Qualcomm

Shaping the AI-native user experience with 6G



Amira Alloum

Director of Engineering

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AI is the new UI

Changing consumer behaviors





"Show my schedule and tell me about my next patient."



"Order a ride for two people to go to the mall and remind me what to buy!"



"Tell me the history of this building."

2026

App-based and user-initiated content consumption

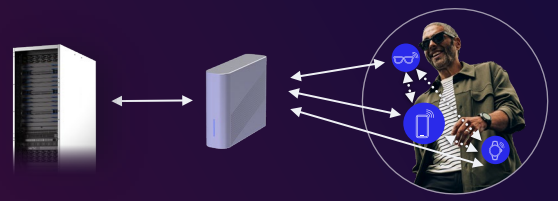
2030 AND BEYOND

Natural user interface with voice, glasses, watch
Persistent and context aware AI Agents
Increasing uplink traffic

6G enables new user experiences and services at scale

User experiences and services scale with better uplink, wider bandwidths and more network capacity provided by 6G

Agentic AI and extended reality experiences



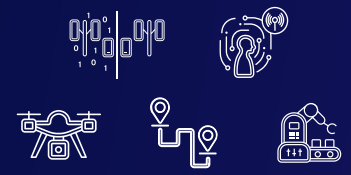
Personal assistant, “see what I see”

AI-native context-aware communications



Live AI, gaming, holographic calling

AI-enhanced services



Robotics, drones
Industrial services

TECHNOLOGY ENABLERS

Collaborative communications	Device agent	Inferencing services
Distributed compute	UE adaptation	Sensing services
Low power	Network coordination	Digital Twin services

Agentic AI and XR experiences will fuel wireless growth



AGENTIC AI ASSISTANT



SEE WHAT I SEE

	AGENTIC AI ASSISTANT	SEE WHAT I SEE
DESCRIPTION	Multi-modal queries, personal memories, tasks	Live video streaming of the user's surrounding
AVERAGE** TRAFFIC REQUIREMENT	UL: 1-10 Mbps (image, video, audio) DL: 1-5 Mbps (AR overlays, voice)	UL: 1-20 Mbps (video, audio) DL: 1-5 Mbps (AR overlays, voice)

Data volume per application far exceeds the current average mobile user volume of 19 GB/month[2]

USER DATA VOLUME ESTIMATES

See what I see
50GB/month
10Mbps UL, 1Mbps DL,
20mins per day
90% uplink

Personal Assistant
45 GB/month
2.5Mbps UL and DL
40mins per day
50% uplink



3D CALLING



INTERACTIVE AR

	3D CALLING	INTERACTIVE AR
DESCRIPTION	3D avatars and holographic interactions	Interactive shopping, worker assistance, sports
AVERAGE TRAFFIC REQUIREMENT	UL: 1-10 Mbps (3D view of speakers & environment) DL: 1-100 Mbps (3D rendering, multi-party) Latency: 10-30 ms	UL: 1-10 Mbps (video, image, audio) DL: 5-25 Mbps (3D rendering) Latency: 10-100ms

Significant spectrum required to scale immersive services

	5G	6G
Channel Bandwidth	**100MHz**	**~400MHz**
Cell Capacity 45 Mbps DL 10 Mbps UL	**~ 5** users/cell [1]	**~25** users/cell

Source: Qualcomm Technologies estimates; 1. Based on 3GPP TR 38.838 "Study on XR Enhancements for NR" for Dense Urban deployment, 80% indoor users projecting ~2-6 users/cell @45Mbps and 10ms latencies DL; ~4-9 users/cell @10Mbps and 30ms latencies UL; 2. Ericsson Mobility Report, June 2025; **Peak rates can be higher depending on device sleep-wake cycle.

Delivering agentic AI and XR experiences with distributed compute and collaborative communications

Collaborative communications optimizes network connectivity across devices to reduce latency, improve throughput and coverage

Devices continuously sense the physical world, process context, make decisions, and drive user-actions

Distributed compute across devices and edge/cloud to reduce power, latency and access larger models



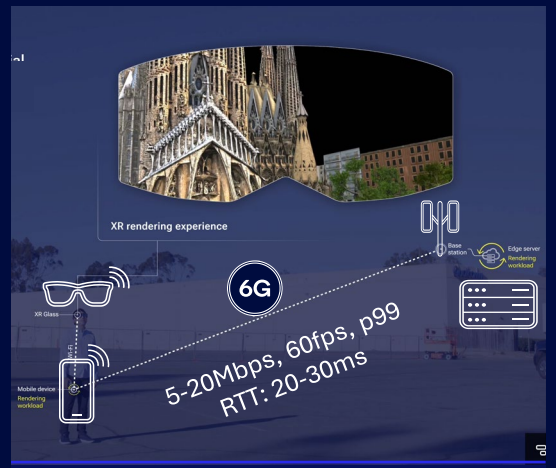
CLOUD / EDGE



6G scales services with QoS enhancements, more capacity, better uplink, and support for multi-device experiences

