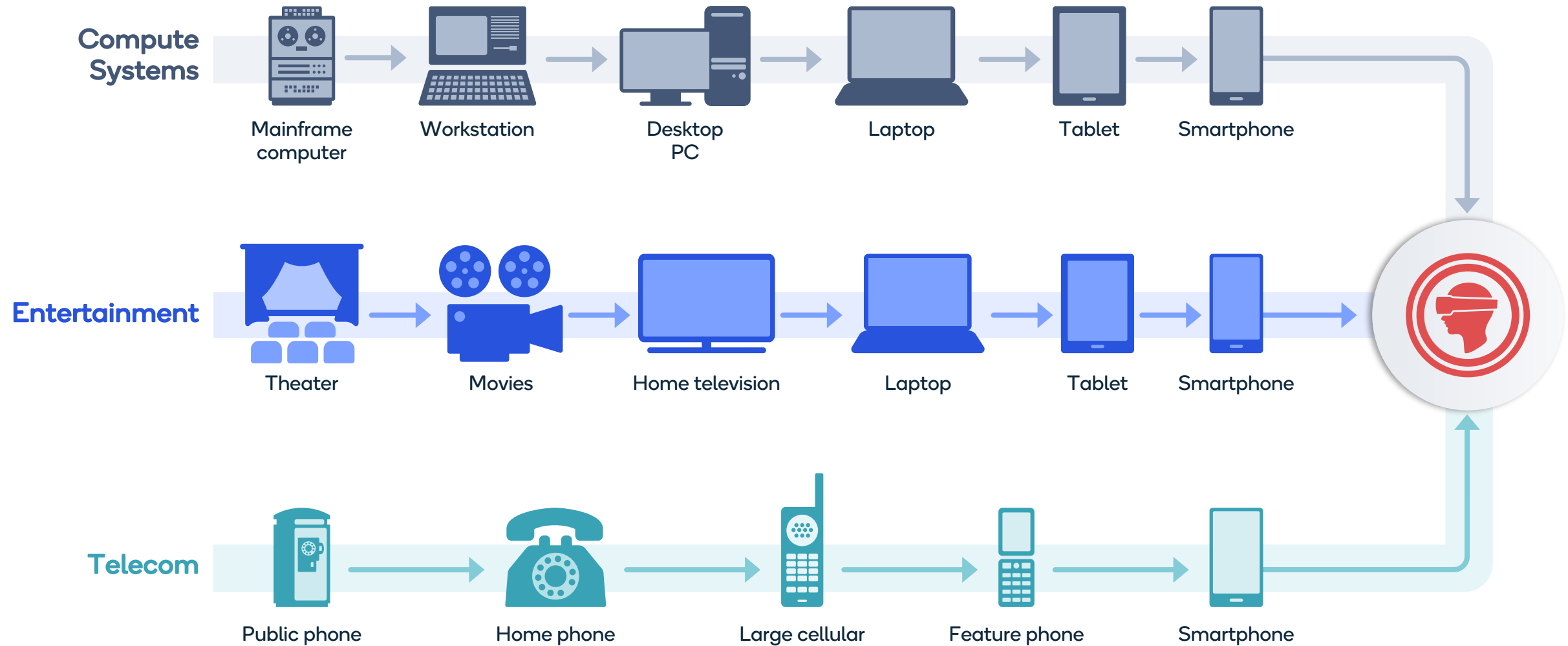
Operators offering
XR content
for the masses



Operator offering for small and medium businesses



Journey to new realities





World's first
5G XR
platform



A new
addition
to the
XR
platform
family

Qualcomm
snapdragon
XR2 5G platform



**Premium
quality**



Next level features for
never before experiences

Qualcomm
snapdragon
XR1 platform



**High
quality**



XR experiences for
mainstream users



Enabling the next generation of premium quality XR devices

Software and technology package



XR Platform APIs
(6DoF, 3D reconstruction, depth, multiview, ATW, single-buffer rendering, Unity plug-in, etc.)



