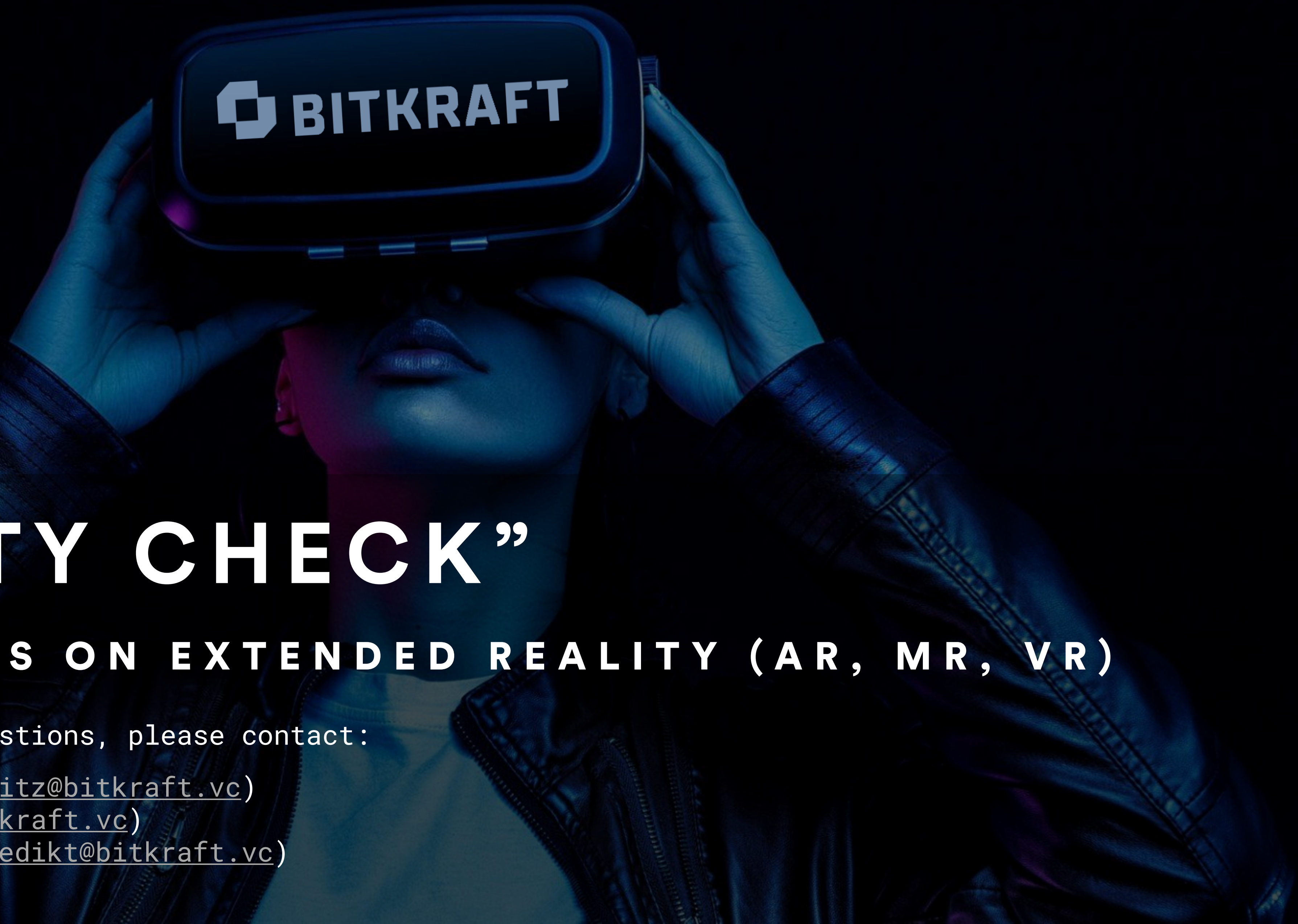
October 2021



"REALITY CHECK"

PERSPECTIVES ON EXTENDED REALITY (AR, MR, VR)

For questions and suggestions, please contact:

Moritz Baier-Lentz (moritz@bitkraft.vc)
Faye Maidment (faye@bitkraft.vc)
Benedikt Hübenthal (benedikt@bitkraft.vc)

SECTION 1: Market Data and a Path to Mass Consumer Use

Both VR and AR are expected to reach significant consumer scale sooner than it appears; 2022 – 2024 may be key years

2020 – 2021

Newfound Passion for Games and Virtual Worlds Brought VR Back Into Focus for Consumers: The market for extended reality devices is growing, not despite the pandemic—but thanks to it. Virtual worlds and XR technology gained an increasing install base and social mindshare, as shelter-in-place, physical distancing, and remote connectivity became the norm. Facebook's success with the Oculus Quest 2 is seen as a main driver of higher adoption of VR in 2021. The Quest 2 has hit a sweet spot where a great experience meets an attractive price. Its all-in-one design means that no other devices are needed, and above all, the headset is affordable enough to attract new customers to the technology, including both gaming enthusiasts and more-casual users.

2022 – 2023

oculus PlayStation.VR

The Heat for VR Is On: Facebook’s crown is hotly contested though. 2022 is expected to see major competition with new devices, including from Sony and Apple. XR might have its “iPhone moment” in the form of new passthrough functionalities of Apple’s headset “View”, rumored to be released as early as Q2’2022. Expectations for better, cheaper devices go hand in hand with rising developer interest and elevated levels of funding for upcoming content productions.

2024

A Possibly Magical Year for AR—and XR at Large: 2024 is poised to become an interesting turning point from many perspectives. It could be the first year in which XR shipments (~50 millions) exceed the global unit sales of gaming consoles. It could also mark the launch of consumer-grade AR glasses from Facebook, Apple, Snap, Samsung, and others. Research expects to see 15 million such smart glasses sold in 2025, ramping up much as other consumer technologies did from there.

VR

AR

SECTION 2: Industry Trends & BITKRAFT Predictions

A deep dive into AR/VR in the current zeitgeist, alongside BITKRAFT's predictions for future immersive culture

		Status Quo 🔎	What's Next? BITKRAFT AR / VR Market Expectations 🔮
AR	1	Lenses and effects augment an 'internet moment' as a toy and a tool.	**Full body tracking, 3D body meshes and cloth simulation will usher in new business opportunities for virtual fashion, AR NFTs, and avatars.**
	2	Location-based AR collectible games with genre-IP-fit win big.	**As incumbents race to build the AR cloud pixel by pixel, businesses will start to benefit from next-level immersive AR content.**
	3	Easy-to-use creation tools build a valuable AR content layer and ecosystem.	**Brands will create their own immersive virtual spaces via metaverse platforms, white-labelled virtual showrooms and WebAR experiences.**
VR	1	Cross-platform, multiplayer VR helps to prove the Metaverse is social and creative.	**Hardware companies will continue to fight to capture developers' and creators' affinity via revenue share increases and community programs.**
	2	VR fitness and sport applications help drive significant consumer revenue on Quest store.	**The next $1B opportunity in content: RPG, narrative-heavy VR games.**
	3	VR content consumption increases across incumbent social medias	**VR esports is coming—it's just a matter of time.**

VR

AR

Extended Reality = Term for Augmented, Mixed, and Virtual Reality

Forms of extended reality mainly differ by their levels of immersion and degree of permeation of the physical world

Extended Reality (XR)

Augmented Reality (AR)

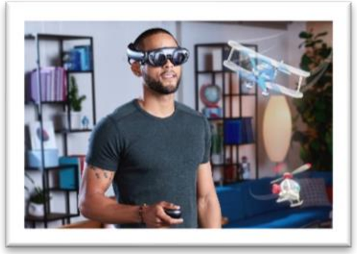
Real world with digital overlay.

Real world remains central to the experience and is enhanced by virtual details.

Mixed Reality (MR)

Real and virtual are intertwined.

Interaction with and manipulation of both the physical and virtual environment.



Virtual Reality (VR)

Completely digital environment.

Fully enclosed, synthetic experience with no sense of the real world.

VR/AR: A Key to the Interactive Layer of the Metaverse

XR wearables contribute to the crucial layer for Web 3.0 utility, allowing a seamless transition between IRL & digital realities

Architectural Layer	Web 1.0 (1990s - 2000s)	Web 2.0 (2010s - 2020s)	Web 3.0 / Spatial Web (2020s and beyond)
Interaction	Desktop browser (click and type)	Mobile touch-screen (touch and swipe)	Wearable AR/VR, voice, and IOT Devices (show and tell)
Computation	Situated server (via wire)	Cloud computing (via 3-4G)	Distributed computing (via AI, 5G + Edge)
Information	Structured (SQL)	Unstructured (Big Data)	Distributed ledger technology (Blockchain)

E.g. Larva Labs' Meebit NFT community equipping their collectibles with digital assets and embodying them in-game via VR.

