



Innovative XR Collaborations with Google for the Beyond 5G Era

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KDDI's 5G Metaverse and Web3 service, "αU"

αU place

Digital twins for
Shopping experiences

Autumn 2023

αU market (αU dotadp)

NFT Marketplace



March 7th, 2023

αU metaverse

Gateway to Web3.0
Open Metaverse

March 7th, 2023



αU wallet

Safe & easy to user
Next Gen Wallet

March 7th, 2023



αU live (prompt αU)

Real and virtual
3D live performances

Autumn 2023



αU live

360 Free-viewpoint Immersive Music Live

Virtual/Real singers reproduced in virtual worlds



スマホ



基地局



インターネット



クラウドサーバー














Ultra-low latency and high band width are required

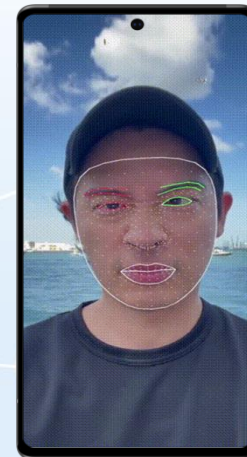
5GSA/MEC combined with Google Cloud Rendering

Google ↔ KDDI Collaboration Scope

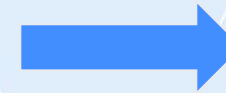
LX: Innovate Life Experiences & Behaviors with 5G

<p>Content</p>	<p>to C</p>  <p>αU live</p>  <p>Intelligence Interior object</p>	<p>to B</p>  <p>Virtual Human</p>  <p>XR Fashion</p>  <p>αU place</p>	
<p>Platform</p>	<p>“αU on Cloud” provides APIs via Google Cloud Marketplace</p>		
<p>Core Techs</p>	<p>AI/CV* *Computer Vision</p>	<p>Google Cloud (Cloud Rendering) Immersive Stream for XR</p>	 <p>Geospatial API (Google/VPS)</p>
<p>NW</p>	<p>5G SA (Stand Alone) / Beyond 5G / MEC /GSMA Open Gateway</p>		
<p>Device/ OS</p>	   		