Reference design



Key components selection
(camera, sensors, etc.)



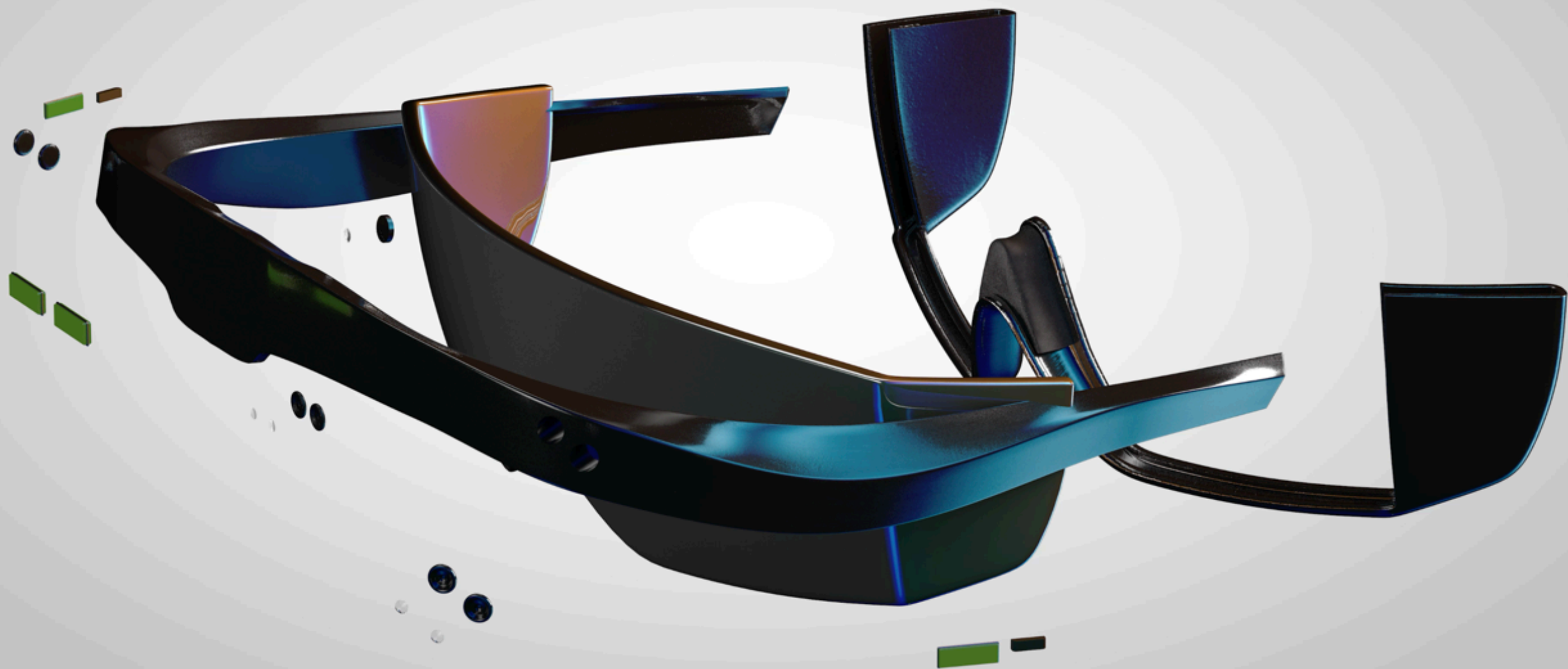
Product/HW design files
(schematics, BOM, layout files, thermal design guidelines)

Qualcomm

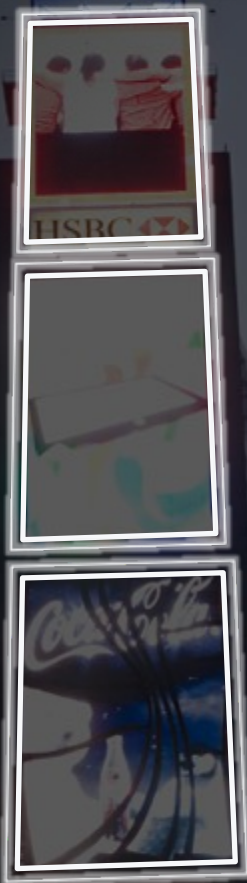
Hiren Bhinde

Director, Head of XR Products
Qualcomm Technologies, Inc.