Source: Deloitte (2021)

01

MARKET DATA

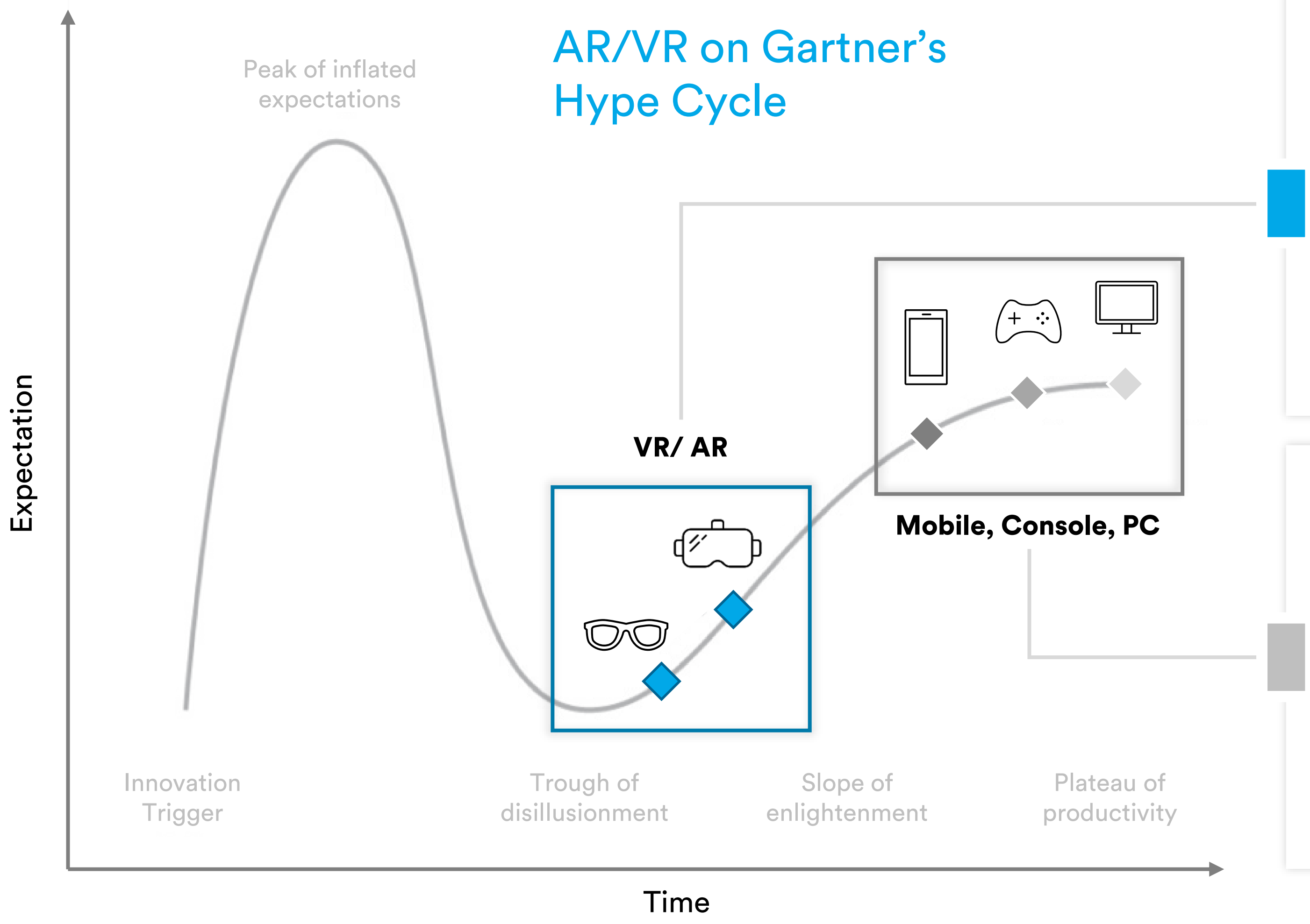
Is Now the Right Time to Invest?

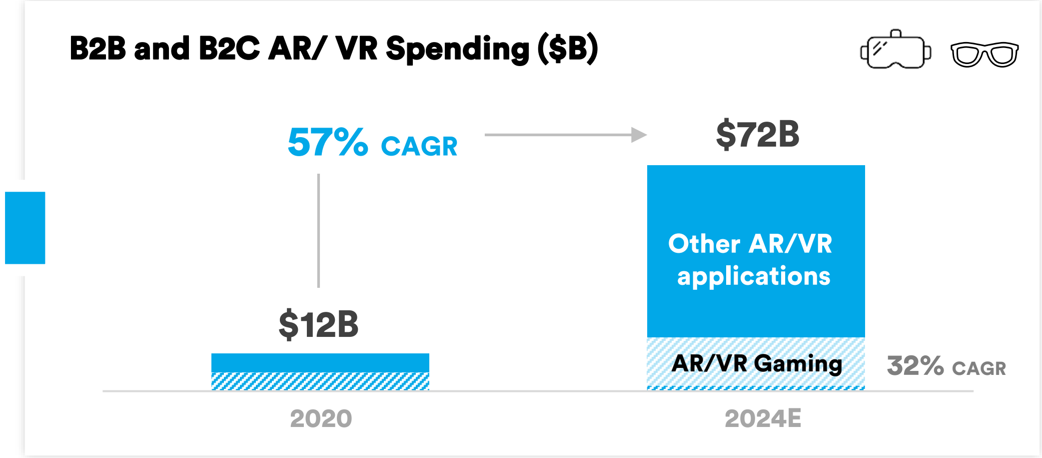
Key highlights:

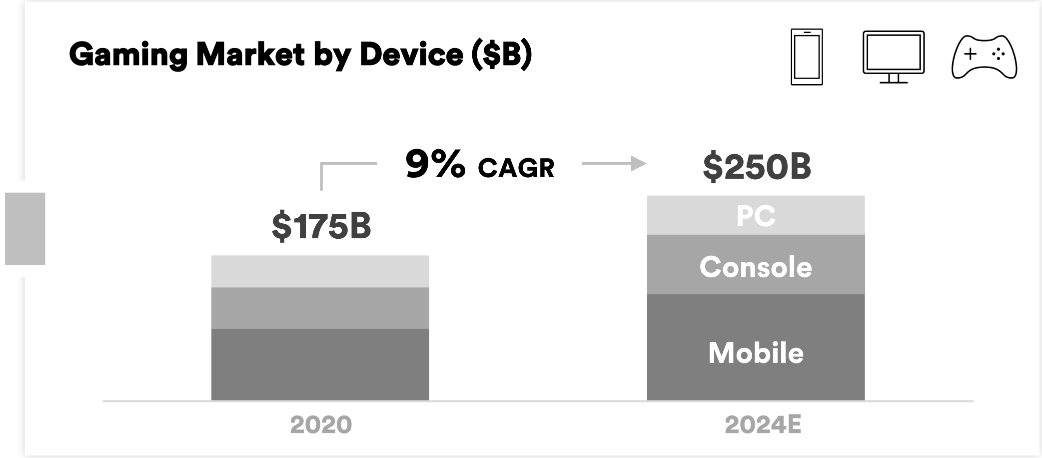
1. Install base: AR and VR headset shipments are expected to surpass gaming console levels in 2024.
2. Mass-consumer use: Continued improvements and devices from Apple and Facebook can drive adoption.
3. Precedent Title Success: Increasing rate of VR game breakouts attracts talent and capital.

XR Has "Crossed the Chasm": The Next Compute & Gaming Platform

AR and VR spending is expected to grow by 50%+ through 2024; in significant excess of other gaming platforms







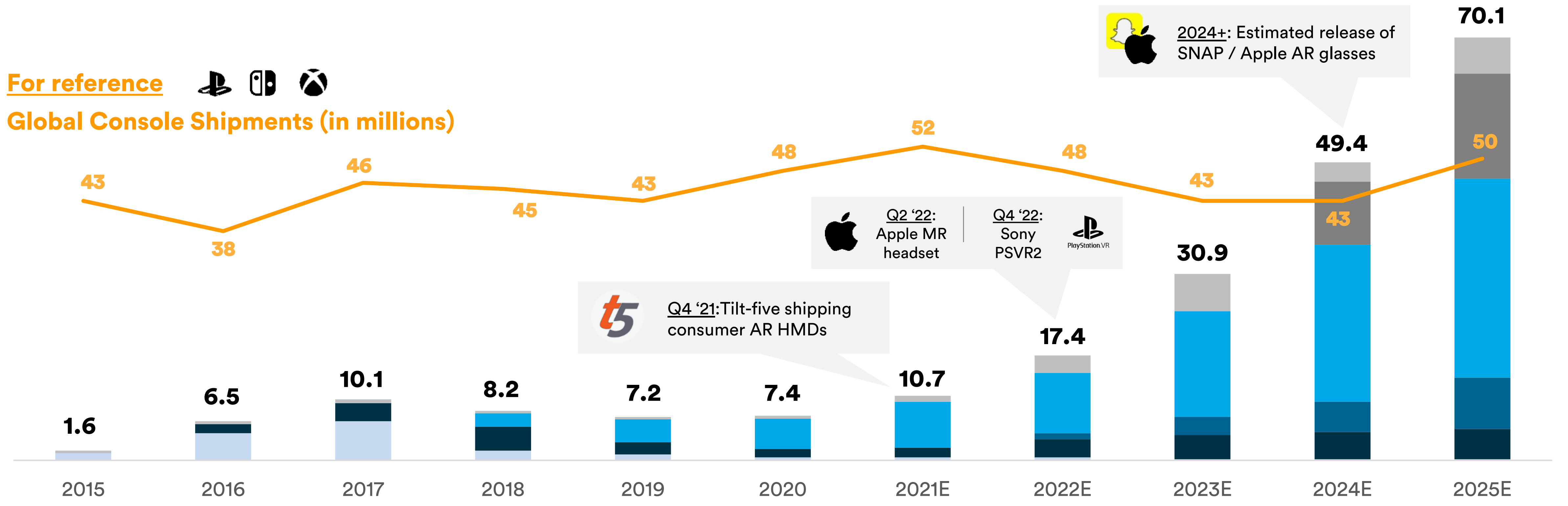
Source: IDC (2021); Statista (2020); Newzoo (2021)

VR
AR

XR Headset Shipments Are Soon Expected To Surpass Console Sales

VR represents the majority of the XR market today; importance of AR to increase from 2024

Global AR & VR Headset Shipments (in millions)