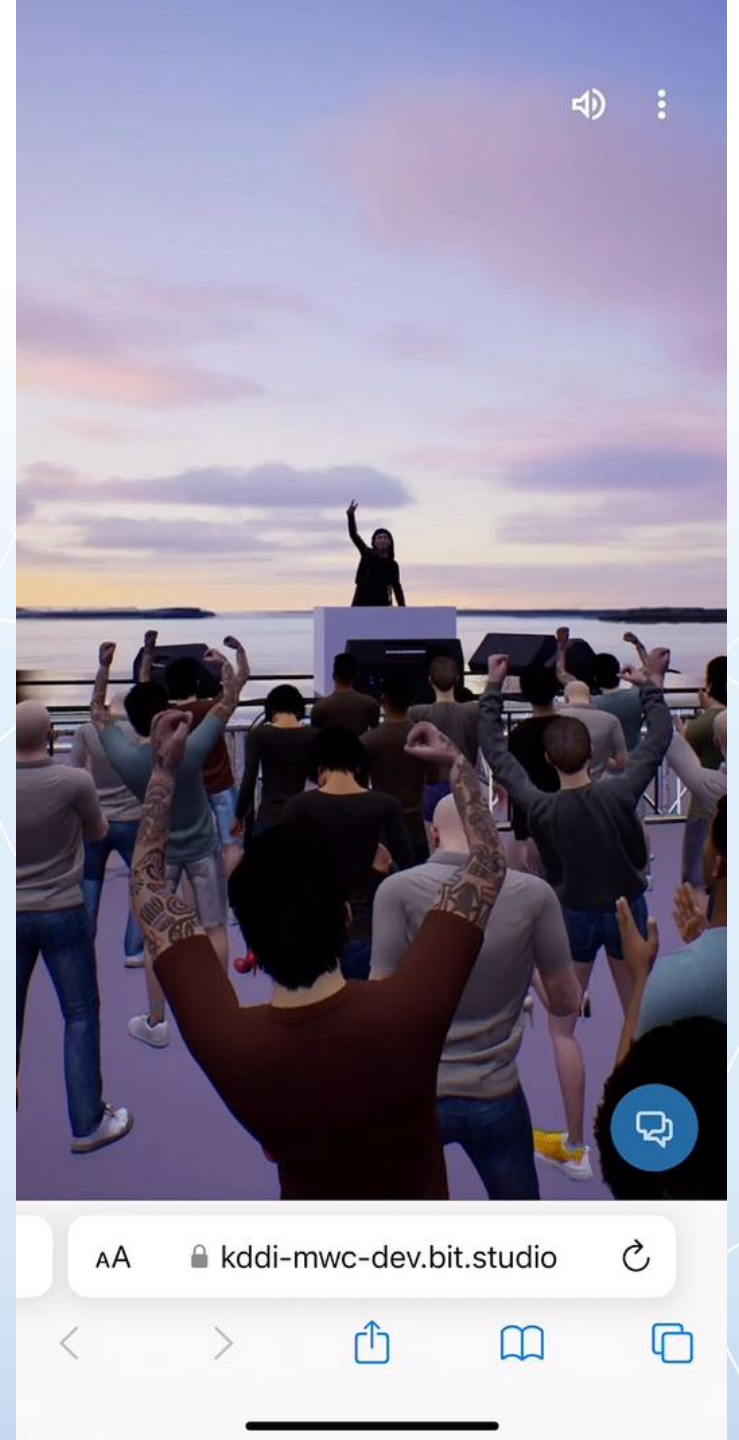
Previous Collaborative Projects



Google Cloud
Immersive Stream
for XR



Interactive Live Experiences powered by Google Generative AI





