

EMERGING TECH RESEARCH

Vertical Snapshot: The Metaverse



2022



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Executive summary

What is the Metaverse?

This ostensibly simple question has sparked fierce debate, the terms of which neatly illustrate the chasm between technology evangelists and cynics. It's also the question that underlies this report, for the Metaverse must be defined, contained, and contextualized before its merits and flaws can be properly understood. Though this snapshot offers a perspective on the development of the Metaverse, it does not claim to be the end of the story. Because the Metaverse is an evolving technical and cultural concept, it is guaranteed to change.

In outlining the core components of the Metaverse and highlighting the conceptual underpinnings, this report aims to demonstrate how both advocates and skeptics conceive of a more immersive digital future, how the Metaverse may differ from the contemporary internet, and how aspiring entrepreneurs and venture capitalists hope to capitalize on its emergence.

First, a definition:

The Metaverse is the internet, iteratively evolved to incorporate Web3 principles regarding the devolution of user data, novel technologies aimed to improve usability and immersion such as augmented reality/virtual reality (AR/VR) headsets, and greater interoperability built atop more open standards and [blockchain technology](#).

Because said evolutions have yet to pass, the Metaverse doesn't fully exist today. This explains exactly why the term is the subject of such intense excitement and derision; advocates and detractors don't yet agree on its key components, how it should differ from the modern internet, or even whether it should come to pass at all.

We view the Metaverse as inevitable. The evolution of computers and networking has consistently focused on creating efficacious digital representations of physical reality. Email, one of the internet's early success stories, simply computerized a centuries-old capability, significantly enhancing its value proposition in the process. Today, the Metaverse aims to take this premise to new heights, leveraging a bevy of new technologies, including Internet of Things (IoT), blockchain, and VR, to more thoroughly bridge the physical and digital worlds. Music, industrial asset monitoring, office collaboration, social media—these experiences and the data they generate will be increasingly connected and accessible in myriad environments. Supercharging information's ubiquity is one step toward improving productivity and generating more compelling digital capabilities.

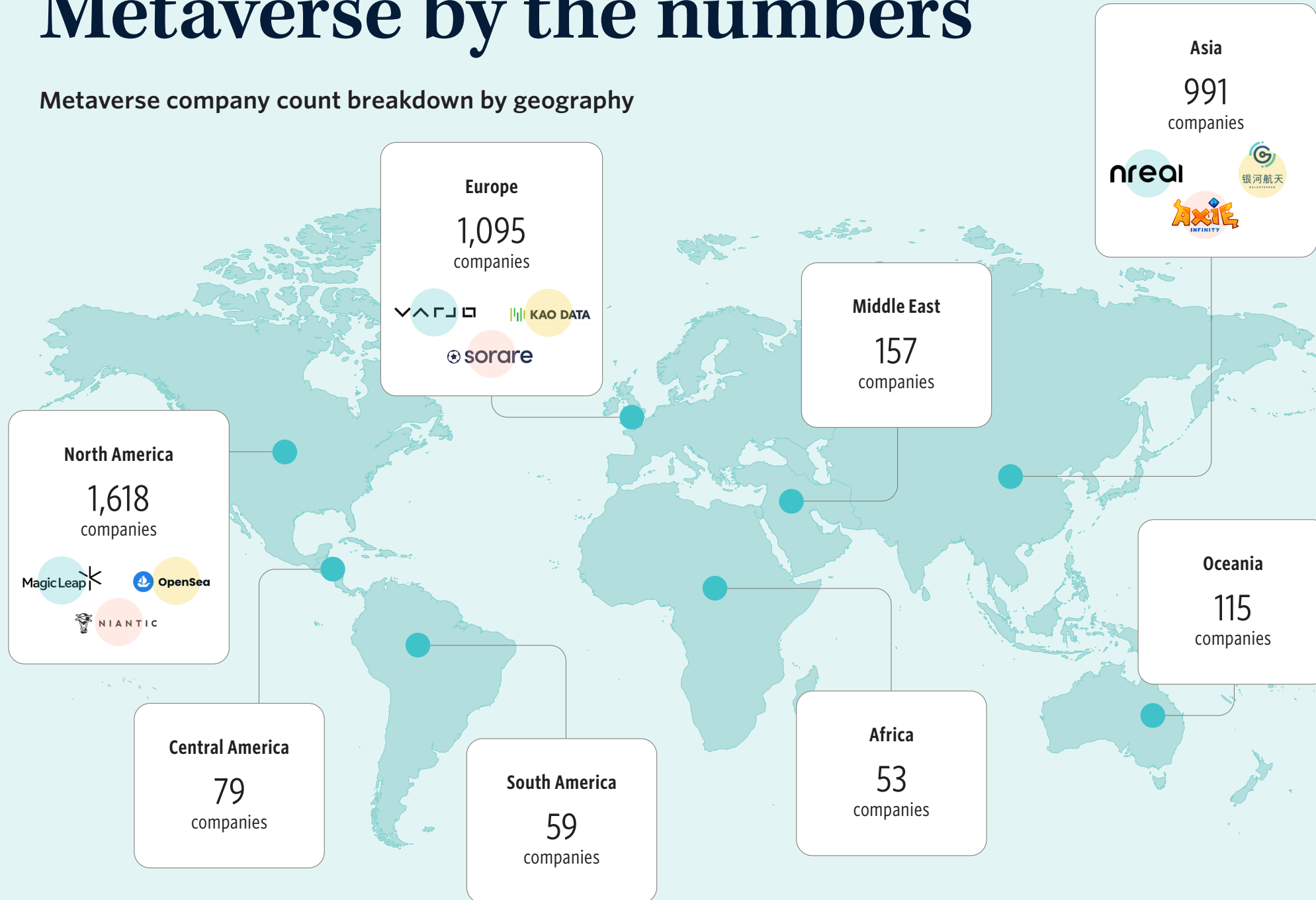
Whatever the Metaverse amounts to, it will always be an extension of the real world, not a replacement. Far from dystopian source material such as "Snow Crash" by Neal Stephenson or "Ready Player One" by Ernest Cline, the actual Metaverse will be inextricably connected to and in conversation with real-world developments, not a place to become untethered from reality. While digital-centric content will certainly exist and indeed proliferate, key principles of the Metaverse such as interoperability and inclusivity suggest that digital silos will be hard to maintain and unlikely to be desired by consumers.

The nascent Metaverse opportunity comprises almost 3,400 companies that have raised \$47.0 billion in venture capital (VC) since 2018. The Metaverse umbrella is expansive, given how many potential segments of activity it purports to touch and the infrastructure and hardware it will take to achieve such ambitions. This report explores those dimensions across the pillars of access, infrastructure, and experience—dimensions that capture the challenges that entrepreneurs and business executives will have to face as they ponder the future of the internet.



Metaverse by the numbers

Metaverse company count breakdown by geography



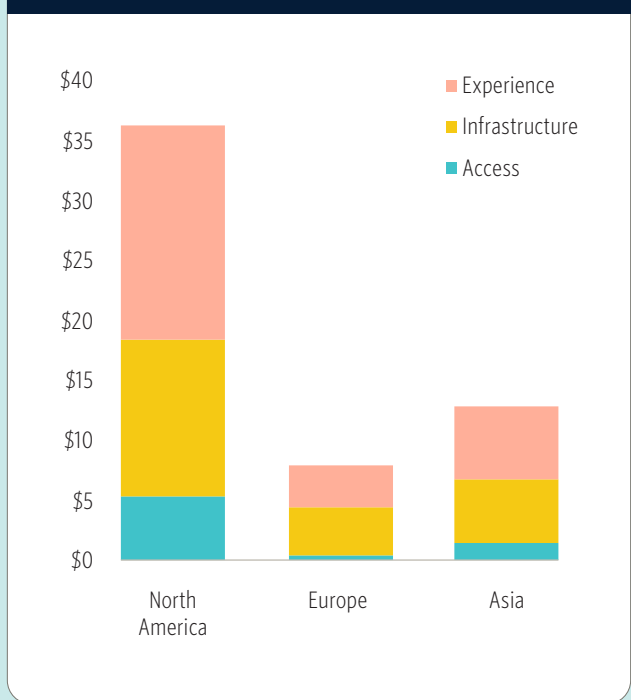
3,327
companies

12,247
investors

9,661
deals

\$115.5B
raised by VC-backed
companies since 2010

Metaverse VC deal value (\$B) by segment for top 3 geographies*



Source: PitchBook | *As of June 30, 2022



Defining the Metaverse

Though the term “Metaverse” has increasingly penetrated the public lexicon, arguments over its meaning and relevance betray frighteningly little consensus about what it is or why it’s important. The following pages aim to tackle this challenge, providing context around the aspirational principles that Metaverse visionaries typically espouse, as well as examining challenges to said principles, which threaten to derail utopian ambitions. In doing so, this report does not intend to pick winners and losers, but rather to establish productive boundaries around the topic to promote more insightful and meaningful analysis.