Understanding the complexities of XR



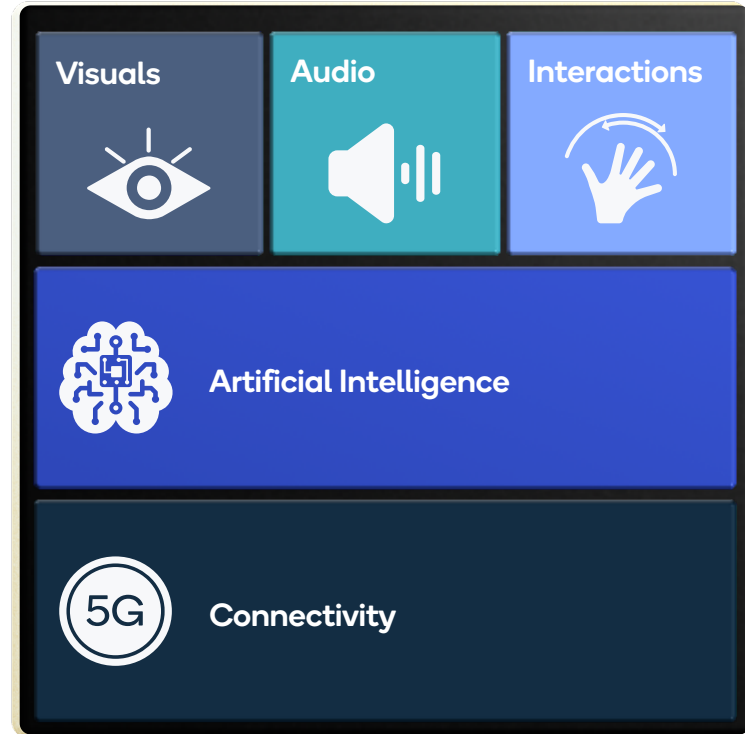
Fueling premium
quality VR
that awakens all
our senses