rapport

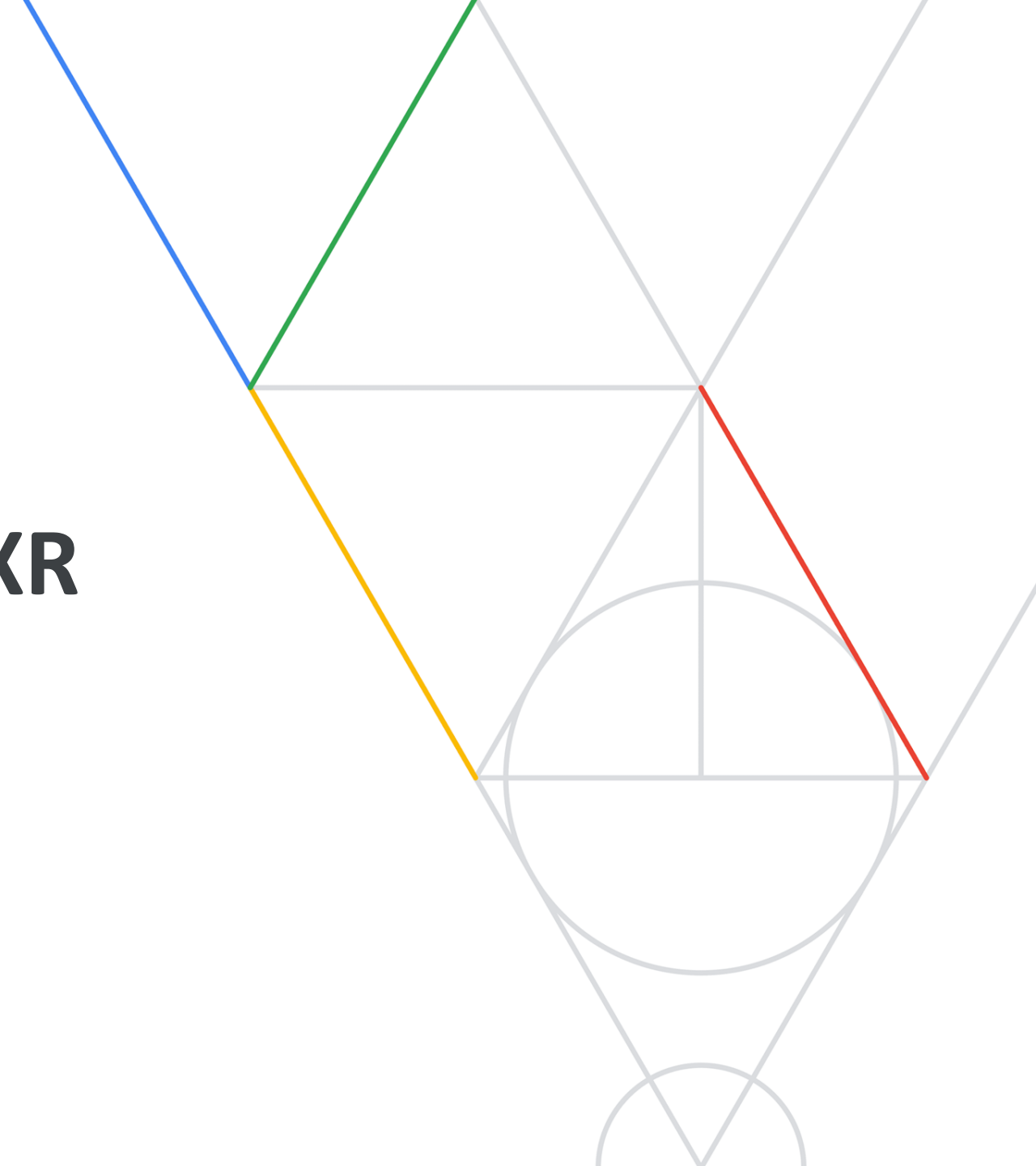
Google

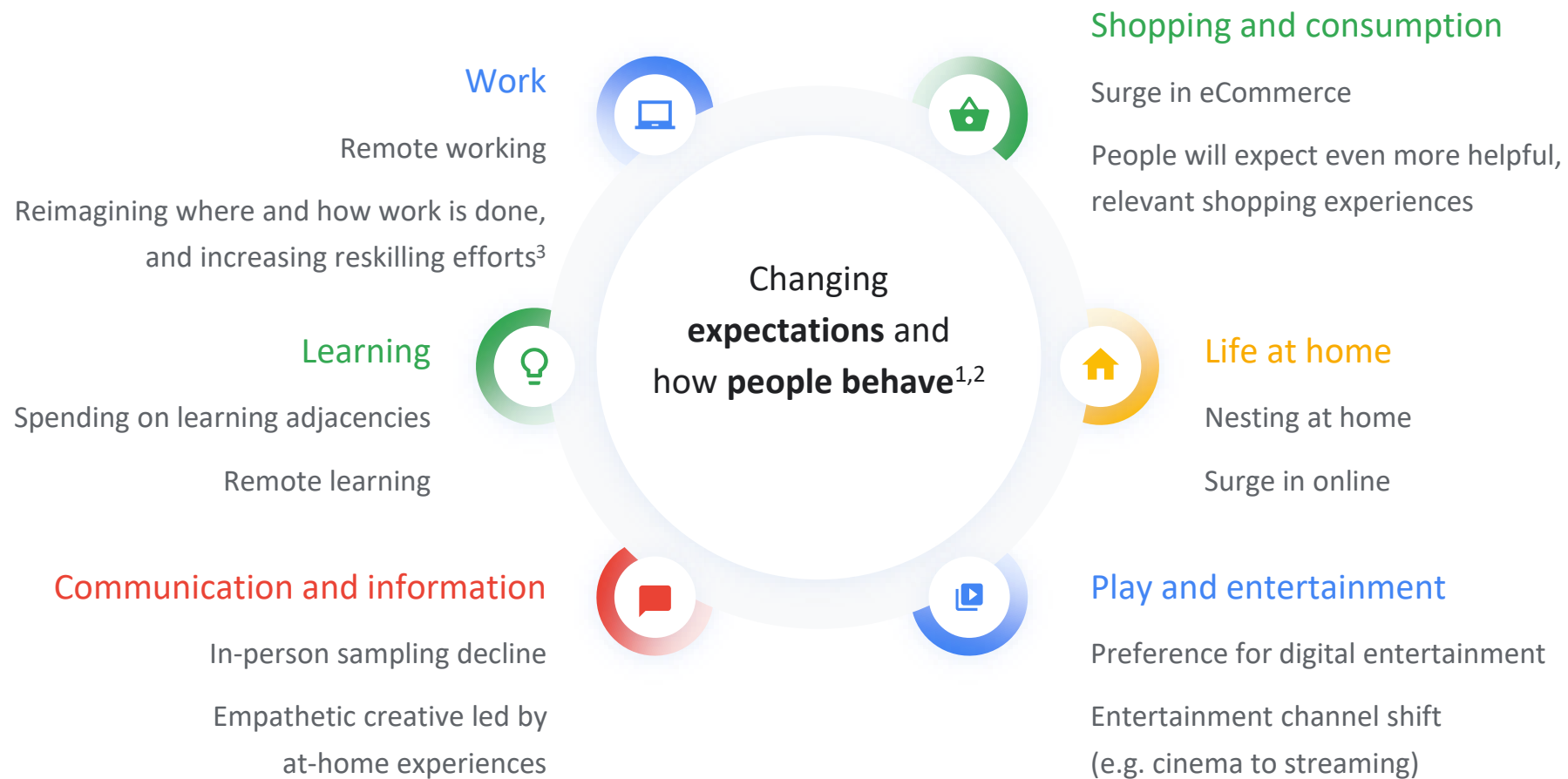
Immersive Stream for XR

Solution Introduction

Mao Kano