The aspirational Metaverse: Goals, rules, and limitations

The aspirational Metaverse is so named because it rests upon near-utopian visions of how the internet could evolve if it was built outside the confines of governmental or capitalistic

interference. While specifics and priorities may vary, it is possible to extract some broad rules based on the work of two key Metaverse thinkers, Matthew Ball¹ and Tony Parisi.² The graphic below adapts Parisi’s seven “rules” and Ball’s seven “attributes” and thus they may differ from their originals. Although even ardent proponents of the Metaverse can admit to the principles’ limited practicality, they are a useful starting point to appreciate the direction of Metaverse development. Just as revolutionary rhetoric often attempts but never perfectly serves to guide successive governments, the principles of the aspirational Metaverse hope to serve as a touchstone for all future Metaverse growth, regardless of the real-life complications that will inevitably arise.



1: “The Metaverse: What It Is, Where to Find It, and Who Will Build It,” [Matthew Ball.vc](#), Matthew Ball, January 13, 2020.

2: “The Seven Rules of the Metaverse,” [Medium.com](#), Tony Parisi, October 22, 2021.



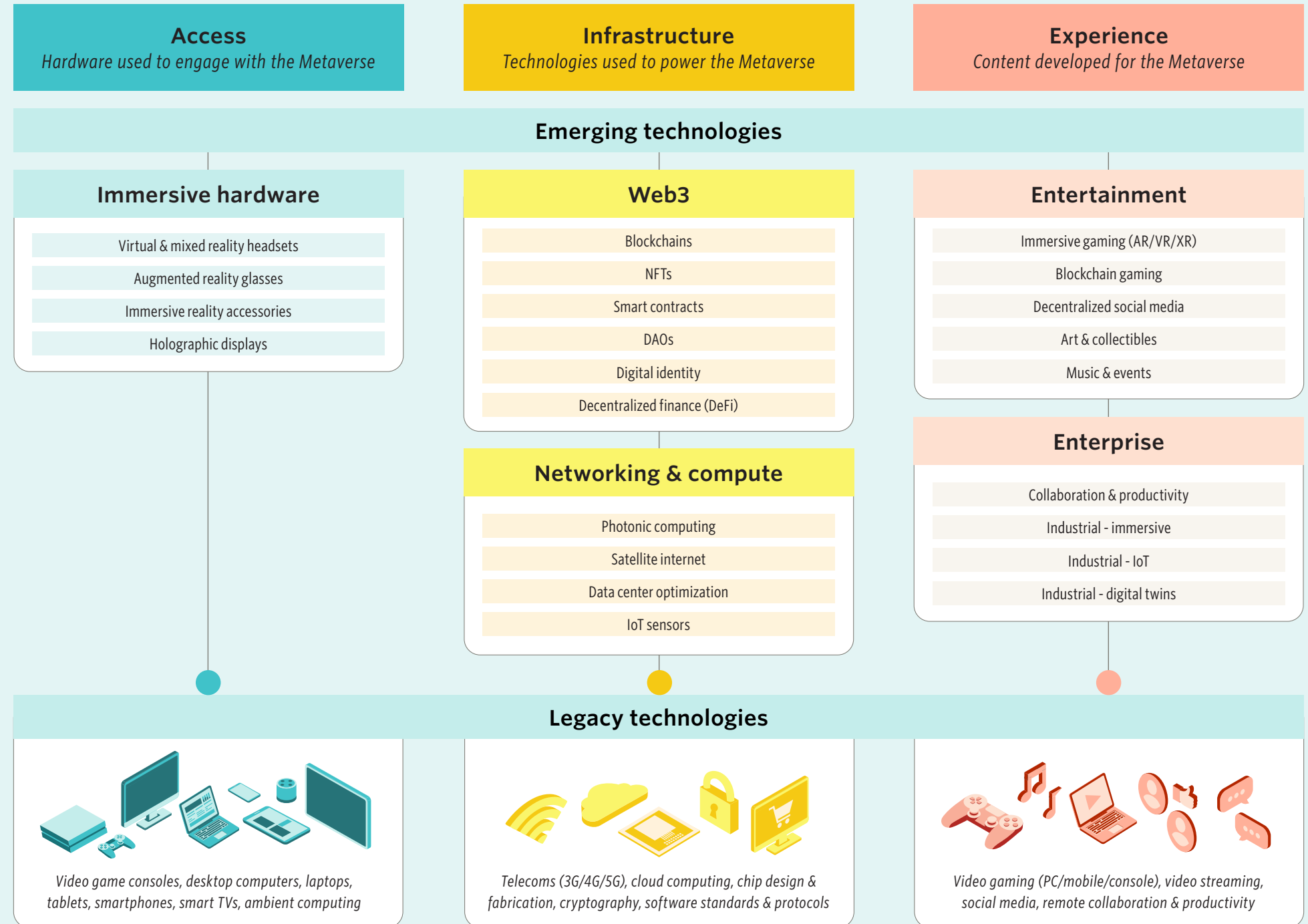
DEFINING THE METAVERSE

A Framework for the Metaverse

Companies aren't so much building *the* Metaverse as they are contributing pieces to the larger ecosystem. This framework disaggregates the Metaverse into its three core components: access, infrastructure, and experience. For the most part, VC-backed companies in this space are building products and services that target one of the three pillars. Larger public companies, notably Meta, have invested into multiple pillars at once.

Emerging technologies: Emerging technologies represent the forefront of innovation, comprising nascent technologies and uncertain bets that have attracted significant VC. They are the focus of this report.