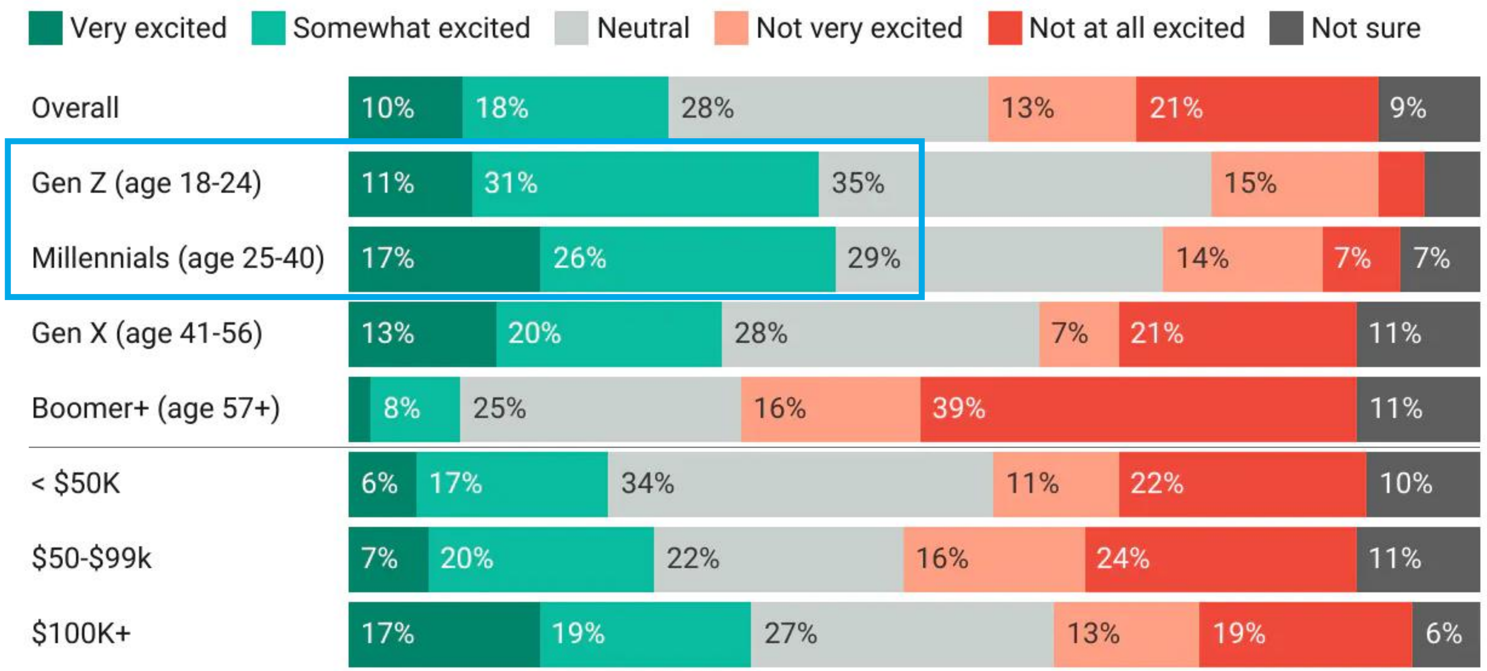
	2015	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E
Installed Base (M)	1.6	8.1	18.2	26.4	33.6	41.0	51.7	69.1	100	149	220

Source: CCS Insight (2021); The Information (2021)

Moderate Excitement; But Consumers Who Try XR Tend to Be Hooked

Highest Anticipation Levels for VR Among Millennials and Gen Z

How Excited Are You About Virtual and Augmented Reality?



Source: Morning Brew-Harris Poll, June 2021, n=2010 US adults • Created with Datawrapper

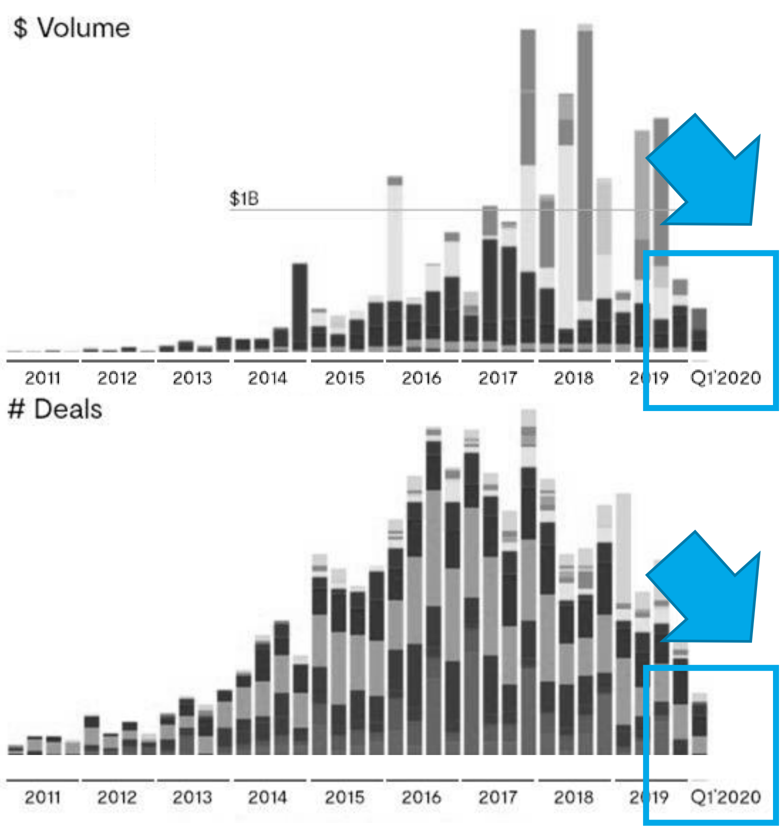
Further Takeaways

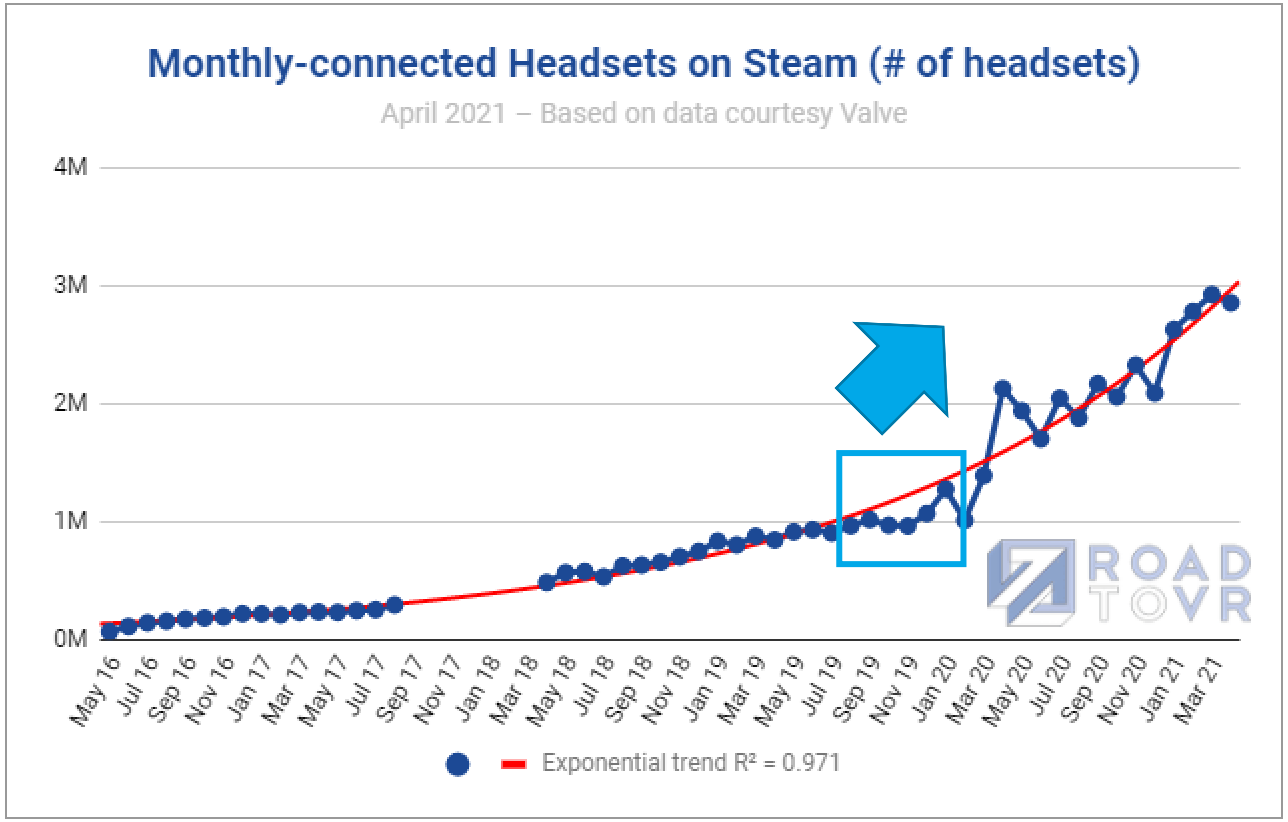
- 90% of those who have tried a headset say they're likely to use one again, with two-thirds saying they will *definitely* do so.
- 31% of respondents own a headset, 24% have used a family member's gear, and 13% have tried hardware provided by an experiential venue/retailer.
- Millennials are the most prolific users, with 42% having tried the tech. Gen Z was the next-highest demo at 29%.
- 44% of consumers say they've used an AR feature on a smartphone. 71% and 72% of Gen Z and Millennials, respectively, say they've used mobile AR. By comparison, 42% of Gen X and only 15% of Boomers have done so.

Recent Data Show Fast VR Usage Growth, Following Capital Drought

After VC funding for XR dipped in early 2020, Oculus 2 + COVID-19 brought usage to new heights

Historical AR & VR VC Funding





Steep Uptick in AR & VR Investments: 60%+ CAGR through 2024

China is leading the charge, with the U.S. expected to outspend in the next few years