Distributed compute with AR/AI glasses

AR rendering with continuous environment tracking



REMOTE RENDERING

In good RF/network scenarios, compute is offloaded to the edge to save battery and access larger models



ON-DEVICE RENDERING

In poor RF/network scenarios, compute is done on device

~2x application coverage gain

~30% system capacity gain

Improved battery life

6G will scale services with enhanced QoS, wider bandwidths, better uplink, and more capacity

APPLICATIONS

LIVE SPORTING EVENTS



"Track player 9 and overlay live stats

CONSTRUCTION SITE EXPERT



"Inspect foundation work and identify corrections needed

SHOPPING ASSISTANT



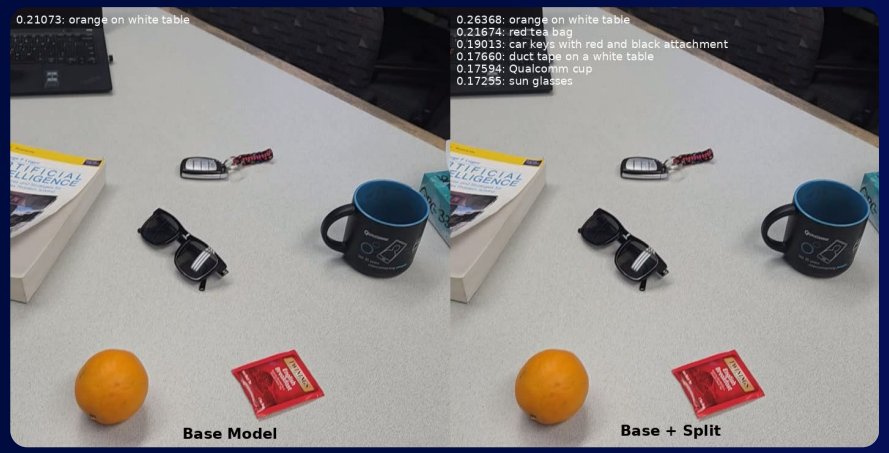
"Find me a dress for gala event and show me how I would look in them

Distributed compute with AR/AI glasses

AI recall

Continuous image capture with personal memory creation





In good RF/network scenarios, compute is offloaded to the edge/cloud to extend battery life and access larger models

6G will scale services with enhanced QoS, wider bandwidths, better uplink, and more capacity

APPLICATIONS

RECALL A MOMENT



"Replay the last goal

COLLABORATION



"Summarize the whiteboard from 10am meeting

PROACTIVE ASSISTANT



"Time for medications. Last seen on couch table

Qualcomm 6G

SEE WHAT I SEE[1] EXAMPLE

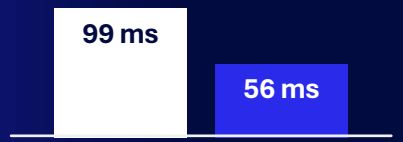
Collaborative communications

A pool of multiple cellular-enabled personal AI devices coordinate with network to aggregate, split or steer traffic for lower latency, higher throughput and better application coverage and reliability



Uplink latency at cell edge[2]

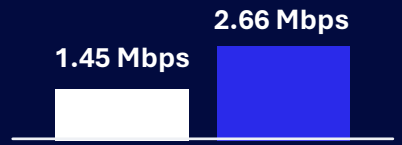
95TH PERCENTILE (MS)



43% REDUCTION

Uplink throughput at cell edge[2]

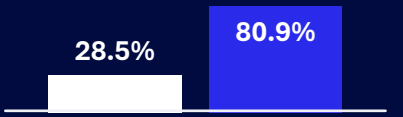
MEAN (MBPS)



83% GAIN

Application coverage under head blocking

SMART GLASSES THAT SATISFY UPLINK QoS (%)



52% GAIN

Baseline (glasses only) | Collaborative communications (glasses + watch)

1. Application has 2 Mbps periodic traffic; 2. Cell Edge is defined as maximum pathloss to meet application QoS (90% of packets have latency <100ms).