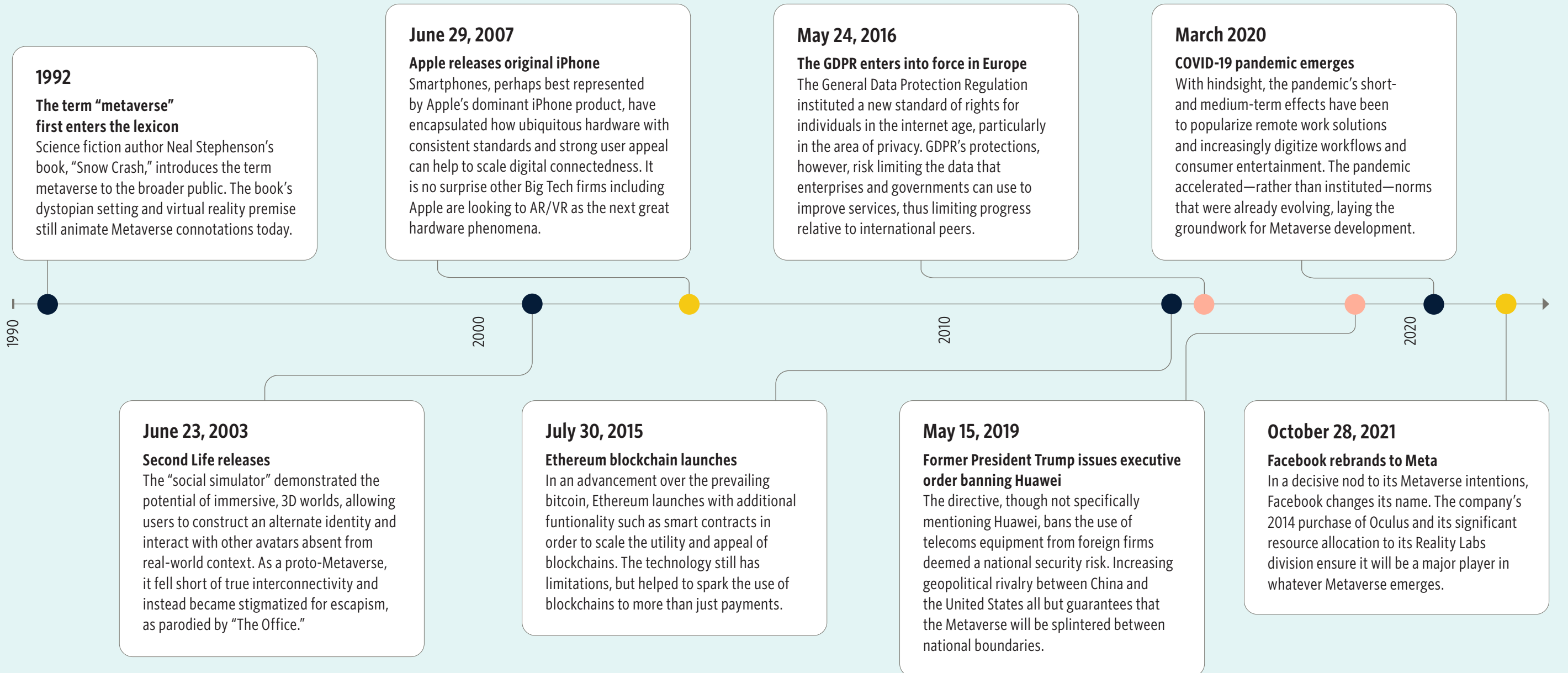
Legacy technologies: Legacy technologies were foundational for building out the internet, and will continue to be crucial for the Metaverse. Given the significant degree of technological maturity, legacy technologies are subject to far less venture investment, and thus will not be a focus of this report.





Metaverse timeline

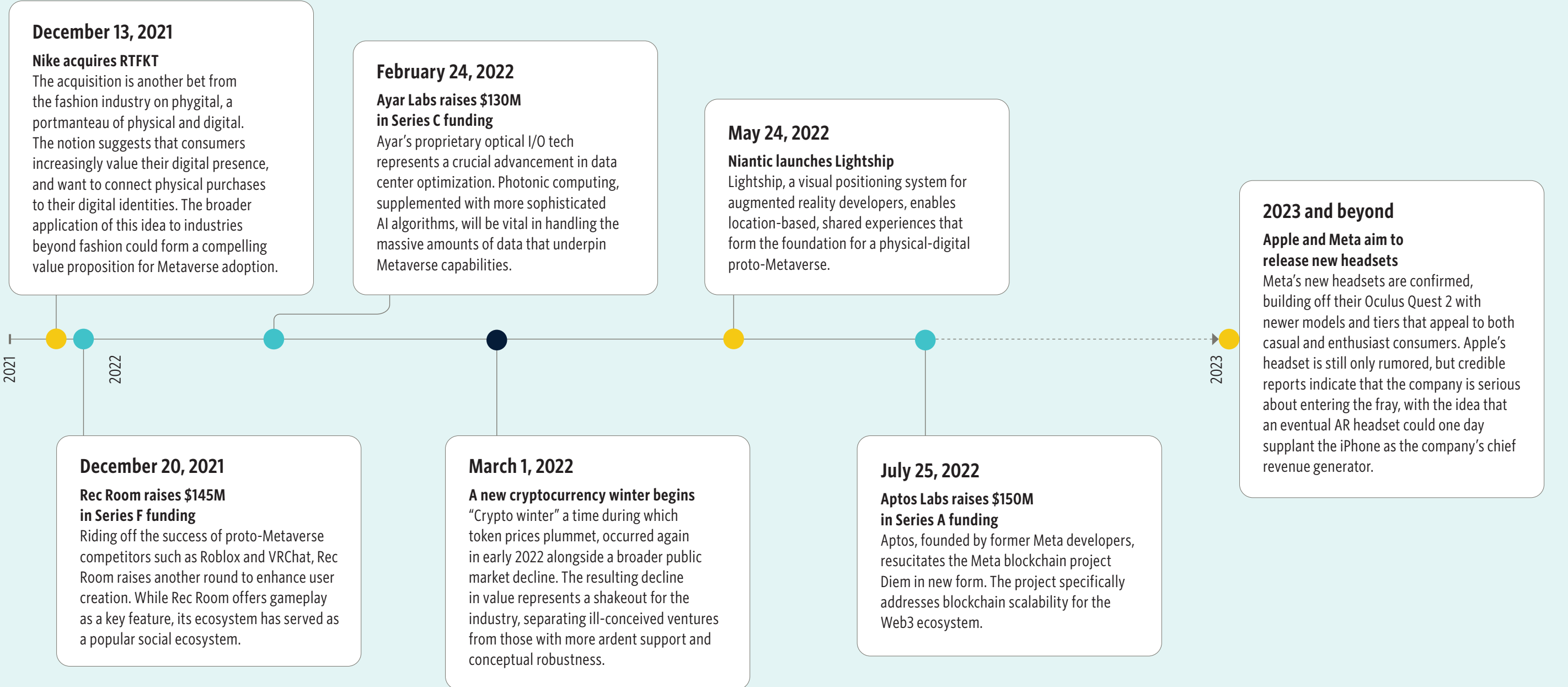
● Background ● Corporate activity ● Regulation ● VC funding





METAVVERSE TIMELINE

● Background ● Corporate activity ● Regulation ● VC funding





Industry outlook and drivers

Younger, digitally native generations are shifting cultural expectations of the internet.

Mainstream society typically attributes technological know-how and sophistication with those below the age of 30. What parent hasn't asked their kid how some new-fangled tech device works? Though much of this perception is based in reality, it is often lost on such observers that the Web 2.0 era was built largely by Gen X and baby boomers, who were coming into their prime working years during the 1990s, when personal computing and the internet was just taking off. People in this age demographic built some of the first large internet businesses, shaping consumer expectations around now commonly accepted norms such as the subscription internet, e-commerce, and software as a service (SaaS).

However, there is often a stark demographic difference between creators and consumers, especially in areas of the internet that tend to skew younger, such as video gaming and social media. Today, most millennials have entered the workforce, with some already rising to more senior roles. Right behind them, the first wave of Gen Zers are beginning to enter the workforce, surprising even millennials with their unique tech culture and expectations as arguably the first digitally native smartphone generation.

The internet's increasing infrastructural footprint and growing presence in society mean that it has gone from novel privilege for children of the 1990s to "human right" for children of the 2020s. During the pandemic, Roblox estimated that 75% of US-residing nine- to 12-year-olds were playing its game.³ All this amounts to shifting attitudes about the role of the internet and its importance in society. Digitally native generations are more likely to expect less friction between digital experiences, having been used to successively more feature-rich and integrated software throughout their lives.

³: ["How Roblox Became the 'It' Game for Tweens - and a Massive Business," CNN, Shannon Liao, October 29, 2020.](#)

Moreover, internet interactions possess increased social importance among younger generations. 56% of Gen Zers claim to be friends with someone they know only via online interaction.⁴ Removing barriers between online interactions, the native language of Gen Z, will grow in importance as this generation matures and becomes the dominant consumer. Digital services that channel these digitally native demands will prove immensely popular and displace legacy business models that appear outdated or unfair to younger consumers. A useful analog for this is streaming bundles. While they bear some resemblance to cable television packages, the crucial innovation has been to insert a greater degree of consumer choice by allowing users to cancel specific unwanted services, rather than be held hostage to an all-or-nothing business model. This is just one example of the increasing value put on convenience and consumer choice, driven by digital trends. There is no going back to the old ways.

Interoperability, not immersion, will be the defining feature of the Metaverse. Images of a theoretical Metaverse immediately conjure a VR headset, probably because of the term's sci-fi roots, but also likely because virtual reality most viscerally exemplifies the potential for sophisticated, interconnected digital ecosystems. Focus spent on the appeal of VR as a next-generation platform has, however, detracted from the more compelling promise of the Metaverse: interoperability. Sci-fi visions of endless worlds packed with diverse experiences are compelling precisely because they infer that barriers to communication and portability are significantly reduced or eliminated altogether, thereby making such experiences as seamless as real life.