Google Cloud



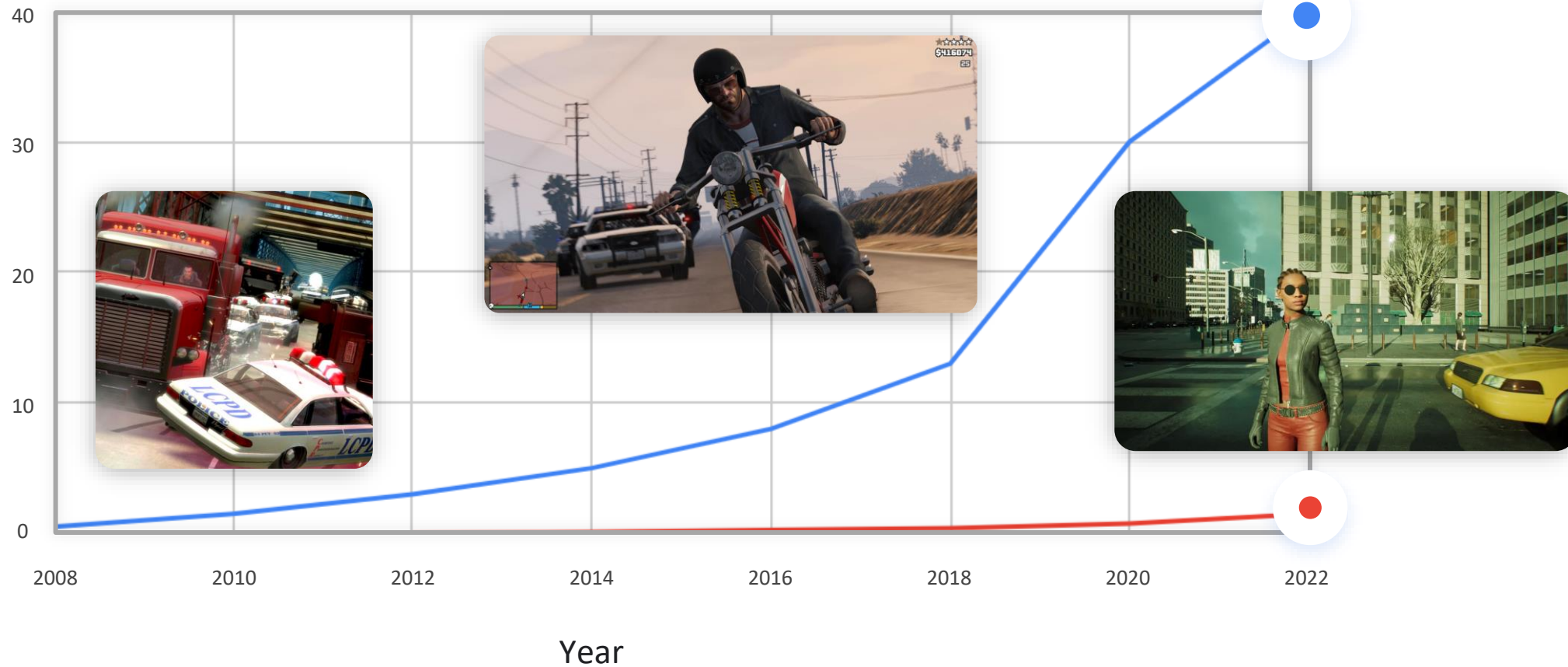


Sources: 1. [Google](#), April 2021, 2. [McKinsey](#), June 2020, 3. [McKinsey](#), April 2021

Why is it possible now?