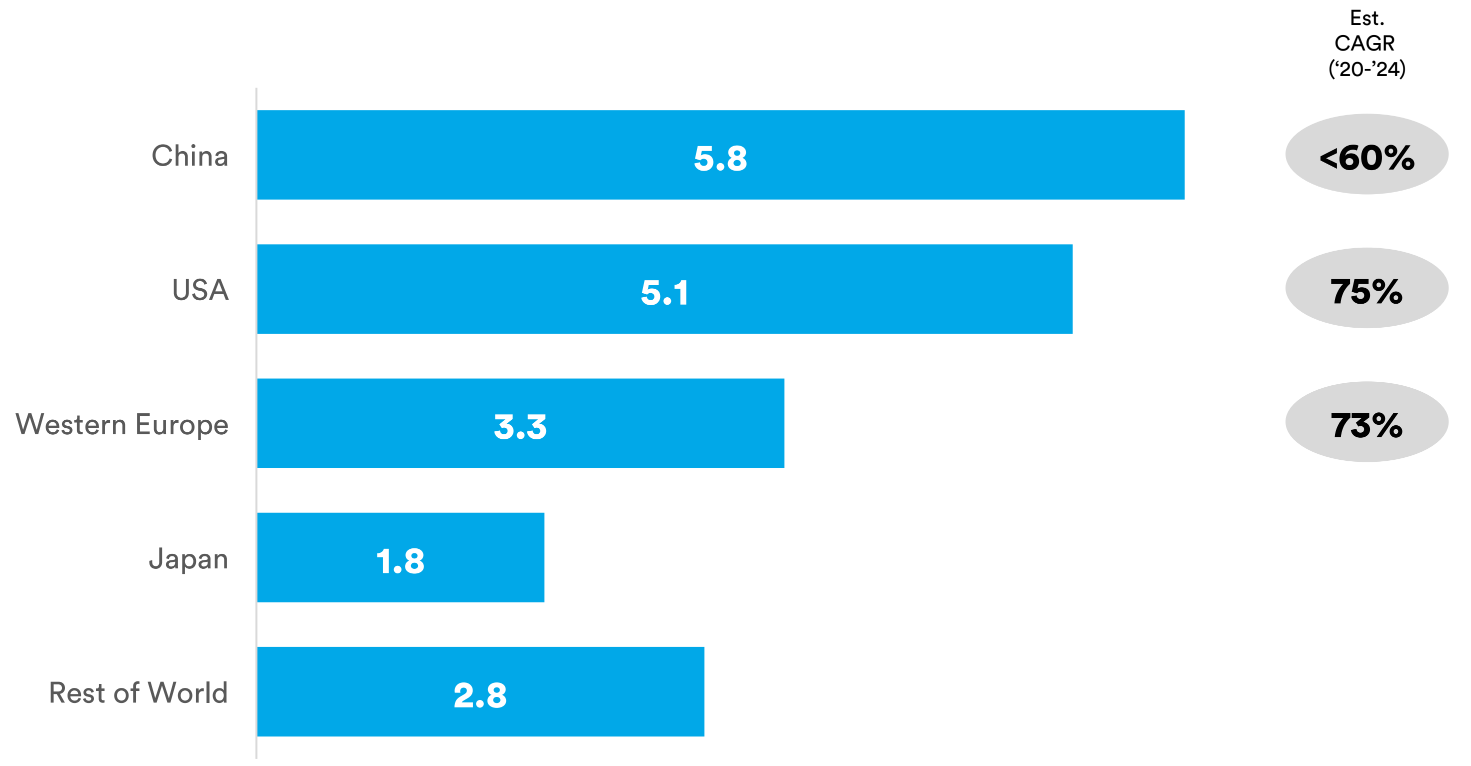
- Based on IDC spending guide:
  - On a geographic basis, China will see the largest AR/VR spending totals throughout the forecast, although its share of the worldwide total will decline.
  - The United States will be the second largest region for AR/VR spending and will draw close to China by the end of the forecast thanks to a CAGR of 75.1%.
  - Western Europe will also make significant gains with a CAGR of 72.8%.

Chinese Consumer VR Space:

"We work to 95% with Western developers as the quality of Chinese/ Asian developers is still significantly worse."

Head of Developer Relations at PICO

AR/ VR spending 2020 by geography (in $B)



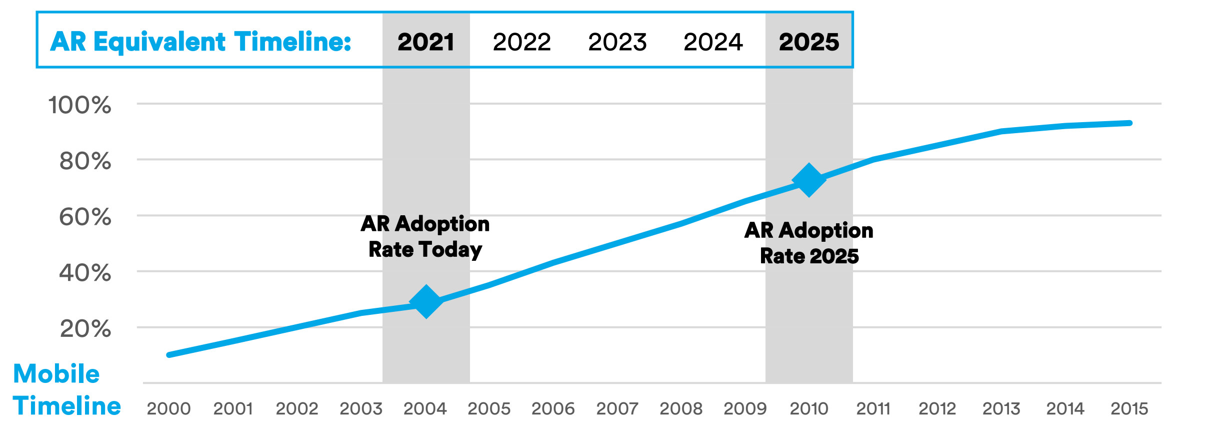
Source: IDC (2021); Statista (2020); BITKRAFT Reference Calls

AR Adoption On Same Track as Mobile Penetration ~20 Years Ago

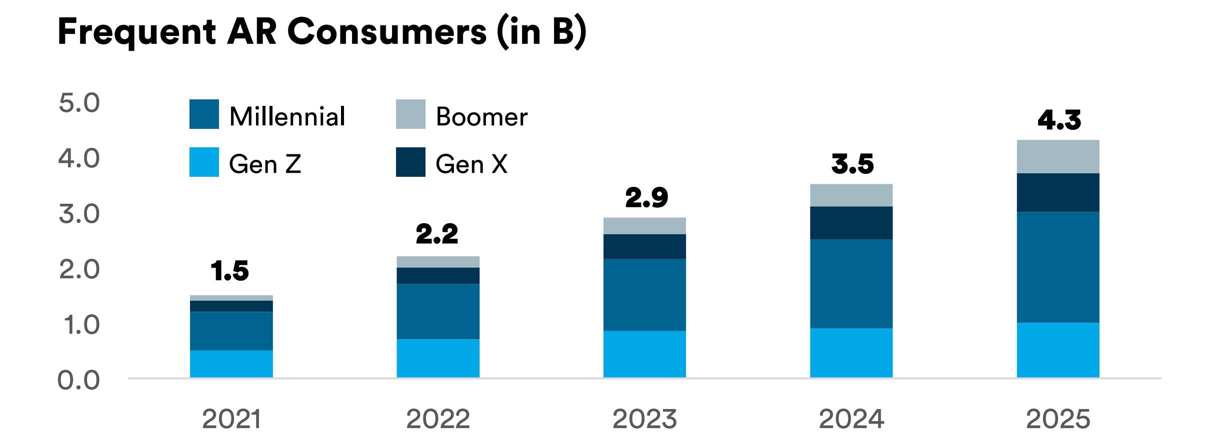
1.5B consumers are already using AR features – among those, Millennials ('80-'96) are the most frequent users

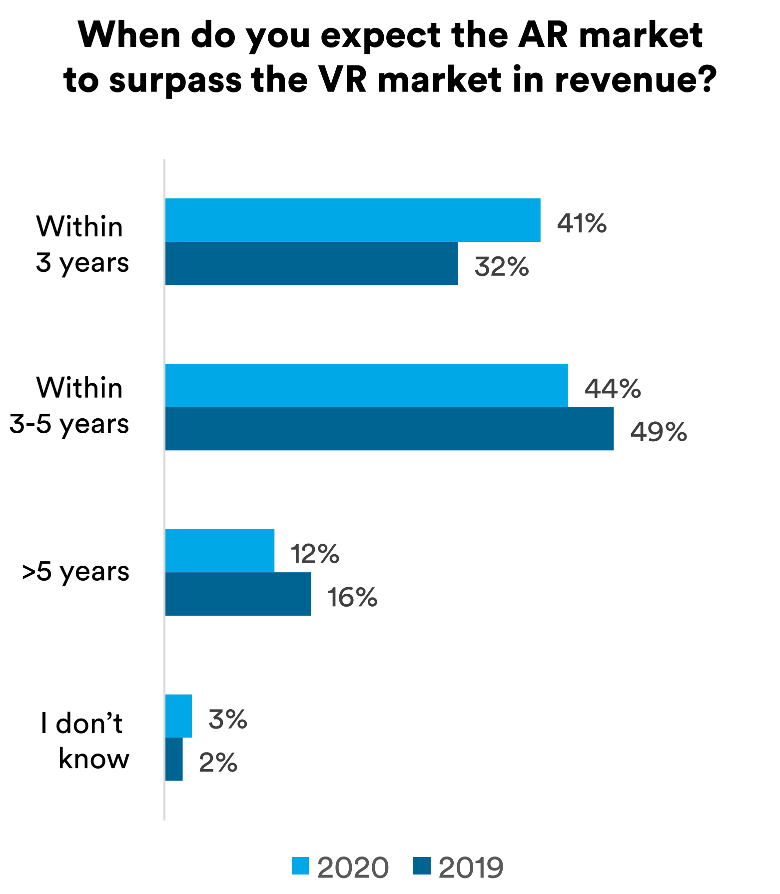
(Mobile) AR Penetration Expected to Triple by 2025

(Line shows worldwide mobile adoption as % of global population)



Mobile AR used by Billions Already





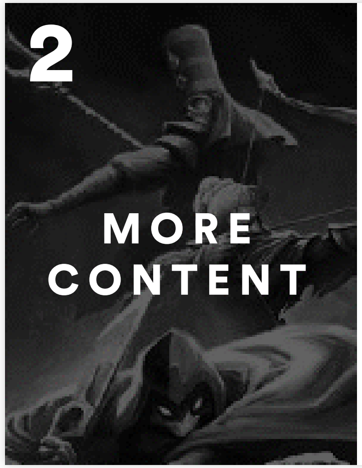
Source: Snap / Deloitte Digital (2021); Perkins Coie (2020)

Largest Perceived Historical Barriers Are Being Solved: (1) Better Devices & (2) More Content

Leading industry references see a bright future for augmented and virtual reality

Key Developments

- 50% price decline of market-leading consumer headset between 2016 – 2020
- Continued downward pressure on price through increased competition
- Improvements to form factor and level of immersion



Key Developments

- 100%+ growth in developers on Oculus earning >$1M (from Sep-20 to Feb-19)
- Shift towards subscription-based models
- Increasing number of larger, specialized game studios

Industry Sentiment

"We can see the patch to 10x pretty clearly. Facebook's ambition is 1B headsets sold."

Head of Game Dev. Relationships

"I believe that now is the right time to invest in VR content creation – similar to what happened to mobile in 2005."

XR Games Lead

Qualcomm

"Based on our bottom-up production forecasts, we're confident that VR will experience healthy growth in the mid-term."

Senior Director Product Management XR

Pico

"We're working very hard to make up for any educational barriers around VR in China. Facebook has done a great job in the West."