Interoperability is also novel, whereas immersion is not. To take a longstanding example, higher visual fidelity in video games has consistently improved the immersion felt by players in a game; but it has not fundamentally changed how video games play. Those innovations have come from

⁴: ["Generation Influence: Gen Z Study Reveals a New Digital Paradigm," Businesswire, July 7, 2020.](#)



INDUSTRY OUTLOOK AND DRIVERS

better game design, new business models, and occasionally new hardware. Interoperability, by contrast, offers the potential for far greater utility and innovation. To take a minor example again from the video game industry, making games cross-platform didn't fundamentally change the game experience, but it did radically enhance the value proposition of games, thus making them more fun simply because there were more people with whom to play.

To extend these examples to the broader Metaverse, interoperability presents developers with a way to develop functionality that makes use of a more comprehensive set of standards and data, thus improving the chances of more innovative, sophisticated use cases emerging. Immersion, rather differently, improves the quality of an individual experience. A more immersive way to watch sports, for example, may draw millions of new users. But it is not the Metaverse if that experience is not connected seamlessly to sports forums, social media, merchandise, and gaming.

Blockchain stumbles threaten the Metaverse's biggest aspirations. Much of the potential for the Metaverse depends on technological innovation, particularly in the promise of blockchains to securely and transparently store information in a decentralized manner. While such an achievement would no doubt enable a paradigm shift regarding data ownership, blockchain enthusiasm has waned as the technology has encountered numerous obstacles in its path to broader adoption.

At present, blockchain's two main problems lie with utility and cybersecurity. On the utility front, blockchain's chief use case until now has been payments, which have failed to secure broader trust and adoption. Bitcoin, by far the most popular and valuable token, remains volatile and of

questionable worth to investors, whose theories about its importance change with each boom and bust. Looking to the broader Web3 ecosystem, core use cases have involved NFTs and the sale of digital art and collectibles. Here, too, initial enthusiasm has faded, and NFT marketplaces have seen activity plummet. Unique NFT transactions on OpenSea, one of the largest NFT marketplaces, have struggled to break 75,000 per day as of June 2022, despite regularly eclipsing 150,000 per day prior to that point.⁵

For the average consumer, aversion to the cryptocurrency ecosystem is often reinforced through high-profile stories of major hacks, which have become commonplace. A \$100 million breach of blockchain Harmony in June 2022 was merely the most recent in a string of hacks over the past few years that have targeted blockchain "bridges," which aim to improve interoperability by enabling easier transfer of tokens across blockchains.⁶ Without bridges, blockchains would resemble Web 2.0 ecosystems, each siloed and offering a unique suite of services. There is hope that through increased security and greater cooperation from governmental authorities, security will improve. Until it does, blockchain ineptitude is holding back Metaverse potential.

Augmented and virtual reality will supercharge Metaverse capabilities, but the technology is still immature. The Metaverse conversation remains abstracted because there isn't a new, killer piece of hardware to properly demonstrate 3D, immersive capabilities. True VR headsets have been around for some time, but they are still far from their potential, held back by issues of component miniaturization and cost. Augmented reality is even more distant, held back by even more sophisticated engineering challenges and consumer skepticism about wearing bulky electronic headgear.

5: "Is the NFT Boom Over? Trading Volumes Hit 12-Month Lows," *CryptoBriefing*, Timothy Craig, July 27, 2022.

6: "Hackers Steal \$100 Million by Exploiting Crypto's Weak Link," *Bloomberg*, June 23, 2022, Olga Kharif, Sidhartha Shukla, and Emily Nicolle.



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Despite these current challenges, the pipeline for mixed reality technology is strong, with all the major Big Tech companies investing heavily in the space. The hardware battle is likely to be most intense between Meta and Apple, the former of which has a head start through its Oculus acquisition in 2014, and the latter of which has been all but confirmed to be working on a headset due for release sometime in the next couple of years.

Attitudes regarding mixed reality experiences have been informed largely by video game content, but significant strides have also been made in the enterprise space, with clients such as construction firms, hospitals, and even the US military embracing the new technology. Given their focus on immersion, these headsets will allow users to experience content more viscerally, thus increasing the degree of information ingested and sense of connectedness to the digital ecosystem. On average, people are already spending almost five hours daily on their phones, a demonstration of how addictive a compelling piece of hardware with a mature app ecosystem can be.⁷ Early mixed reality usage is unlikely to see the same level of addiction, largely due to an immature content and usability ecosystem and a stigma against wearing a headset for long periods of time or in public. Given the power of immersion, however, as such technology matures to become more sleek, powerful, and comprehensive, and as consumer sentiment changes as younger generations more readily embrace an immersive world, AR/VR remain the most compelling platforms of the future.

Decentralization is an ethos, not a promise. Advocates of blockchain have consistently lauded the technology's potential to decentralize ownership away from big corporations, using mechanisms such as token economics and decentralized autonomous organizations (DAOs) to devolve power back to users. As the blockchain ecosystem has grown, skeptics of this mantra have

been quick to point out that, so far, ownership among blockchain advocates looks to be more of the same, with venture capitalists and founders retaining enormous shares of equity and revenue. This is a fair criticism, and it does indeed appear that many functions in the cryptocurrency space, such as NFT marketplaces, will at least start out centralized.

Is this then a betrayal of the decentralization promise? Not exactly. While near-term development may hew closer to the Web 2.0 world, the underlying infrastructure and technology that these firms are developing will help to enable a less centralized world.

Moreover, pure decentralization should not be the end goal. Proprietary solutions can move faster and scale more quickly than public ones. Such rapid innovation should continue to be incentivized, with economic rewards for entrepreneurs. The key difference, however, is that consumers have much more flexibility to switch ecosystems. This means that a company's moat is not simply a network effect, but rather a continuous series of innovations regarding user experience and services rendered. In this world, it is possible that business lifecycles are much shorter, unable to sustain momentum as creativity fades, which would probably be good for society. Early innovation would still be rewarded monetarily, so founders couldn't complain of hard work with no payout. And consumers would be best off, continuously rewarded with new technology and updates.

Corporate incumbents will co-opt Metaverse momentum in the short term, but face long-term disadvantages. With no agreed-upon central thesis to guide Metaverse development, and with relatively little economic power vested with Metaverse enthusiasts, what happens to the cultural notion of the metaverse is unsurprisingly going to be influenced most by those who already have the most economic power and influence, Big Tech firms. The process has already begun, with

⁷: ["People Devote a Third of Waking Time to Mobile Apps," BBC, Jane Wakefield, January 12, 2022.](#)



INDUSTRY OUTLOOK AND DRIVERS

Facebook renaming to make its parent company Meta, and executives such as Satya Nadella of Microsoft embracing the term through mention of an “enterprise Metaverse.”⁸

Thus, the first wave of Metaverse projects will inevitably focus on consolidating expansive corporate ecosystems, with a nod to interoperability. Microsoft is the best example, given its presence in entertainment, office productivity, and cloud computing. While these branches have traditionally been separate, the company is increasingly looking for ways to connect its various operations for a more cohesive user experience. This kind of cross-application functionality plays off the notion of interoperability, as users can expect to find deeper integrations between areas such as messaging and productivity. True interoperability will not be prioritized, however, as companies have no incentive to incorporate large-scale data from outside vendors—outside the rare partnership such as Microsoft’s recent agreement with Discord on Xbox.

Such a state should inject new life into these firms, but it will also spell the beginning of the end of Web 2.0 dominance. Once the nod to interoperability begins, consumer expectations will follow. While mega-ecosystems controlled by Microsoft, Google, Meta, and Apple will have first-mover advantage and be best resourced, blockchain projects that promise greater degrees of flexibility with equal or better functionality will arise over time. It is unlikely that these firms will be able to acquire their way out of competitive innovation this time around, given the immense emphasis being put on antitrust regulation after the Web 2.0 era. Moreover, attempting to adopt blockchain technologies themselves will fail if these firms are half-hearted about it, but will be a success for the broader ecosystem if Big Tech fully embraces them.