Performance of Desktop & Mobile GPUs Over Time

- Desktop GPU (TFlops)
- Mobile GPU (TFlops)



The challenge? Traditional XR solutions lack the ability to deliver user & developer needs

Users/developers want:

High performance
including high
quality visuals



But are challenged by:

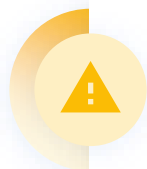
Devices not capable of handling compute-intensive interactive experiences, and mobile graphics processing units (GPUs) are not powerful enough for photorealism

Seamless user
experience



Users must download a secondary app in order to engage with immersive experiences, adding additional time and friction to the overall customer journey

Device compatibility
(ease of implementation)

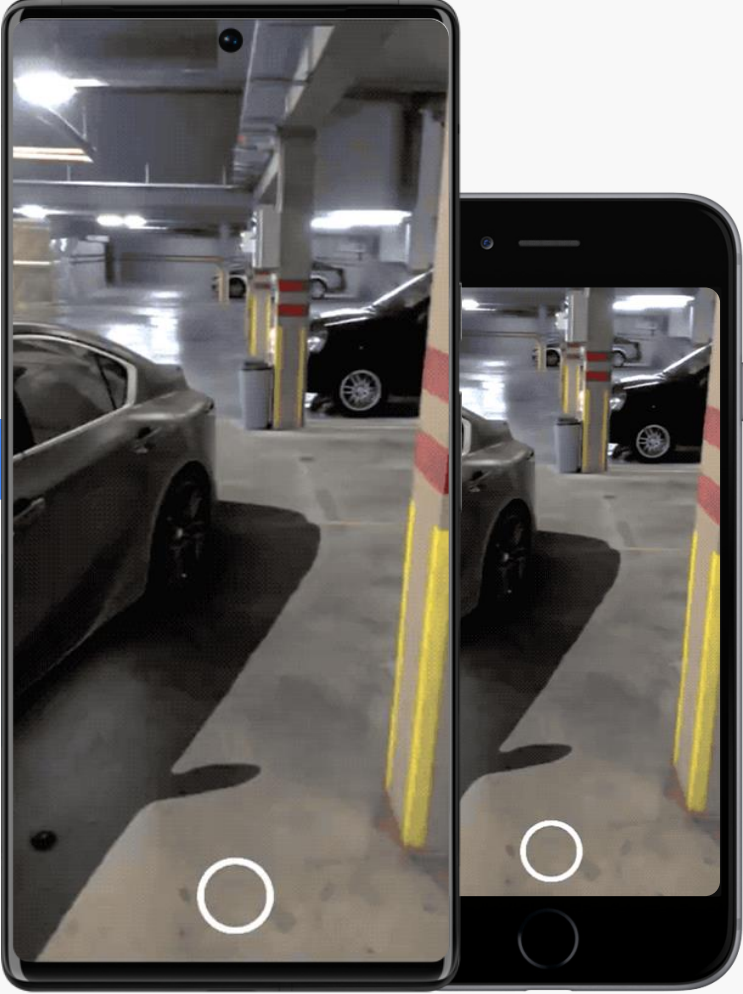
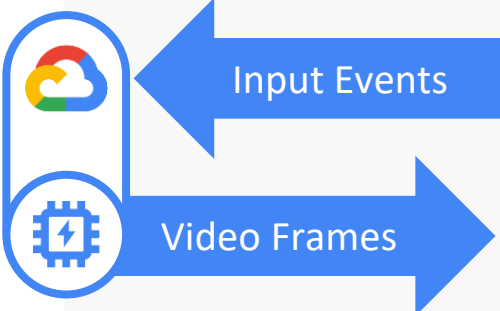


Today, developers need to build two versions of each experience (iOS and Android), and run testing against multiple possible device years/manufacturers - with device and IT complexity hindering the seamless setup of cloud-based streaming solutions

Mobile rendering power is limited, so we render in real-time using **cloud GPUs**



And enable **immersion**
and interactivity



While being **frictionless**
to users.