Head of Platform Architecture

1 2022 Is Poised For a Potentially Strong Year for AR/VR Headsets

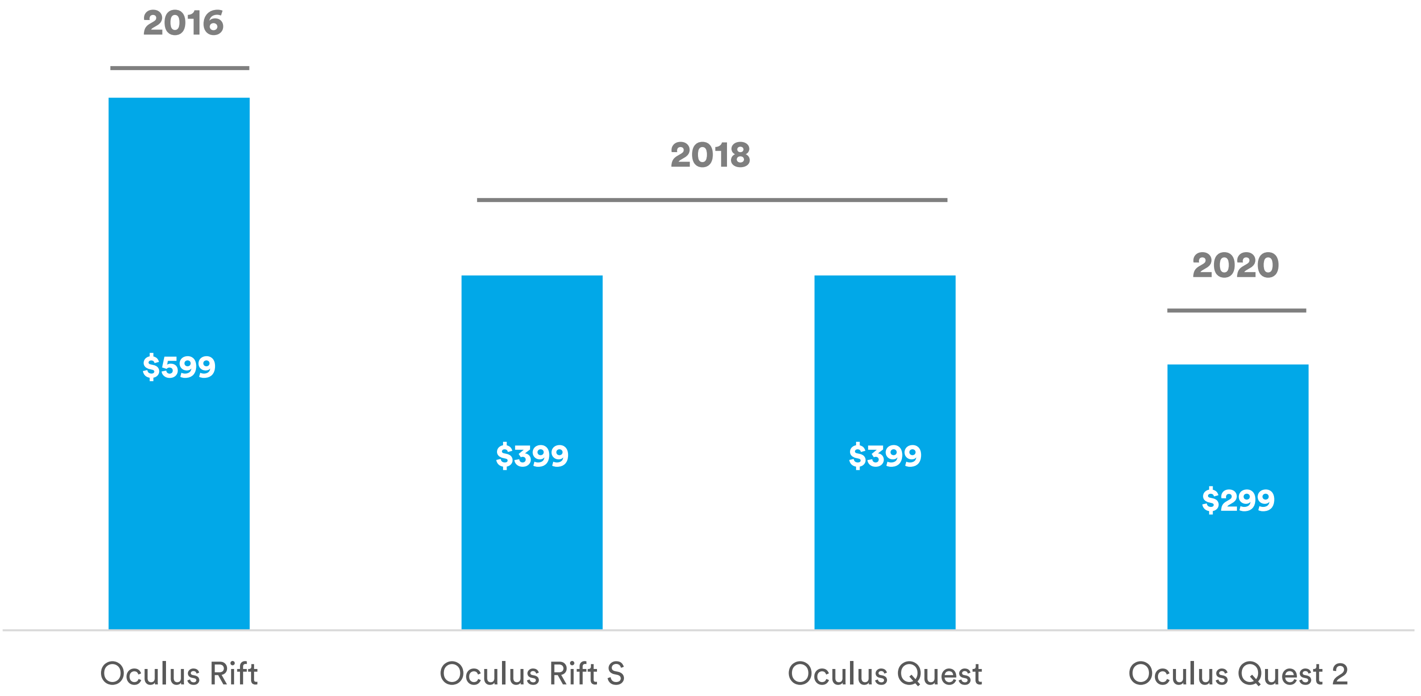
Notably, Apple is expected to release mixed reality headset with passthrough functionality in Q2 2022

	htc	LYNX	Apple	oculus	magic leap	PlayStation VR
Estimated Release	**Q4 2021**	**Q1 2022**	**Q2 2022**	**Q2-Q4 2022**	**Q2-Q4 2022**	**Q4 2022**
Description	• VR standalone headset with improved form factor, but less computing power (weighs 189g vs. 503g for Quest 2) • Primarily use case = ‘wellness’ applications, i.e. movies, meditative experiences, but not gaming • Design resembles modern sunglasses with reflective shades; no strap-on required • Priced at $499	• Mixed reality headset, allowing to combine AR & VR with passthrough mechanism • Company has raised $2.3M from French angel investors so far • Final headset price top be announced – estimated between $1,000-1,500 • Company to launch Kickstarter campaign soon to fund release in Q1 2022	• Device will be focused on gaming and entertainment; VR with strong passthrough focus • Apple does not want to lose market share to Facebook; have recognized AR & VR as major growth area • Headset price has not been determined, but is estimated to be higher than Oculus Quest 2 ($299)	• Quest 3 = virtual reality headset, successor of market-leading Quest 2 • Current installed base of Quest ~10M – 50% market share of shipped consumer headsets in ‘20 • People are already looking at Oculus as a gaming platform rather than simply a device • Facebook has the ambition to sell 1B virtual reality headsets in the mid- to long-term	• Magic Leap 2 = augmented reality headset (successor of previously ‘failed’ Magic Leap One) • Mostly focused on enterprise applications • Tethered with expanded field of view • Recently announced $500M funding to support go-to-market launch in late 2022	• Virtual reality headset, successor of PSVR with higher resolution and improved FOV • PSVR2 will have new controller similar to Oculus Quest 2 • Unclear if tethered or untethered; requires PlayStation 5 to use • Sony is focused on improving motion sickness and nausea
Design						

1 Positive Tailwinds Facilitated by 50% Oculus Price Decline Since ‘16

Most purchased VR headset (=Oculus Quest 2) $100 cheaper than PS5

Price Evolution – ASP of Oculus Devices Over Time ($)



Display Improvements

OLED vs. LCD

- First VR headsets were mostly using OLED displays, which offer high responsiveness at a higher price
- Oculus and HTC have moved to LCD to lower the economical barriers for consumers and offer higher immersion
- There are multiple firms working to improve LCD displays particularly for VR
- For example, Japan Display, once one of Apple's main suppliers, is now experimenting with LCD for VR – they had to pivot as smartphones are now primarily using OLED displays

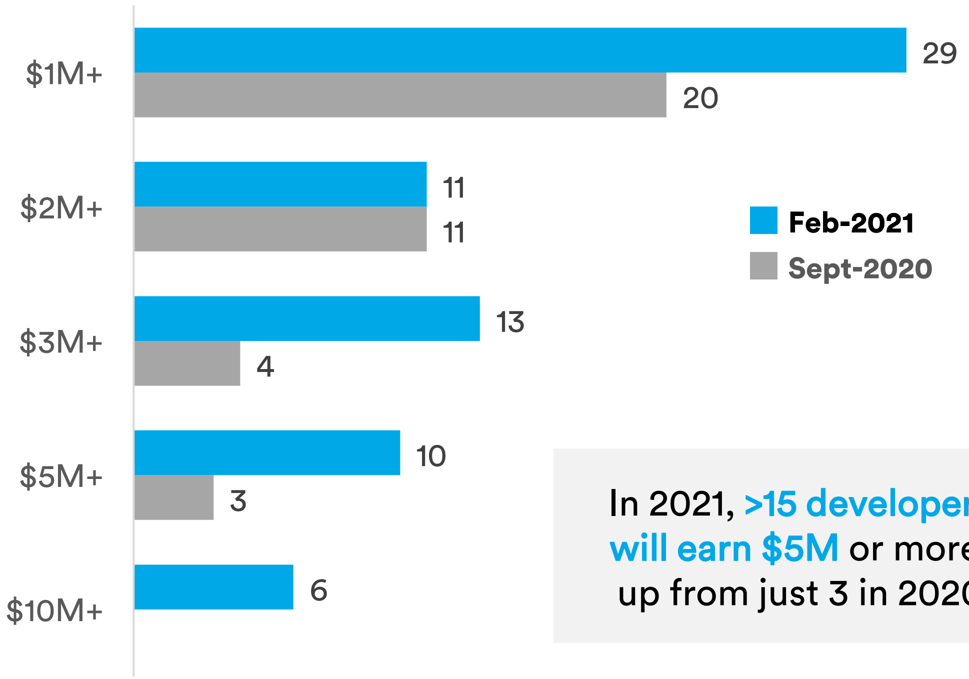
Source: Oculus (2021)

2 Commercial Viability of Titles Reaches "VC Readiness" for IP Bets

Number of Developers Earning >$1M on Oculus has increased by >100% in 6 months

VR = B2C Hits Increasing at Fast Rates

Distribution of Developer Earnings on Oculus Platform



In 2021, **>15 developers will earn $5M** or more, up from just 3 in 2020

AR = B2B, But B2C Hits Possible (e.g. Niantic)

Rich B2B Software Landscape

VUZIX

magic leap

Microsoft HoloLens

B2C Breakout Hits Help To Prove Commercial Viability

Niantic's Pokémon Go has recently surpassed $5B in lifetime revenue, over 5 years after its launch in 2016

Source: VentureBeat (2021)

2 VR-Focused Studios Have Received Significant Funding Recently

Sufficient funding will allow developers to experiment with content formats and facilitate switch to subscription-based, game-as-a-service models

	Founded	Location	# Employees	$ Funding	# Games	# reviews (across games)
RESOLUTION	2015	Sweden	~80	$39M	6	~10,000
nDreams	2006	United Kingdom	~100	$12M	7 (some exclusive to PSVR)	<2,000
SURVIOS	2013	United States	~100	$72M	9	~3,000
Fast Travel Games	2016	Sweden	~40	$6M	4	<1,000
Beat Games	2018	Czech Republic	~20	n/a	1	~15,000
SUPERHOT	2013	Poland	~50		1	~3,600
SKYDANCE INTERACTIVE	2006	United States	~280	n/a	2	<1,000
ILM X LAB	2015	United States	~70	n/a	5	~20,000
VERTIGOGAMES	2008	Netherlands	~50	n/a	7	~7,000

$46M (= 35% of total) raised within last 9 months

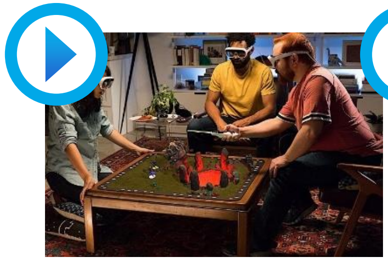
Source: Oculus (2021); LinkedIn (2021); Crunchbase (2021); BITKRAFT analysis (2021)