8: “Microsoft’s Metaverse Plans Are Getting Clearer With Its \$68.7 Billion Activision Acquisition,” *CNBC*, Tom Huddleston Jr., January 19, 2022.

In any case, Microsoft appears to be the key company to watch during this next era of Metaverse innovation, not simply because of its many-tentacled presence throughout gaming and enterprise, but also because of its more recent attempts and ethos to “play nice with others.” The company appears to recognize that cooperation rather than isolation can lead to very positive results for consumers, as well as for the corporate bottom line.

Mental health concerns threaten Big Tech’s dreams for the Metaverse. Expanded usage of smartphones has presented a conundrum for social psychologists and mental health advocates looking out for the welfare of today’s digitally active kids and teens: What to make of social media’s impact? Many have demonized social media, which often goes hand in hand with cyberbullying, as harmful to teenagers’ self-image. Facebook’s recent studies—the controversial subject of a US Senate inquiry—revealed that teens who struggle with mental health issues felt Instagram use worsened the problem.⁹ However, the same research revealed that many teens found Instagram to be a fortifying source of support when dealing with common adolescent issues. Researchers and numerous studies tend to agree that there is no direct causal link between social media and mental health, and that the relationship may work for both the positive and the negative, depending on extraneous factors such as age, sex, and event.

This does not mean that Big Tech firms are off the hook for assessing the impact of their technology on today’s youth—and society at large. At the extremes, a lack of content moderation has been blamed for inciting genocide in places such as Myanmar, pointing to the extreme ability of social media to rile emotions that lead to real, tragic outcomes.¹⁰ Even in more banal cases,

9: “Facebook’s Documents About Instagram and Teens, Published” *The Wall Street Journal*, September 29, 2021.

10: “A Genocide Incited on Facebook, With Posts From Myanmar’s Military,” *The New York Times*, Paul Mozur, October 15, 2018.



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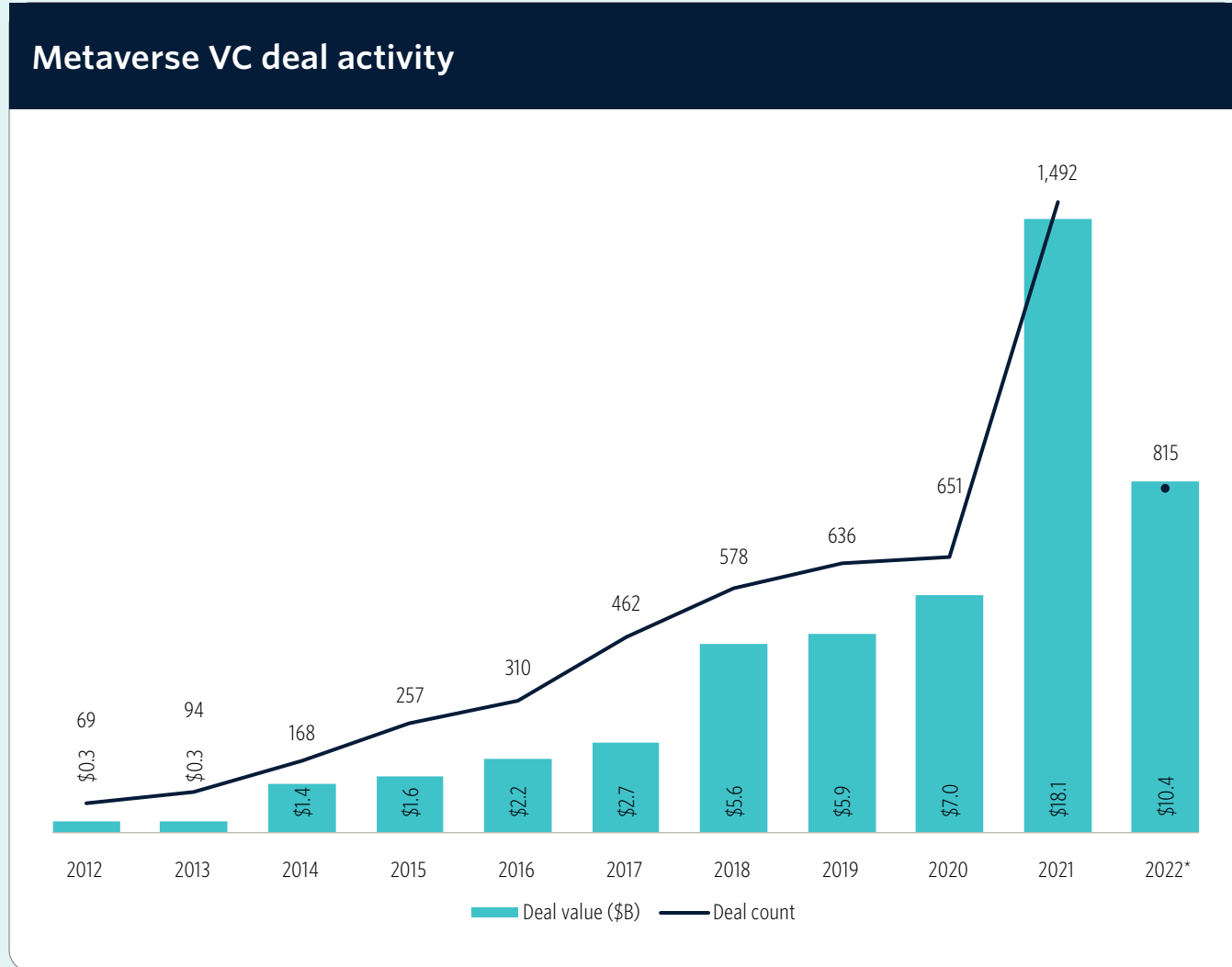
such as the innovation of the “infinite scroll,” social media has deteriorated attention spans and oversimplified nuanced topics. As dystopian Metaverse source material has already suggested, more immersive technology could enable healthier interaction between individuals, but it could also be rife with escapism and extreme content that the real world can’t easily provide.

The outcome will hinge largely on Big Tech firms and how they self-moderate in the Metaverse era, along with regulation that may be imposed upon them by increasingly technophobic governments. Given Meta’s internal research and the public firestorm around it, Big Tech firms can no longer plead ignorance about the potential of their products to inflict real harms on consumers. Such scandals not only attract the attention of government regulators, but they also discourage consumers from using their products, thereby hurting the bottom line. Big Tech firms, highlighted by Meta, are pivoting how they develop and market social media products, emphasizing transparency and mental health effects. Whether these changes will convince consumers is unclear, but the fact that these conversations are now normalized and scrutinized is a net benefit to society.