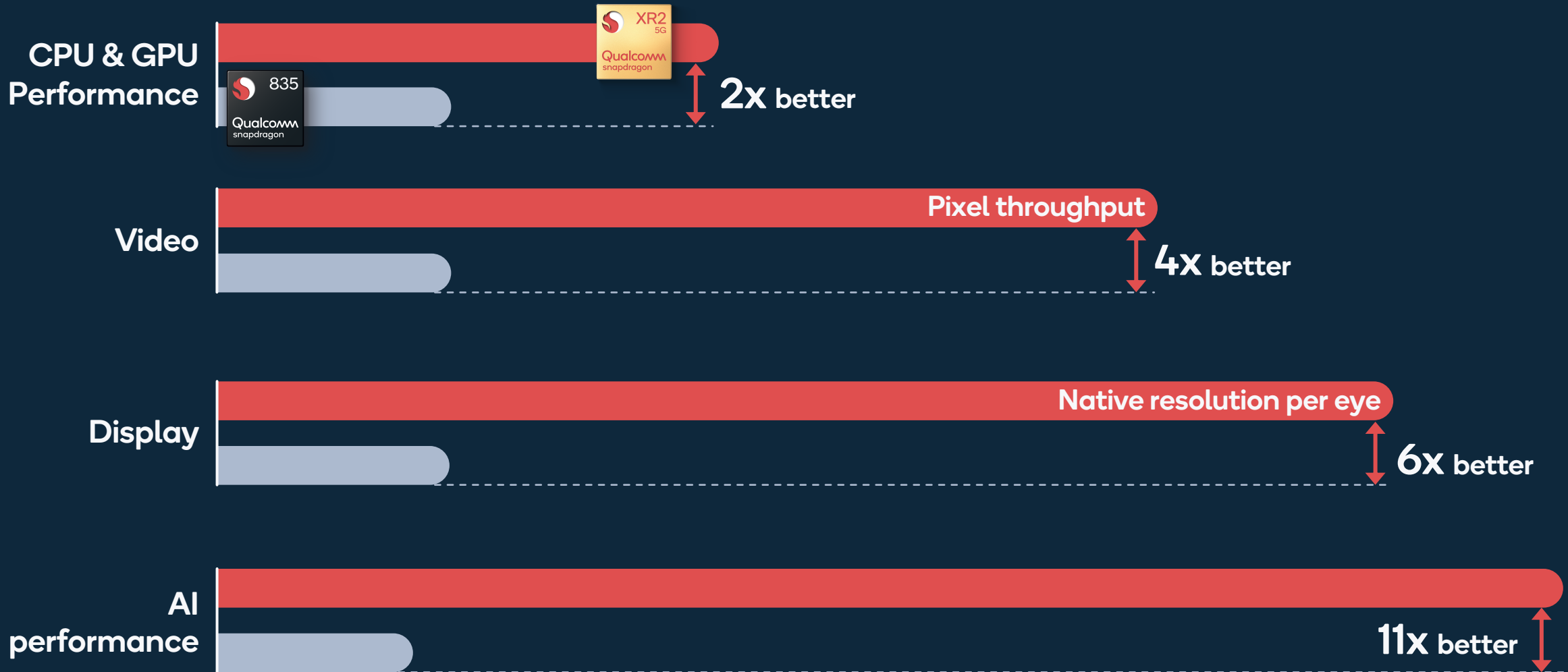
AR learning makes every lesson an adventure



Snapdragon XR2 5G platform



Incredible performance gains





Audio

Visuals

Interactions

A cinematic scene from a video game showing two characters in futuristic, high-tech suits walking through a sleek, futuristic corridor. The character on the left is wearing a blue and red suit, while the character on the right is wearing a red and yellow suit. The corridor has large windows on the right side, showing a lush, alien landscape with tall, thin trees and rocky terrain. The lighting is bright and futuristic, with a blue and white color palette. The overall atmosphere is one of high-tech, sci-fi adventure.

High performance graphics

1.5x shader processing

1.5x pixel/3x texel rates

3K x 3K per eye @ 90 FPS

Display and video fidelity

8K @ 60 FPS (4K @ 120 FPS)