Context-aware communications

Device (UE) agent perceives local context tracks UX KPIs, adapts local parameters and triggers network coordination

Perception

Traffic types and sensor inputs

TRAFFIC CLASS
Gaming

TRAFFIC CLASS
Live AI

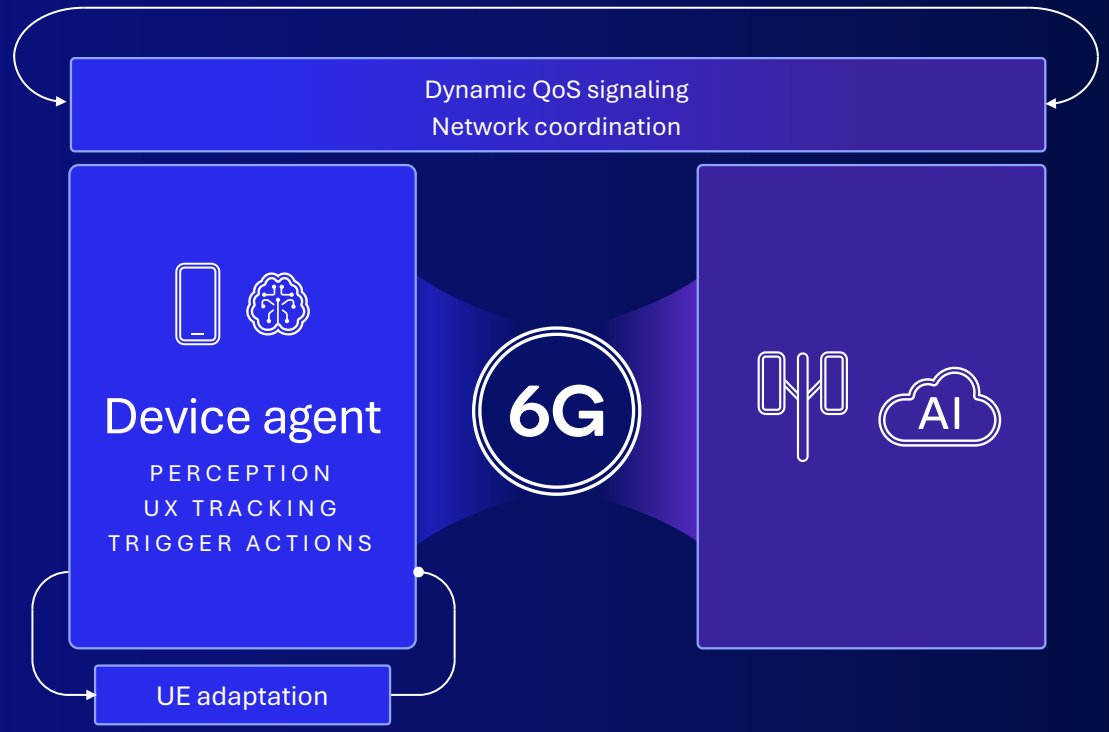
SENSOR
IMU (vehicular motion)