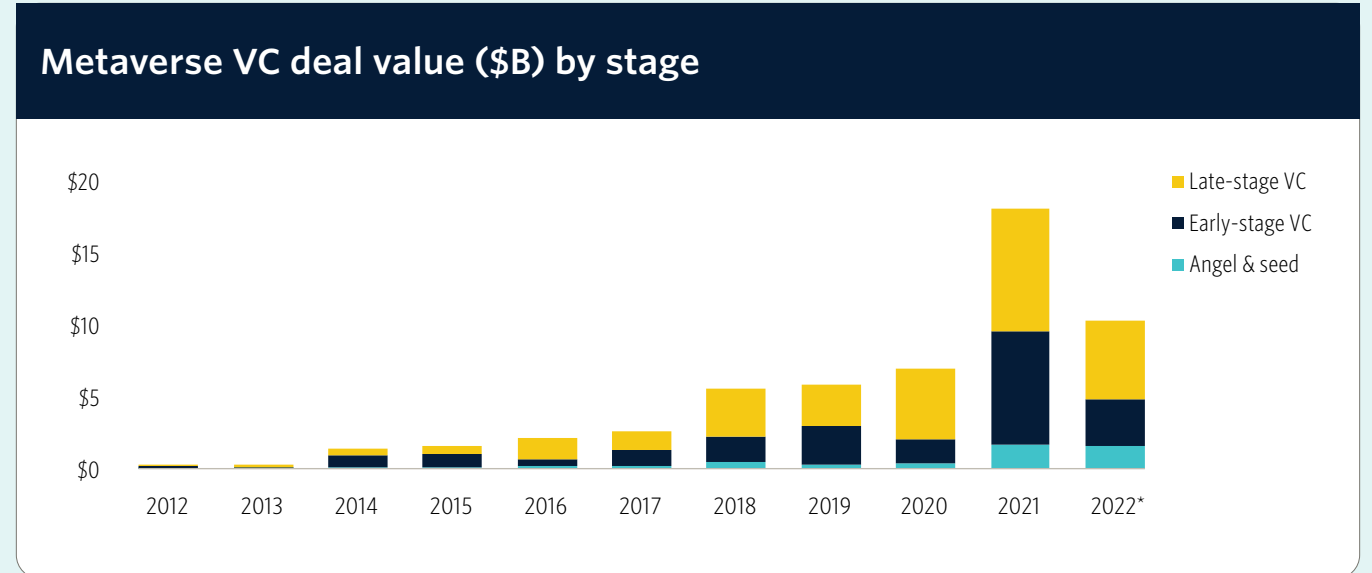
A Metaverse that meaningfully prioritizes interconnectedness and context is more likely to result in positive outcomes for users. A Metaverse that prioritizes immersion and addiction, by contrast, is likely to be beset with the same problems that bedevil today’s social media firms. Given the immense advertising revenue at stake, it would be sensible to not trust Big Tech firms to properly self-moderate, even despite recent scandals and public pushback. Government action will likely be necessary to set clear rules for social media firms, setting standards around content moderation, advertising to children, and privacy. Parents of today and the near future, knowing the harms that unconstrained digital interaction can inflict, will likely be hesitant to allow their children unfettered access to immersive worlds. Big Tech executives should take note.



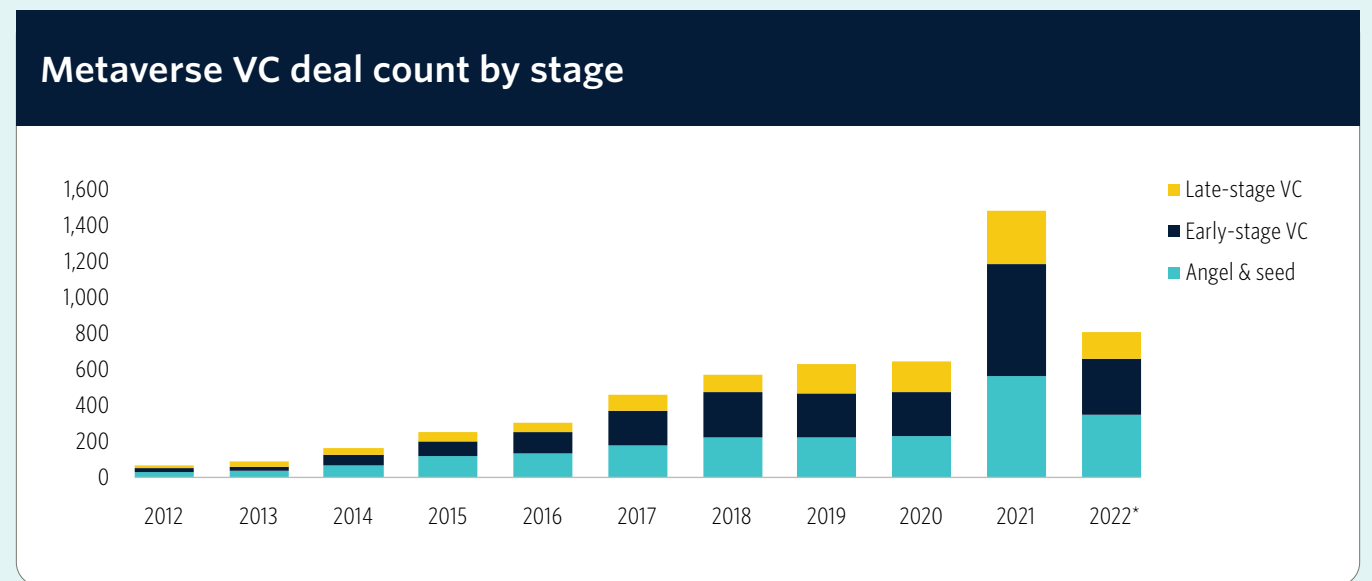
VC activity



Source: PitchBook | Geography: Global | *As of June 30, 2022



Source: PitchBook | Geography: Global | *As of June 30, 2022



Source: PitchBook | Geography: Global | *As of June 30, 2022



VC ACTIVITY

Notable Metaverse VC deals*

Company	Close date	Deal size (\$M)	Country	Subsegment
Magic Eden	June 21, 2022	\$130.0	US	Web3
Rario	April 21, 2022	\$120.0	Singapore	Sports NFTs
Axie Infinity	April 6, 2022	\$150.0	Vietnam	Blockchain gaming
Rokid	March 20, 2022	\$110.4	China	VR headset
O(1) Labs	March 17, 2022	\$92.0	US	Web3 infrastructure
Aptos Labs	March 15, 2022	\$200.0	US	Blockchain
Ayar Labs	February 24, 2022	\$130.0	US	Photonic computing
Sire	February 3, 2022	\$100.0	United Arab Emirates	Blockchain infrastructure
Phantom	January 31, 2022	\$109.0	US	NFT wallet
Helium	January 14, 2022	\$200.0	US	Blockchain