4x more pixel throughput

120 Hz refresh rates at higher resolution

Advanced color processing – HDR10 and HDR10+ support

Custom silicon for reduced latency in AR





Visuals

Audio

Interactions

Voice UI/Chat

MEMBERSHIP

SQUAD OCEAN-4



LOCATION
LOCAL TIMES

EL AMARNA
23:47

SQUAD
COMBAT LOSS

14 UNITS
2

Score
3,300

Health

Time
71



Audio context
detection



Multi-player communication





Visuals

Interactions

Audio



**to enable 7
concurrent cameras**



1st

to enable 7
concurrent cameras



Cameras

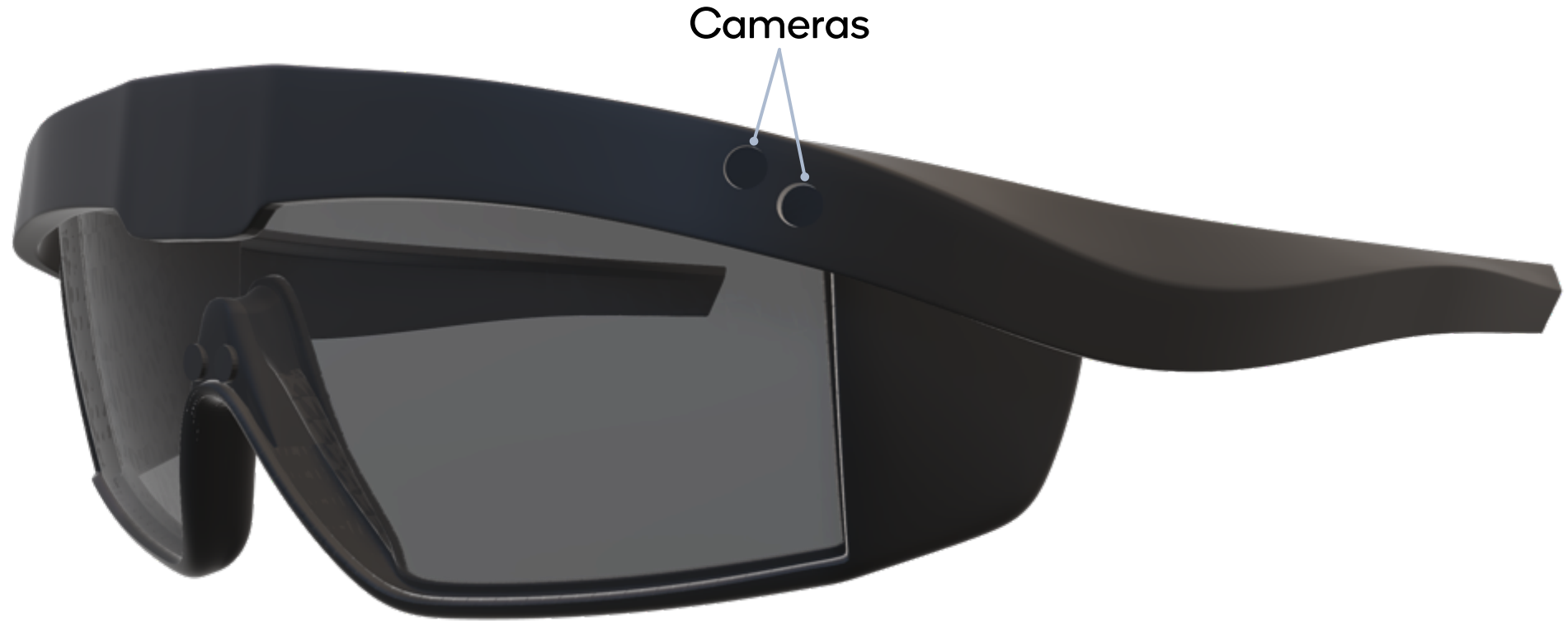


**to enable 7
concurrent cameras**



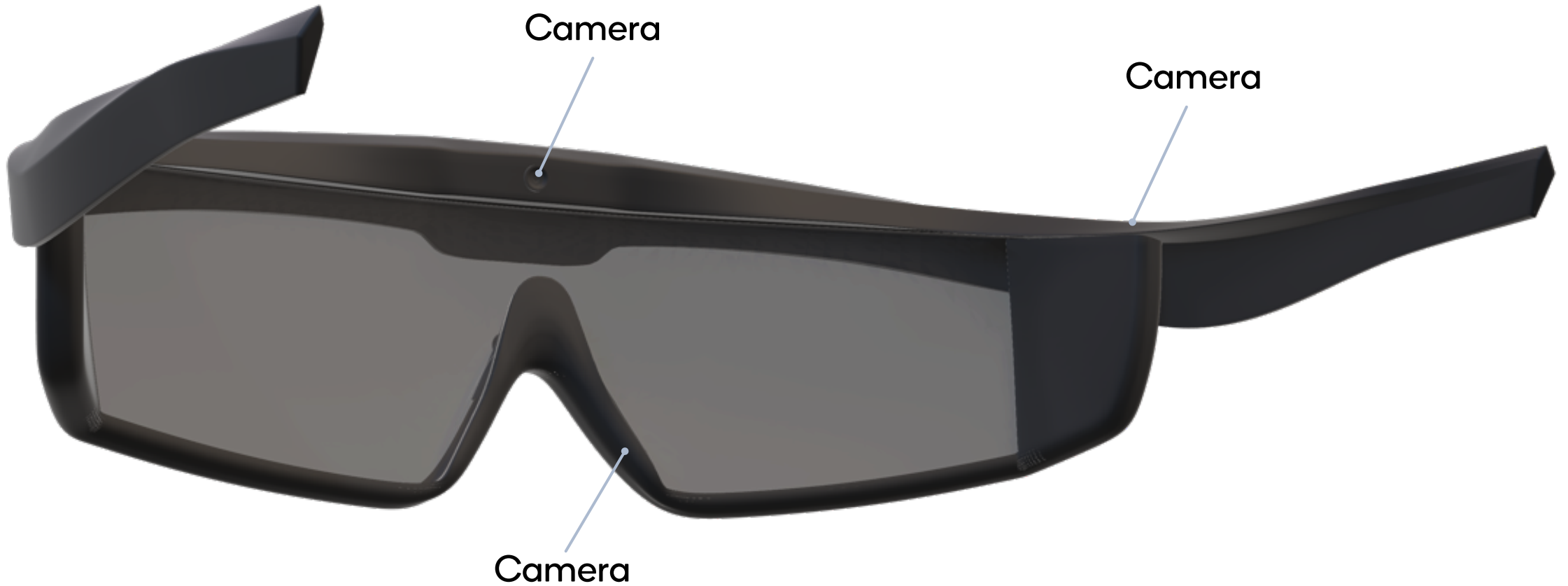


**to enable 7
concurrent cameras**





**to enable 7
concurrent cameras**





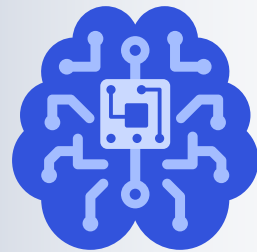
XR2
5G

Qualcomm
snapdragon

3D reconstruction and scene understanding



Snapdragon XR2 takes a leap in AI technologies



 **On-device
intelligence**

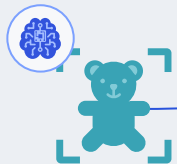
3D reconstruction



Semantic
segmentation



Object detection &
recognition



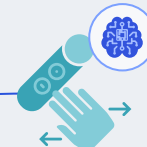
Object occlusion



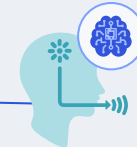
Depth
understanding



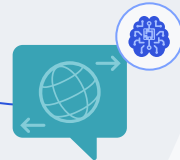
Controllers and
hand tracking



Voice UI and
context audio



Real time audio
translation



Mixed Reality
allows us
to switch
between
immersion
levels



5G for high bandwidth, low latency

-10 to 50 Mbps

-200 to 5000 Mbps,
very low latency

Sustained network performance

lte

5G

Boundless XR



Premium XR anywhere

On-device processing
augmented by edge cloud

Photorealistic graphics
and visuals



1st 7 concurrent cameras

1st Dedicated computer vision processor

1st 3K x 3K per eye

2x better CPU and GPU

Object detection and occlusion

3D audio, context detection

World's
1st



8K @ 60 FPS video **1st**

True Mixed Reality **1st**

High concurrency perception algorithms

3D reconstruction/scene understanding

Variable rate shading

Adreno foveation with eye tracking

XR in a 5G world



0:28:47



0:00:01



Evolution of social communications building on decades of breakthrough technologies



1980s
Analog voice
Voice call

1990s
Digital voice
SMS

2000s
Mobile data
MMS and
video calling

2010s
Mobile broadband
Enhanced
video calling

2020+
Enhanced Mobile Broadband
Holographic telepresence





Qualcomm





The age of
XR, AI and 5G
A more immersive, intelligent
and connected future



Thank you

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