UX Tracking

KPIs and metrics

Video quality

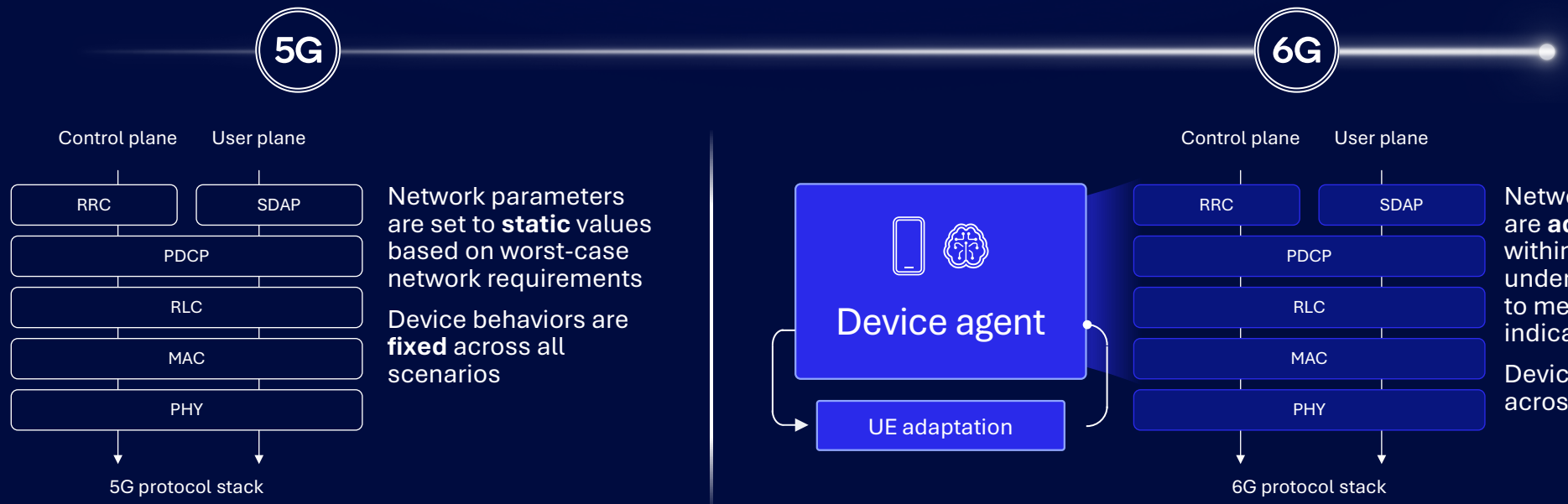
Application stutter



CONTEXT-AWARE COMMUNICATIONS

Local adaption of network parameters

A network protocol that adapts to optimize user experiences



A paradigm shift from conformance to network supervised adaptation

CONTEXT-AWARE COMMUNICATIONS

Local adaption of network parameters

CLOUD GAMING APPLICATION

STEAM-based cloud application 100 MHz BW, 60 FPS, 30 Mbps DL bursty adjacent cell interference



5G BASELINE

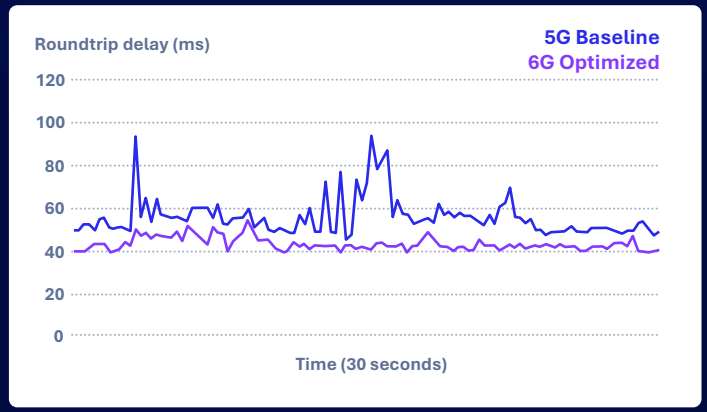


6G LOCAL ADAPTATION

LOCAL ADAPTATION

Dynamically adapted RLC, PDCP parameters within ranges approved by network, reduces latency spikes and improves user experience





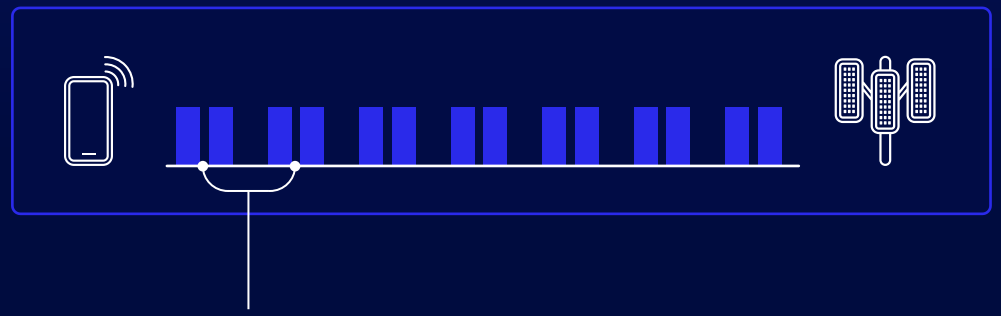
CONTEXT-AWARE COMMUNICATIONS

Dynamic QoS signaling

5G QoS

Designed for semi-static sessions

(e.g., video calls, streaming)