Source: PitchBook | Geography: Global | *As of June 30, 2022

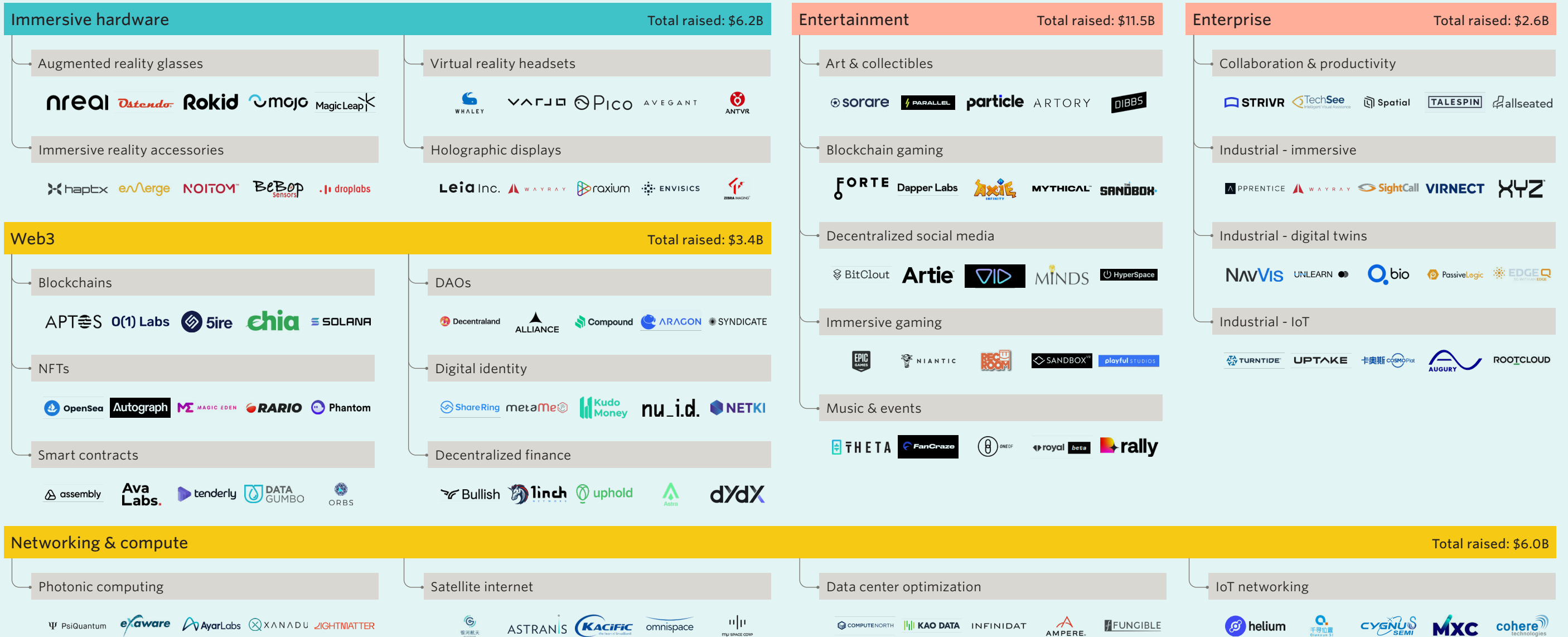


Metaverse VC ecosystem market map

- Access
- Infrastructure
- Experience

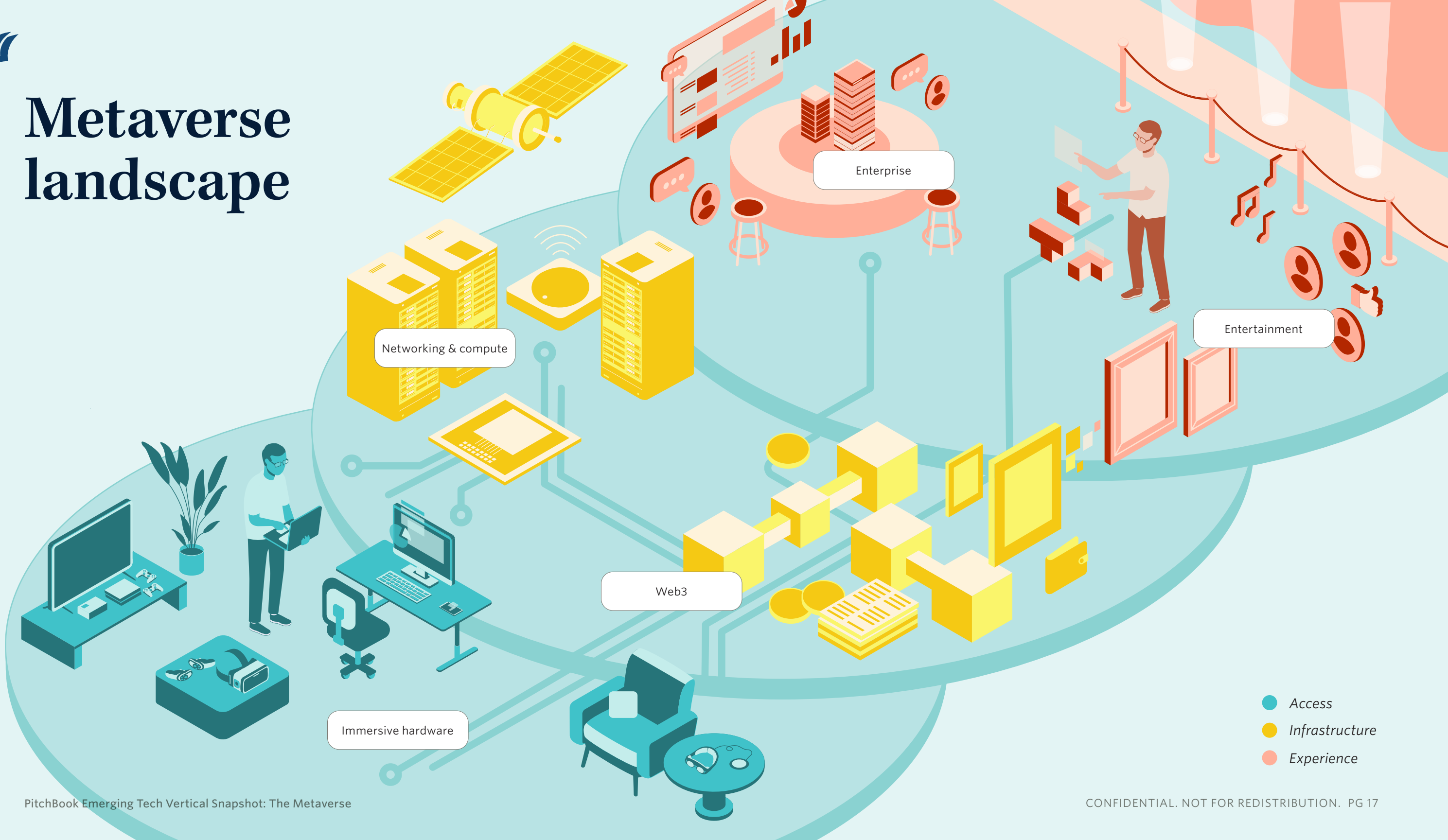
Click to view the interactive market map on the PitchBook Platform.

Market map is a representative overview of venture-backed or growth-stage providers in each segment. Companies listed have received venture capital or other notable private investments.





Metaverse landscape



- Access
- Infrastructure
- Experience







Metaverse taxonomy






Immersive hardware		
<i>Startups developing devices that display 3D, immersive content.</i>		
Virtual & mixed reality headsets	Startups developing VR and mixed reality headsets.	
Augmented reality glasses	Startups developing AR glasses.	
Immersive reality accessories	Startups developing supplemental hardware designed to be used in conjunction with AR/VR headsets. Such accessories include treadmills, haptics, controllers, and sensory equipment, among others.	
Holographic displays	Startups developing displays that can display 3D content on a 2D screen.	

Web3		
<i>Startups leveraging blockchain technology to disaggregate value creation and user data away from centralized stakeholders. Web3 startups aim to use blockchain to enable greater interoperability of data and more comprehensive features.</i>		
Blockchains	Startups developing novel blockchains using distributed ledger technology.	
NFTs	Startups developing software solutions such as developer tools, protocols, scalability, and interoperability solutions that aim to promote the usage and feature set of NFTs.	
Smart contracts	Startups developing smart contract software with the aim of promoting the automated settlement of legal contracts.	
DAOs	Startups developing software to manage DAOs, organizations that use smart contracts maintained on blockchains to govern interactions between users, group incentives and outputs, and membership conditions.	
Digital identity	Startups developing digital identity solutions using blockchain technology that aim to facilitate more trusted transactions.	
Decentralized finance (DeFi)	Startups developing financial services that enable transactions without the need for a centralized intermediary.	







METaverse TAXONOMY

Networking & compute		
<i>Startups developing communications and processing innovations that help to enable faster and more seamless transfer of data around the world.</i>		
Photonic computing	Startups developing computers that use light to transmit data instead of electrons, typically using lasers.	
Satellite internet	Startups contributing to the expanding satellite internet ecosystem, either through operating satellites, managing ground stations, or enabling satellite infrastructure.	
Data center optimization	Startups developing improvements to modern data centers in order to increase data throughput.	
IoT networking	Startups designing and developing IoT sensors.	

Entertainment		
<i>Startups developing consumer-oriented content for use in the Metaverse.</i>		
Immersive gaming (AR/VR/XR)	Startups developing games for the immersive headset market.	
Blockchain gaming	Startups integrating aspects of blockchain technology into video games in an effort to alter gaming business models and increase player agency.	
Decentralized social media	Startups integrating blockchain technology into social media experiences and apps.	
Art & collectibles	Startups in this category are developing NFT products that facilitate the exchange of physical and digital art.	
Music & events	Startups developing experiences tailored around music or events, often integrated with blockchain functionality.	



METaverse TAXONOMY

Enterprise		
<i>Startups developing business-focused content for use in the Metaverse.</i>		
Collaboration & productivity	Startups developing office software designed to enhance collaboration and productivity through more immersive and interoperable software.	
Industrial - immersive	Startups developing immersive experiences for industrial clients, typically in the areas of manufacturing, engineering, and construction.	
Industrial - IoT	Startups developing IoT solutions for industrial use cases such as site monitoring.	
Industrial - digital twin	Startups developing software for industrial clients that enables them to monitor physical assets in from a mirrored digital perspective.	