Simple URL/QR Code



No app download



No loading times



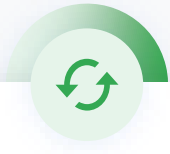
Any device: iOS, Android & Web



And correcting for
latency.

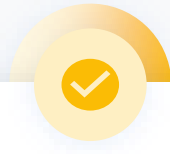


Our solution - underpinned by Google Cloud Immersive Stream for XR - enables seamless, photorealistic XR for everyone



Seamless experiences

Experiences run on any device - whether old or new - **enabling end-customers to engage in 3D and AR experiences in seconds**, without having to wait for new applications to download to their device



Broad compatibility

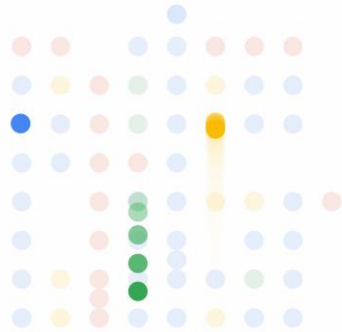
Experiences automatically run across iOS, Android, and web, so **developers don't need to build and maintain OS and SDK-specific versions**, or test against a matrix of manufacturers and model years



Photorealistic quality

Experiences are rendered on cloud machines with desktop-class GPUs - augmenting and offloading the processing power of mobile devices, and **enabling powerful cloud rendering of rich 3D scenes (millions of polygons and gigabytes of textures)**

When XR meets Generative AI



Vertex AI

Provides the easiest way to [build and scale generative AI applications](#) with access to leading generative models like Gemini, tools for customizing those models and connecting them to the real world, and an [integrated, and enterprise-ready platform](#) that helps organizations deploy applications successfully to production.



Gemini on Vertex

Our latest foundation model, available through Vertex AI. Built from the ground up for [multimodality](#) — reasoning seamlessly across image, video, audio, and code.

Potential XR Use Cases Powered by Generative AI

- Interactive XR Entertainment

Live performances by
virtual artists



Entertainment Assets and
configurable visual effect data
assets



Google Cloud

Content
Personalization
Logic

Google Cloud
Immersive Stream for XR

Personalized
interactive XR
experiences

Virtual artists can respond
dynamically or even create the
content on demand based on user
inputs

Users' Real-time
feedback is sent to the
Personalization logic
engine

Achieve a
personalized
event together
with artists

Use **Generative AI** to
dynamically create
contents (audio,
background, etc.)