Tilt Five: First Mover in Mass-Market Mixed Reality Home Entertainment

TILT FIVE

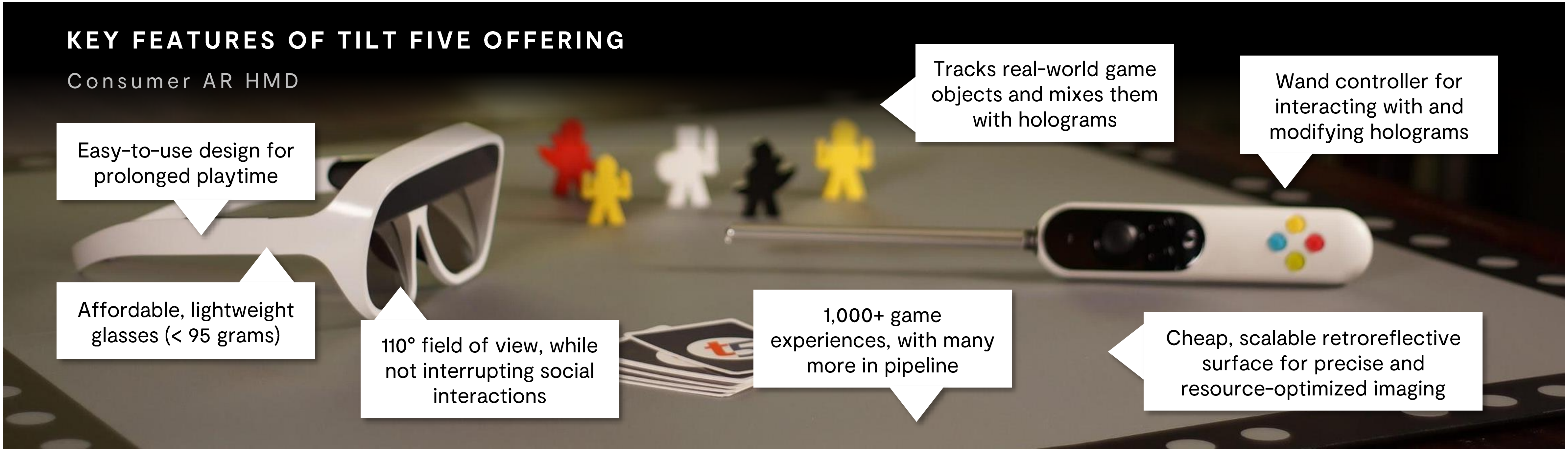
- With 8 years of R&D behind it, Tilt Five has developed a patented far-eye and fixed-view “directed” AR technology using a proprietary chip design and retroreflective surface.
- In contrast to competitor ambitions of “everywhere” AR, by limiting the area of displayed AR, the company solves multiple current hard AR problems holding back successful B2C applications: compute constraints, field of view, and comfortable prolonged playing experience.

DEMO VIDEOS



KEY FEATURES OF TILT FIVE OFFERING

Consumer AR HMD



Resolution Games: A Leading Multiplayer VR Studio, Diverse Games

RESOLUTION

- Founded in 2015, Resolution Games is one of few large scale, dedicated VR studios focused on multiplayer experiences for various target groups
- The company is led by Tommy Palm, 5x entrepreneur and former leading game designer for the >$1B franchise “Candy Crush” at King
- Since its foundation, management has raised $38.5M, including its latest $25M Series C, which was co-lead by BITKRAFT and Qualcomm Ventures
- The company is headquartered in Stockholm, Sweden, and has ~80 employees

Team of Industry Veterans and Serial Entrepreneurs


TOMMY Palm
CEO

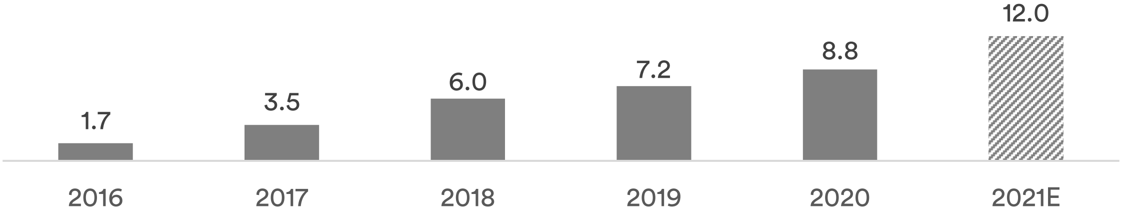

MARTIN Vilcans
CTO


PAUL Brady
CCO


PATRIK Dreber
COO

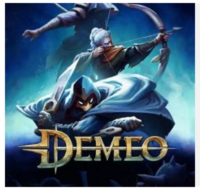

TOM Hall
CD

Revenue Development ($M)



Executing A Unique Content Strategy

Bringing a high # of different game titles to market



Most Recent Title	#1 Tabletop VR Game	#2 Oculus Bestseller	>$2M Revenue in 1 Mo.

BLASTON	ACRON	ANGRY BIRDS	BAIT	COOK OUT
>$1M LTR*	>$1M LTR	>$2M LTR	-	>$1M LTR
FPS with Esports Potential	Family-friendly party game	VR-port of successful mobile game	F2P Fishing Game	Social Cooking Game

Built with their **proprietary development engine** “Fidelity”, leading to **reduced lead times** and allowing to build their **own asset catalogue**

FIDELITY

Source: BITKRAFT analysis; **Note:** LTR = Lifetime revenue

02 TRENDS & PREDICTIONS

What Are Interesting Opportunities?

Key highlights:

1. AR: Full-body tracking, AR NFTs and avatars, AR cloud, and brand experiences among key trends.
2. VR: More and new content, genre experimentation, and VR esports expected.
3. AR & VR: Across domains, big tech will continue to invest heavily into developer ecosystems.

VR

AR

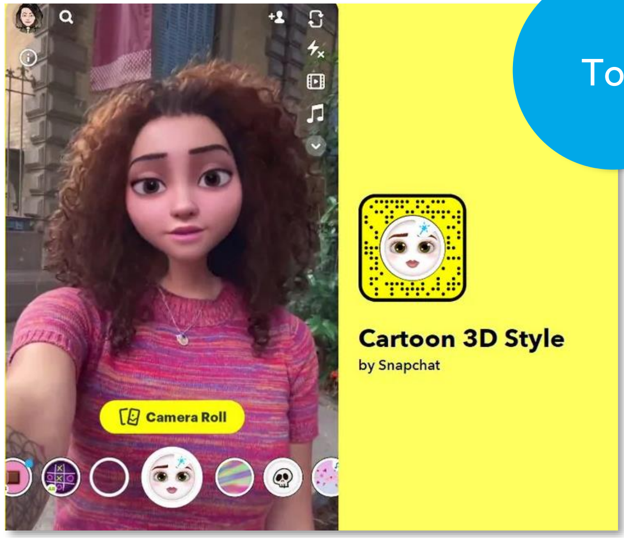
1 Status Quo

Lenses & Effects Augment an 'Internet Moment' as Toy & Tool

Consumer spending on 'mobile AR experiences' and on 'physical goods influenced by AR' are expected to reach $1.9B and $4.8B in 2021 respectively

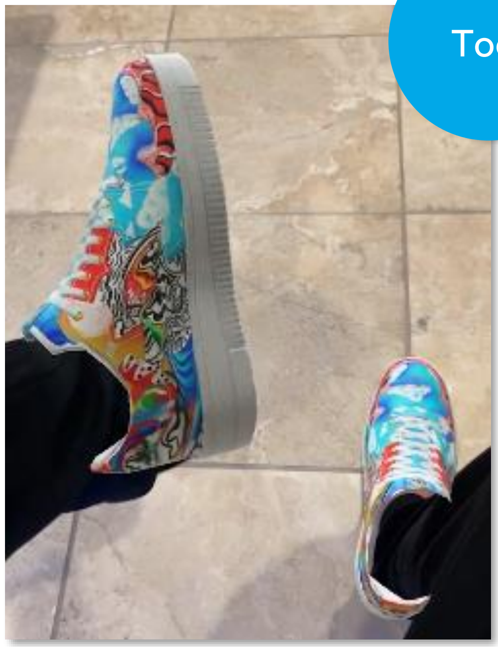
"Today, more than 200 million people engage with AR on Snapchat everyday" – Evan Spiegel, CEO Snap.

Survey Equivalent Ages:	*13-24*	*25-44*	*45-50*
AR Usage Frequency (2021)	Gen Z	Millennial	Gen X / Boomer
Several times each day	26%	19%	12%
Once a day	13%	13%	7%
Several times a week	19%	18%	15%
Once a week	8%	8%	8%
A few times a month	10%	11%	12%
Once a month	4%	5%	8%
Less than once a month	8%	13%	17%
I don't use AR in this way	12%	14%	21%
Frequent	66%	58%	42%



Toy

Tool



- The Snap toon viral lens achieved close to 1.7 billion views in 4 days.
- Interacting with products that have an AR experience leads to a 94% higher conversion rate. In the case of interior design app Houzz, customers spend more time in app – up to 2.7x more time – with the AR feature, than without.

Source: AR Insider

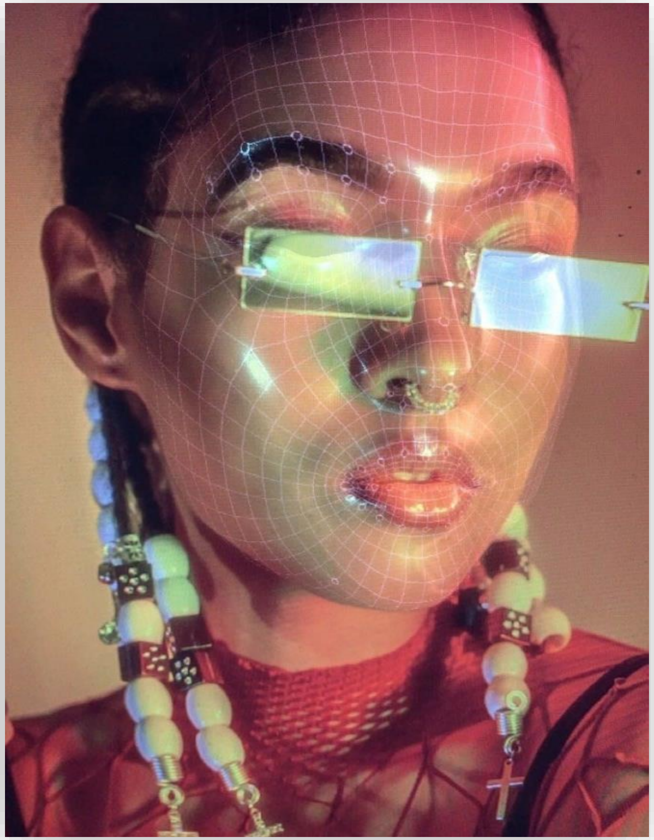
1 What's Next?