Key players

Key Metaverse angel & seed companies*

Company	Segment	Growth theme	Product focus	Geography	Total VC raised (\$M)	Last financing date
Fractal	Experience	Blockchain gaming	Web3 infrastructure	US	\$35.0	April 1, 2022
Iskra	Experience	Blockchain gaming	Web3 infrastructure	Singapore	\$34.4	April 5, 2022
Co:Create	Infrastructure	Web3	NFTs	US	\$25.0	May 10, 2022
Salience Labs	Infrastructure	Computing	Photonic chip	UK	\$22.5	May 12, 2022
Sempre	Infrastructure	Data centers	Edge connectivity	US	\$20.0	December 21, 2021
Conduit	Infrastructure	Decentralized finance	DeFi API	US	\$17.0	January 13, 2022
HyperSpace	Experience	Social media	Phygital	United Arab Emirates	\$11.5	November 17, 2021
Superdao	Infrastructure	Web3	DAO tooling	US	\$11.5	January 26, 2022
LaCollection	Experience	NFTs	Art	France	\$10.1	February 17, 2022
Condense Reality	Experience	Metaverse	Events	UK	\$9.6	July 28, 2022

Source: PitchBook | Geography: Global | *As of June 30, 2022



KEY PLAYERS

Key Metaverse early-stage VC companies*

Company	Segment	Growth theme	Product focus	Geography	Total VC raised (\$M)	Last financing date
Assembly Networks	Infrastructure	Web3	Smart contracts	Germany	\$118.0	December 10, 2021
Lightmatter	Infrastructure	Computing	Photonic chip	US	\$113.0	May 6, 2021
Pixel Vault	Experience	NFTs	Collectibles	US	\$100.0	February 2, 2022
The Sand Box	Experience	Blockchain gaming	Game-making tools	Malta	\$93.0	October 28, 2021
Moralis	Infrastructure	Web3	Dapp infrastructure	Sweden	\$53.4	May 11, 2022
Enya	Infrastructure	Web3	Ethereum scaling	US	\$48.1	April 5, 2022
Ramen VR	Experience	Immersive gaming	VR game	US	\$45.2	March 17, 2022
iQUT	Access	VR	VR headset	China	\$14.2	January 26, 2022
Obsess	Experience	Retail	Metaverse shop	US	\$13.5	July 22, 2022
Inmo	Access	AR	AR glasses	China	\$10.0	May 16, 2022

Source: PitchBook | Geography: Global | *As of June 30, 2022



KEY PLAYERS

Key Metaverse late-stage VC companies*

Company	Segment	Growth theme	Product focus	Geography	Total VC raised (\$M)	Last financing date
Epic Games	Experience	Immersive gaming	Game development & tools	US	\$6,360.0	April 11, 2022
Niantic	Experience	Immersive gaming	AR games & developer tools	US	\$780.0	November 22, 2021
OpenSea	Infrastructure	Web3	NFT marketplace	US	\$423.1	December 27, 2021
Compute North	Infrastructure	Computing	Server infrastructure	US	\$390.1	February 9, 2021
Rec Room	Experience	Social media	VR social app	US	\$294.4	December 20, 2021
Nreal	Access	AR	AR glasses	China	\$244.0	March 29, 2022
Mojo Vision	Access	AR	AR contact lenses	US	\$182.9	January 4, 2022
Figment	Infrastructure	Web3	Blockchain infrastructure	Canada	\$165.0	December 10, 2021
Apprentice	Experience	Immersive enterprise	Pharmaceutical AR	US	\$142.0	January 29, 2022
Emerge	Access	VR	VR tactility	US	\$31.4	April 9, 2022

Source: PitchBook | Geography: Global | *As of June 30, 2022



KEY PLAYERS

Notable Metaverse investors

Investor	Deal count*	Angel & seed	Early-stage VC	Late-stage VC	Investor type
AU21 Capital	111	44	65	2	VC
Coinbase Ventures	94	43	48	3	CVC
NGC Ventures	91	32	58	1	VC
Shima Capital	87	35	50	2	VC
Genesis Block Ventures	85	31	52	2	VC
Genblock Capital	80	36	43	1	VC
Andreessen Horowitz	80	17	51	12	VC
LD Capital	73	39	31	3	VC
Binance Labs	59	14	40	5	VC
Spark Digital Capital	59	21	38	0	VC

Source: PitchBook | Geography: Global | *As of June 30, 2022



KEY PLAYERS

Notable Metaverse investors (cont.)

Investor	Deal count*	Angel & seed	Early-stage VC	Late-stage VC	Investor type
DeFiance Capital	57	32	25	0	VC
Mechanism Capital	54	32	22	0	VC
Signum Capital	53	19	30	4	VC
Pantera Capital	53	18	31	4	VC
SkyVision Capital	51	27	23	1	VC
Alumni Ventures	51	18	19	14	VC
Hashed	50	16	27	7	VC
Polychain Capital	49	23	22	4	VC
Moonwhale	47	20	27	0	VC
Collab+Currency	46	20	21	5	VC

Source: PitchBook | Geography: Global | *As of June 30, 2022



Key acquisitions

Niantic acquired NZXR for an undisclosed amount on April 5, 2022.

In acquiring NZXR, a New Zealand-based outfit made up of former Magic Leap employees, Niantic continues to push its vision of a “real-world metaverse” distinct from the virtual reality environments pushed by the likes of Meta. NZXR’s familiarity with building AR experiences will fold easily into Niantic’s core expertise of making AR-enabled games. Niantic’s bet on a “real-world metaverse” is a wager that AR—not VR—will be the core technological foundation of the future internet. The belief is founded in VR’s experience of “total immersion,” which completely removes users from their real surroundings and places them in a virtual environment. In Niantic’s view, AR’s focus on supplementing the real-world environment with digital overlays is more compelling—simply enhancing a user’s interaction with the physical world rather than replacing it entirely. Niantic’s Lightship release in the first half of 2022 aims to increase the number of developers building AR experiences with its tech.

Unity acquired Weta Digital for \$1.6 billion on December 1, 2021.

Unity acquired Weta Digital to put Weta’s visual effects (VFX) tools into the hands of more artists and creators via Unity’s platform. Creating some of the most impressive and believable VFX in the business, Weta’s tools and talent have been deployed on films such as “Black Widow” and “Lord of the Rings.” Those same tools will now be more widely available to Unity customers, helping to scale Metaverse creations and content. Fundamentally, Unity wants it to be easier to build 3D content, analogizing the potential growth in 3D creation to what happened to 2D art over the past decade. If the Metaverse is to be filled with a rich variety of experiences, creator tools such as Weta’s would go a long way toward helping creators to construct unique instances, forming the standard for how to build and scale environments or content.

Nike acquired RTFKT for an undisclosed amount on December 13, 2021.

RTFKT, which develops digital sneakers and collectibles in the NFT ecosystem, is perhaps one of the best examples of the “phygital” trend that has caught the interest of mainstream corporates. Though Nike has swerved far outside its traditional lane to make this acquisition, this deal matches the ambition it has shown in the digital space through other partnerships such as with Fortnite. Nike is betting that norms surrounding ownership will continue to evolve to encompass the digital realm. In such a future, consumers may come to expect many physical purchases to be linked directly with a digital counterpart. For example, buying a pair of Nike sneakers may unlock the same pair of shoes in a digital environment such as a video game or social VR experience. In this way, consumer utility is doubled—or at least increased—and brand presence is extended into virtual environments. Younger generations will be the testing ground for this trend, given that they spend far more time in digital ecosystems than their older counterparts and place far more of their personal identity online.

Microsoft announced its intention to acquire Activision Blizzard for \$75.0 billion on January 18, 2022.

Though the deal is subject to antitrust concerns and not yet complete, Microsoft will likely prevail. The deal, which sees software and gaming juggernaut Microsoft snap up one of the largest video game publishers, suggests the company is not only serious about maintaining its position in the gaming industry, but may further believe that gaming represents the vital foothold into the larger Metaverse conversation. Such a deal is also emblematic of the enormous power and capital that the Big Tech firms wield in determining our Metaverse future. Through control of the dominant studios and publishers that make video games today, Microsoft will significantly influence consumer expectations regarding topics such as blockchain in gaming. This influence can be positive, as seen with Microsoft’s “Game Pass” service, which migrated the Netflix model of content access into the gaming ecosystem. How Microsoft uses such control over the long run, however, remains to be seen.

About PitchBook Emerging Tech Research

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