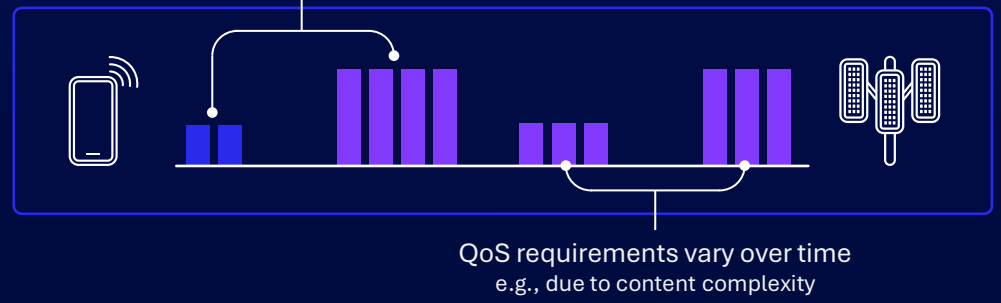


Single traffic type within a **single** QoS flow

6G DYNAMIC QoS

Designed for fast-changing AI traffic and content complexity

Multiple traffic types within a **single** QoS flow



QoS requirements vary over time

e.g., due to content complexity



CONTEXT-AWARE COMMUNICATIONS

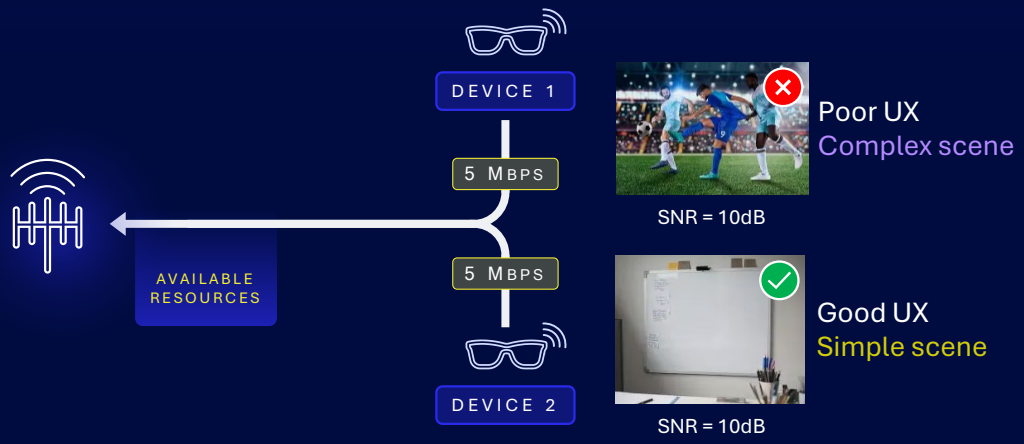
Dynamic QoS signaling to manage UX KPIs

5G TODAY

5G does not incorporate (UX) metrics

Burst of complex content may result in poor UX, in congested networks

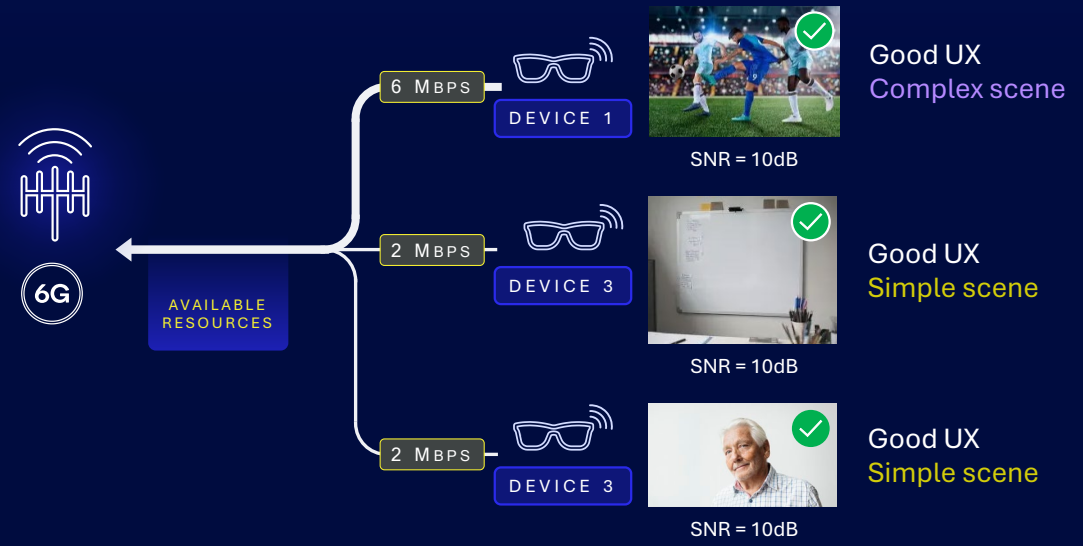
Inefficient resource allocation wastes capacity



6G DYNAMIC SIGNALING

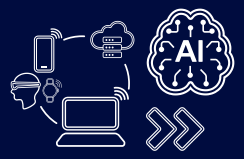
Device agent tracks UX KPIs and provides real-time QoS parameter feedback to network

Network adapts resource allocation, leading to improved coverage and capacity



Qualcomm

Empowering next-generation user experiences and services at scale with 6G



Advancements in wireless, edge AI, XR and low-power compute are enabling new digital experiences



6G is being designed to meet next-generation user experience and service demands in the era of advanced intelligence



We are driving cutting-edge technology innovations to enable new and enhanced user experiences and services

Thank you

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