Full Body Tracking, 3D Body Meshes and Cloth Simulation Can Usher in New Business Opportunities for Virtual Fashion, AR NFTs, and Avatars

Digital Fashion technology developed by incumbent platforms Snapchat, Instagram and TikTok may largely push adoption

- With full body tracking introduced via Lens Studio 3.4 in February 2021, and later 3D body mesh and cloth simulation via Lens Studio 4.0 in May 2021, AR is truly levelling up its ability to aid our expression in the metaverse.
- TikTok's AR platform is currently in beta, which will likely accelerate creation and consumption of AR content for entertainment and education.
- Digital fashion, previously only reserved for in-game wear (Pokemon Go x Gucci; GTA x Misbhv) is now an AR Try-On experience, a lucrative advertising channel that Snap reports leads to a higher conversion rate.
- In the future, just as lens and filter creation were democratized by Snap Lens Studio and Spark AR, fashion creation platforms and builders will seek to allow any brand/consumer to easily create their own digital collections.
- Legacy fashion creation platforms such as CLO and Marvellous Designer require significant skill-based training to master and are therefore not attractive to the burgeoning creator market. We expect to see innovation here in the next year.

How it started



How it's going

VR

AR

2 Status Quo

Location-Based AR Games with Genre-IP-Fit Win Big

Pokémon Go achieved $1.9B in revenues in 2020 alone

$5B Total Revenue since Launch

- Niantic quickly adapted to the restrictions of COVID-19, allowing Pokémon GO to grow 39% year-over-year. Although the game has historically encouraged in-person gatherings and long-distance traveling, the developers altered gameplay features to bring in-game events, Pokémon and items directly to players' homes.

- With Reality Blending enabled, Niantic's advanced AR feature currently in beta, interacting with a buddy or taking a GO Snapshot in AR mode, provides a great improvement in how Pokémon appear on screen in relation to their surroundings.

- Ludia's Jurassic World Alive, similarly a location-based AR collectible mobile game, reached $100M in revenue since launched in 2018 as reported in May 2021. This makes it in the top ten highest earning mobile augmented reality games and contributes to the case for the publisher's acquisition by Jam City confirmed in the same month.

- In its lifetime, Jurassic World has accumulated 2.7 billion total game sessions and more than 1 billion in-game battles.

Source: SensorTower

2 What's Next?

As Incumbents Race to Build the AR Cloud, Businesses May Start to Reap the Benefits of Next-Level Immersive AR Content

Niantic, Snapchat, Apple and Google lead the developer platform creation in 2020-2021

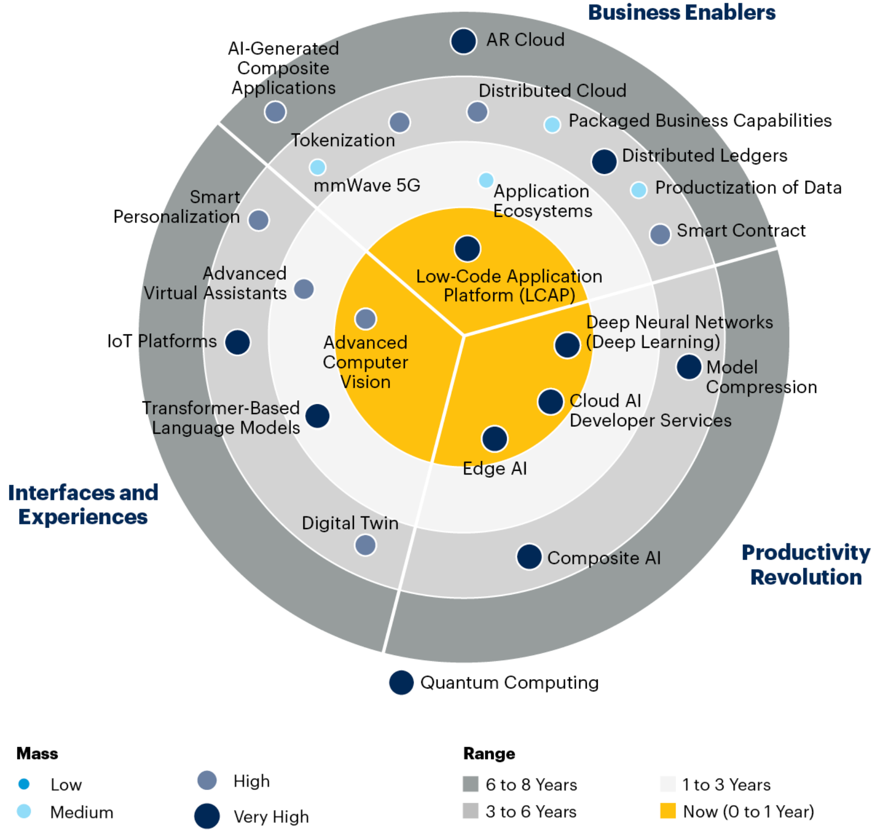
- The AR cloud enables the unification of physical and digital worlds by delivering persistent, collaborative and contextual digital content overlaid on people, objects and locations to provide people with information and services directly tied to every aspect of their physical surroundings
- Gartner predicts that by 2025, 15% of organizations with more than $1 billion in revenue will use AR cloud to monetize the physical world through new interactions and business models.
- Although we are still early in the the AR Cloud's full mapping, current releases of location-based, technology advancements from incumbent players will allow consumer and brands to drive deeper engagement from their AR experiences

Newly Available AR Technology

Real-time mapping
Persistent content
Semantic segmentation
Multiplayer support

Current AR Cloud Big Tech Projects

Google [Live View, or visual search with Google Lens], Apple [location-relevant AR through its geo-anchors and Project Gobi], Facebook [Live Maps], Snapchat [Local Lenses] and Niantic [Lightship]



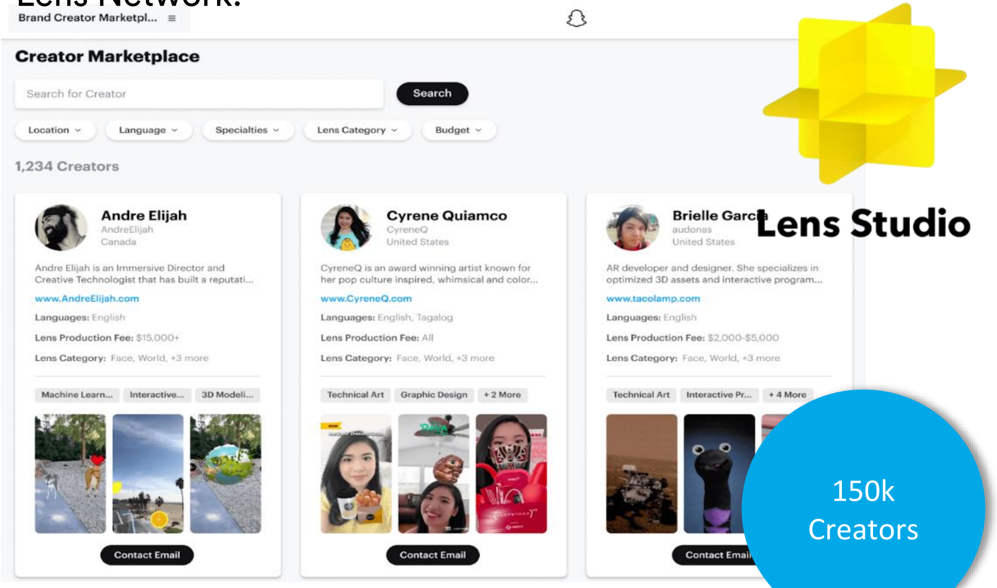
Source: Gartner, 2021

3 Status Quo

Creation Tools Help To Build AR Content Layer & Ecosystem

Lens Studio currently boasts 150K AR creators vs. Spark AR's 600K

- Over 50% of AR developers have under one year of experience with 63% of consumers having tried at least one social platform developer account.
- In Q1 2021, Snap reported a total 150,000 users who have made over 1.5 million lenses and in May 2021 announced the launch of their Creator Marketplace to help businesses collaborate with Creators across the Snap Lens Network.



150k Creators

600k Creators

- In comparison, Facebook's Spark AR platform now has 600,000 creators in 190 countries, with 2 million AR filters and effects created to date. In contrast to Snap, Facebook is turning its focus toward video calling and chat, as it launched its Multipeer API for AR video calling (Messenger, Instagram and Portal) in June 2021, allowing creators to build effects that can be experienced by multiple users via multiple screens.

Source: Snap x Deloitte AR Report

3 What's Next?

Brands Seek To Create Their Own Immersive Virtual Spaces via Metaverse Platforms, White-Labelled Virtual Showrooms and WebAR Experiences

Gucci sold $1M worth of digital items within the Roblox x Gucci Garden experience, using scarcity to drive sales

Obsess VR

Roblox x Gucci

- According to Vogue, some retailers and brands have gone from 15 to 85 % e-commerce in a couple months. With online shopping now at the core of business, there is a shift to augment online store fronts and provide interactive, highly-converting experiences for customers.
- Designers Tommy Hilfiger and Charlotte Tilbury worked with experiential e-commerce software provider Obsess VR. The company reports a 400% increase in inbound interest since the pandemic.
- One Obsess client reported that conversion rates increased up to 50% when compared to shopping the same collection via e-commerce.
- In the Roblox x Gucci Garden experience, the luxury brand opted to meet its new consumers ‘where they are’ rather than building an extension of their own site. Gucci sold over $1M worth of digital items on the marketplace proving that the metaverse is a lucrative revenue stream in its own right.

Source: Vogue Business

4 Status Quo

Cross-Platform, Multiplayer VR Helps to Prove the Metaverse Can Be Social and Creative at its Core

Rec Room predicts it will pay out $1M to creators in 2021 via its token exchange program

A comparison between social world building mobile applications session length per DAU. Rec Room VR sits at 160 minutes session length per DAU.