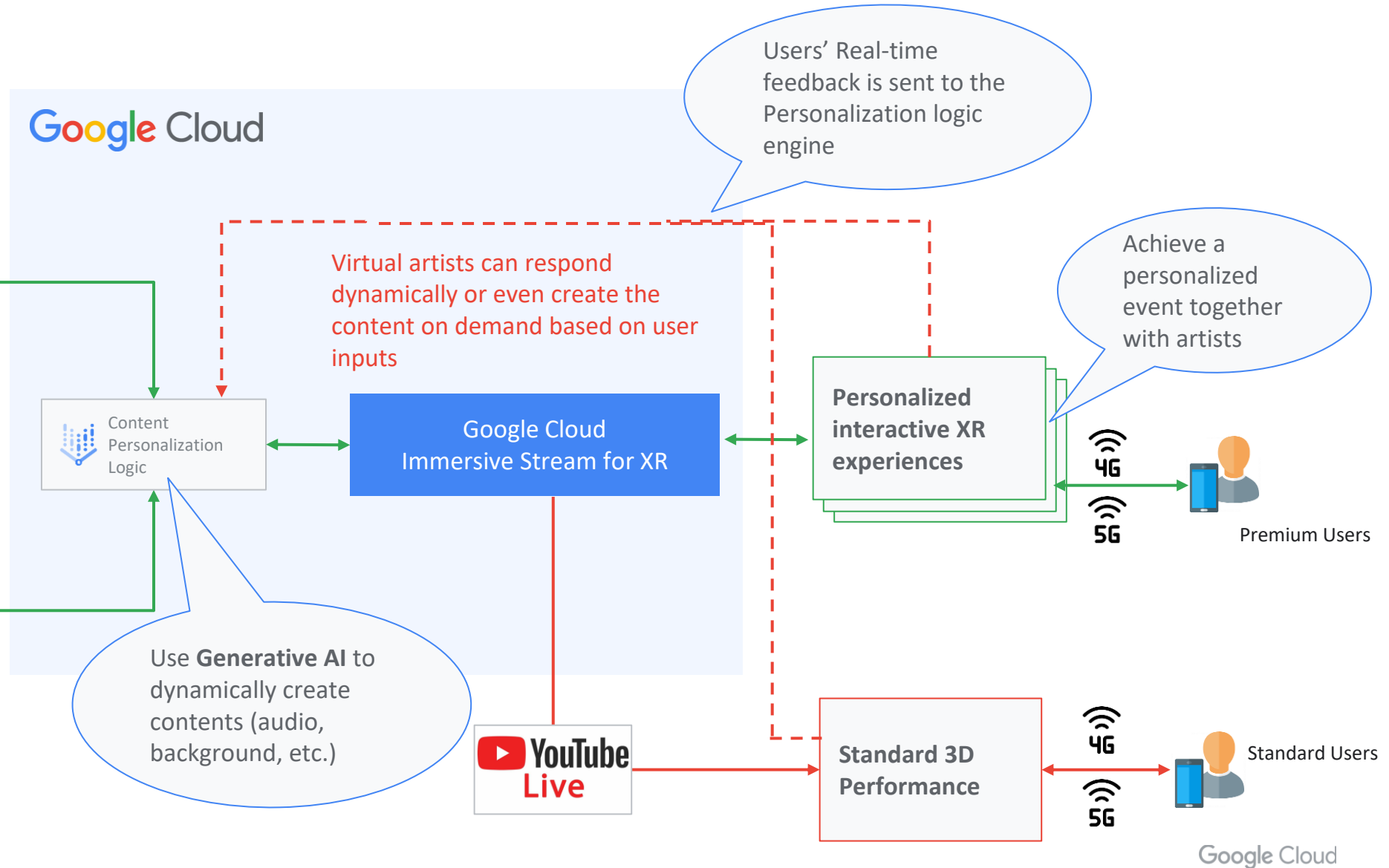
YouTube
Live

Standard 3D
Performance

Premium Users

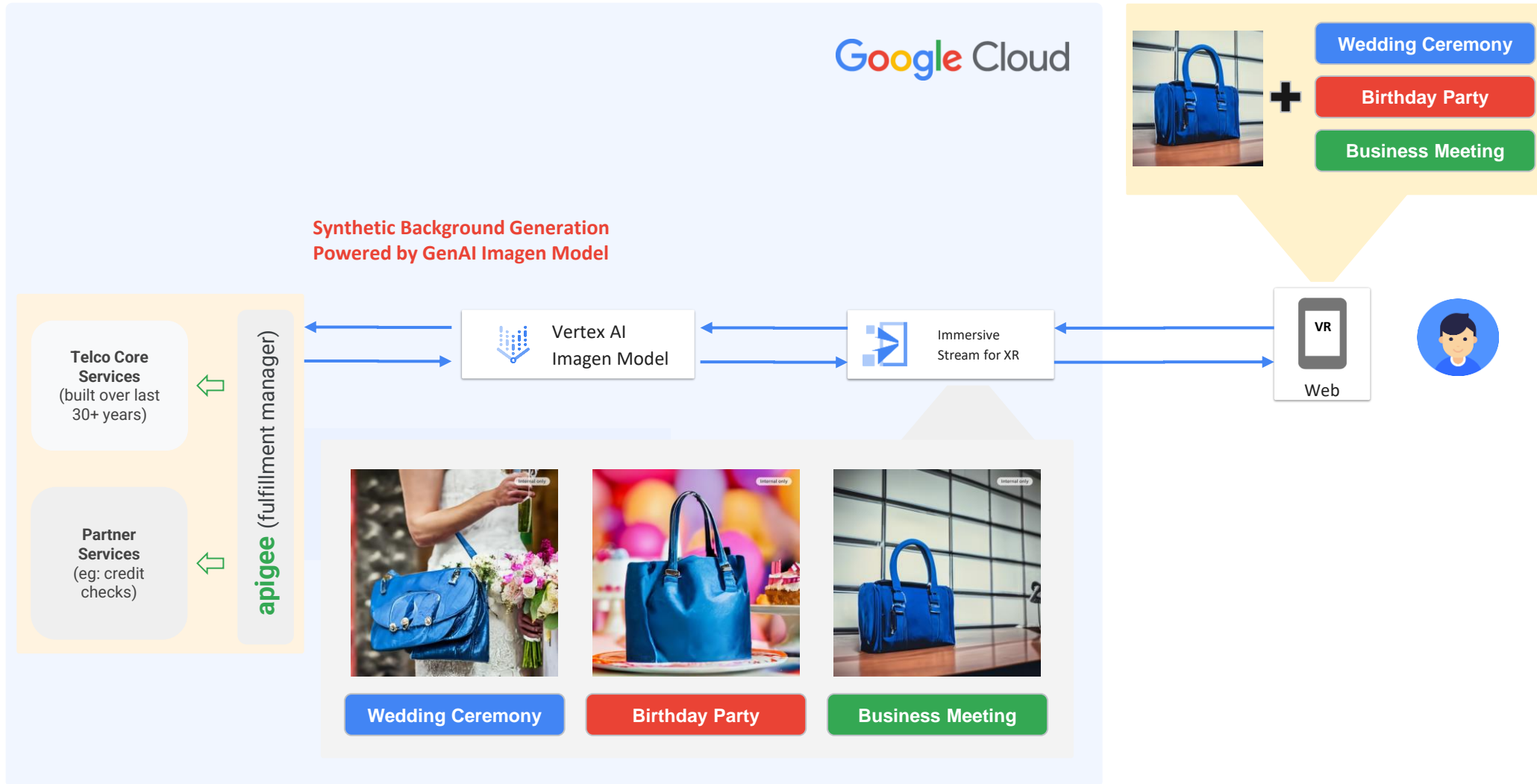
Standard Users

Google Cloud



Potential XR Use Cases Powered by Generative AI

- Interactive Shopping Experience





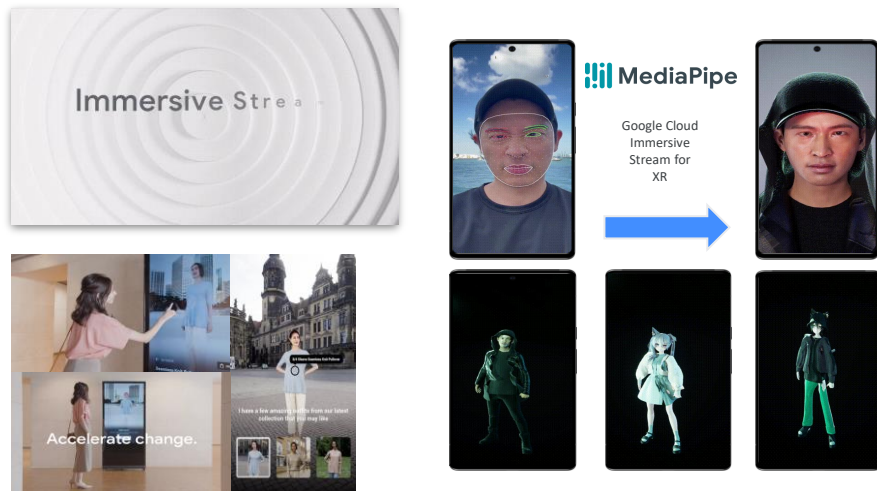
KDDI Labs in collaboration with Google Partner Innovation

Innovative XR Collaborations with Google for the Beyond 5G Era

Google Partner Innovation to collaborate, experiment & incubate with KDDI across the newest Cloud & Google technologies to bring new experiences to users & consumers with a focus on Generative AI development.

Collaborate, Experiment & Incubate

Then



Gemini
On Vertex AI

Now



Google PI



Google Cloud

KDDI