- In January 2021, Rec Room, the social VR platform, reported one million MAU Quest users, with Rec Room Designer Shawn Whiting sharing they're still growing past that one million per-month active rate with a "particularly dedicated user base." In January 2021, they hit their record milestone of 45k concurrent VR players.
- Most impressively, Rec Room reports their VR DAU (demographic aged between 13 - 16 years old) spend an average of 2.7 hours in Rec Room when they visit, almost an hour longer than Minecraft DAUs.
- Social world builder platform, VR Chat, similarly rode the coattails of the Quest 2 launch, to achieve their record of 40k concurrent VR users on NYE 2020. With growing demand for UGC, social world building spaces and creative expression (VR Chat now has over 10 million unique avatars).

4 What's Next?

Hardware Companies Will Seek to Continue to Fight to Capture Developers' and Creators' Affinity via Revenue Share Increases and Community Programs

Both Oculus and Viveport released developer ecosystem initiatives and Bytedance acquires Pico

- On February 2, 2021, Oculus launched App Lab as a way for developers to easily distribute their apps safely either via a link or via the third-party platform, SideQuest, without the need for store approval or side loading. While a VR experience in the App Lab won't appear in the Oculus Store by searching, once downloaded, users will then be able to access it from their Quest library.
- For indies looking for play testers at the earliest stages of development or wanting to build an audience around their experience, App Lab allows creators to get an app directly to their community, even if it is experimental, or aimed at a unique audience.
- Seemingly in response, on February 18, 2021, Viveport announced an increase in developer net revenue split to 80% developers and 20% Viveport (up from 70% from 2020), in addition to giving developer 100% of their net revenue over the 2020 holidays.
- In Q3 2021, TikTok's parent company acquired Chinese VR headset maker Pico levelling up their tooling capabilities for gen z creators on the platform. ByteDance told CNBC in a statement that Pico's "comprehensive suite of software and hardware technologies, as well as the talent and deep expertise of the team, will support both our entry to the VR space and long-term investment in this emerging field"

1M MAU

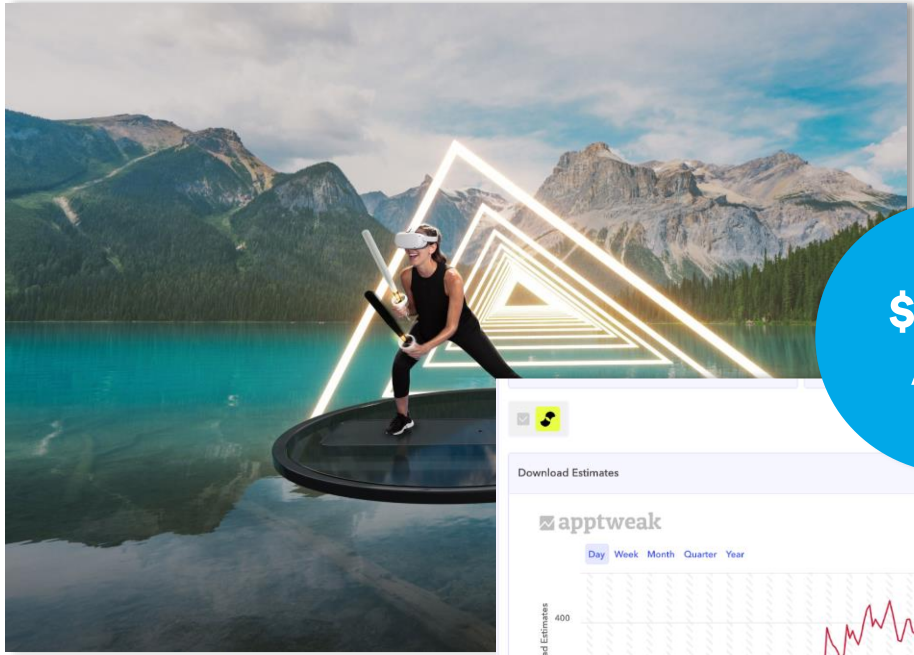
5 Status Quo

VR Fitness and Sport Applications Likely to Drive Significant Consumer Revenue on Quest Store

As Quest 2 goes mainstream, consumers pick up VR fitness during quarantine.

- Supernatural best described as 'Peloton meets Beat Saber' launched its VR fitness offering in April 2020, just as the worldwide pandemic hit. With the Quest 2 launched in October 2020 contributing to an uptick in user base numbers, Supernatural's VR Fitness solution found its market fit with gamers and non-gamers alike.
- Supernatural app in the Oculus store achieved ~4,000 ratings (that's just under half of Onward Population One at 9800+ and 8060+ ratings respectively on 1/7/2021, two games that hit $10M+ in revenues on Quest alone).
- According to App Tweak, Supernatural has achieved a total of 130k downloads on both stores. Quick napkin math (including the 4 registered users to one membership) suggests Supernatural is pulling in almost $7.5M ARR

(N.B. This assumes all users are on a monthly subscription and does not include the churn data post 30 day free trial. Modest estimations of 40% churn would still yield $4.5M ARR)



$7.5M ARR

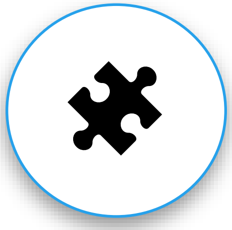
Supernatural iOS US app downloads from October 2020 - July 2021

5 What's Next?

The Next $1B Opportunity in Content: RPG, Narrative-Heavy VR Games

The largest up-and-coming segment 'Story Seekers' are split evenly between men (47%) and women (53%)

Segment	VR Target	US Gamer Pop (millions)	US Gamer Pop (percentage)
Dedicated Gamer	☑ ☑ ☑	21	18%
Play-to-Win Gamer	☑ ☑ ☑	13.2	11%
Steady Gamer	☑ ☑ ☑	7.6	6%
Participant Parent	☑	10.4	9%
Story Seeker	☑	**27.7**	**23%**
Bench Player	🚫	25.6	21%
Time passer	🚫	12.4	12%



49% Puzzle

Top Games Played by Story Seeker segment

47% RPG

Source: Oculus VR, 2019 Gamer Segmentation Study

- Story Seekers are primarily solo players because their preferred games are about problem-solving, escapism, and exploration—inherently solo experiences.

- To sell this audience on VR, there needs to be a focus on how it helps players escape from reality and visit new worlds. VR takes RPG, fantasy, and narrative games to a whole new level.

- Story Seekers are estimated to be the largest segment of the US gamer population at 23% (27.7 million)

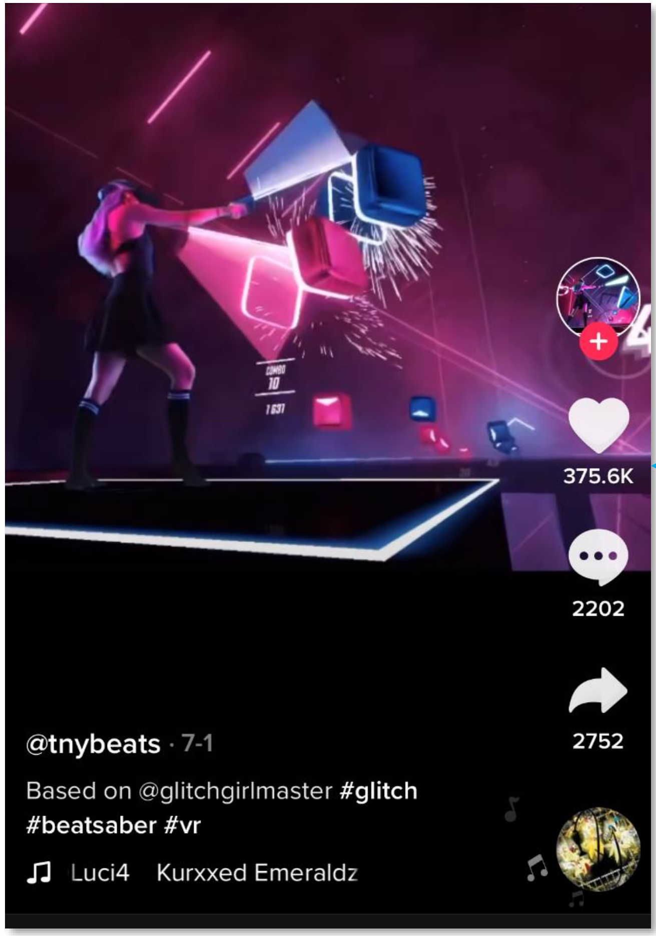
VR

AR

6 Status Quo

VR Content Consumption Increases Across Incumbent Social Media

As 6DOF VR enters the mainstream, VR viewership on third-party platforms increases



LIV	x	YouTube	1,3bn views
LIV	x	TikTok	1,2bn views
LIV	x	facebook	1bn views

- Merging the virtual and the real world mixed reality platforms such as LIV sees 30k hours of UGC content created per month with lots of potential for growth as it launches on mobile (Android & iOS), Oculus, PSVR.
- While MR content creation is currently popular with VR rhythm games, as other genres continue to grow in popularity (and other metaverse social worlds port to VR), we expect the demand for more collaborative and competitive VR content to increase further.

@tnybeats: ~8M views

@phiabunny: 100k subs

- Many of VRChat's personalities have become VTubers to expand their horizons in gaming and content creation
- Vtuber views grew to over 1.5B views per month by October 2020.

6 What's Next?

Is VR Esports Coming?—We Believe It's Just a Matter of Time

Maturity: High

Maturity/ Mass-market readiness

Esports-Ready VR Content	Sizable Player Base	Broadcasting (Fanbase)	VR Leagues + Teams	Sponsoring & Media rights
• Competitive games with high replayability that are fun to watch, provide the foundation for VR to take off as an Esport • There are a few games, especially FPS titles (e.g. Blaston, Population One, Onward), with the potential to become the first VR Esports hits	• Better content has the potential to lead to higher player numbers • Increased competition among players may lead to higher professionalization and skill cap of games • At the same time, a more sizable ecosystem can allows for new business models (e.g. shift from premium purchases to F2P gaming)	• Another prerequisite is the broadcasting of content, which can allow players to become fans and support their favorite creators • Popular streamers have used Twitch to stream VR content, but there will be additional platforms for actual VR viewing	• Once a sizable player and fan base has been reached, leagues and teams will likely be formed • Initial attempts, e.g. VR League by ESL, VRML or CVRE, have been scaled back due to lack of interest in the past	• Due to the insufficient size of the overall ecosystem, sponsors have been reluctant to invest into VR so far • Once a critical mass has been reached, there may be plenty of companies—especially those already involved in esports—using VR to promote their brand

We expect VR Esports to come to fruition over the next 3-5 years