

Metaverse's Rise and Decline

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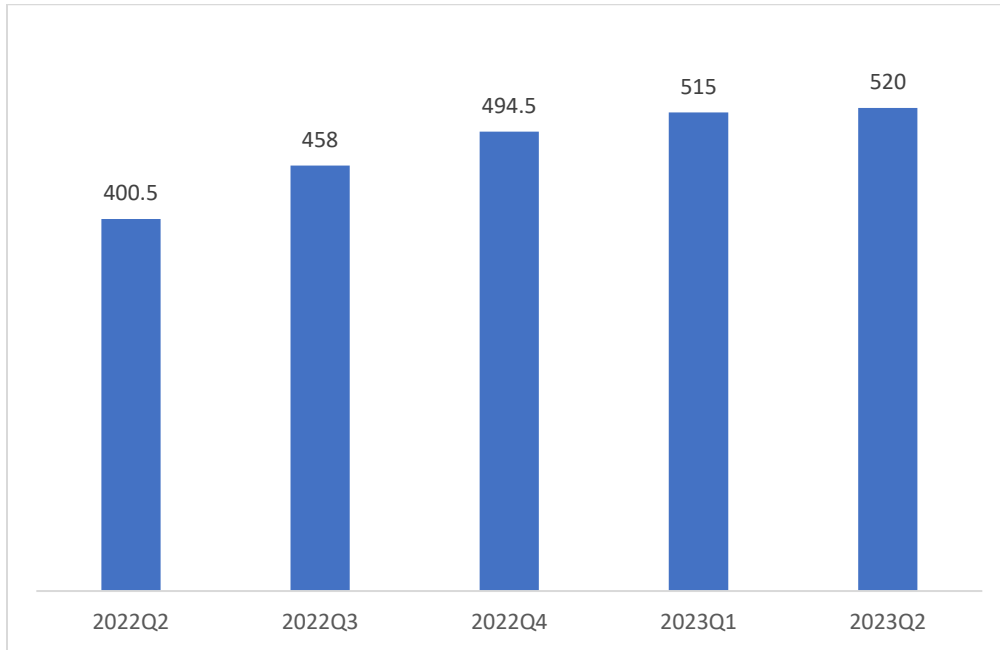
Abstract

Major companies in diverse industries have recently downsized or closed down their metaverse divisions. The authors look at the factors that have led to such strategies.

Has the metaverse failed to achieve its expected popularity? We ask because there has been a decline in the growth rate of metaverse users (Figure 1) despite heavy investments in it. For instance, as of 2022, Meta invested \$100 billion on metaverse research and development (R&D). In 2021 alone, the company's metaverse R&D spending amounted \$15 billion¹. Meta's goal was to attract 500,000 users to its virtual reality (VR) platform Horizon Worlds by the end of 2022. In December 2022, it had only about 200,000 users (compared to Facebook's approximately 3 billion), down from 300,000 in February 2022¹. These disappointing results appear to have led the company to shift its focus away from the metaverse to artificial intelligence (AI)².

In November 2022, Meta cut 31% of its workforce, or 11,000 people. Laid off employees included those from the Reality Labs division, which is responsible for developing augmented reality (AR) and VR prototypes in emerging technologies such as mixed reality and brain-computer interfaces³. In April 2023, the company announced³ a further cut of 4,000 jobs, which also included Reality Labs and its gaming section, which was reported to have access to relatively more resources⁴.

Figure 1: Metaverse users (million)



Data source: Metaversed Consulting⁵

Other companies in a diverse range of industries have also downsized or closed their metaverse divisions (Table 1). In September 2022, Disney announced a plan to convert its streaming service Disney Plus into a metaverse-focused division, which was specifically titled the “Next Generation Storytelling & Consumer Experiences group”⁶. Disney Plus was launched in November 2019 with a huge library of on-demand shows and movies. The group was “tasked with finding ways to tell interactive stories in new technological formats using Disney’s extensive library of intellectual property”. Then CEO Bob Chapek’s stated goal was to “create an entirely new paradigm for how audiences experience and engage with our stories”⁷.

Table 1: Major companies downsizing or closing their metaverse divisions

Company	Actions related to downsizing or shutting down metaverse operations	Remarks
Microsoft	February 2023: discontinued Industrial Metaverse Core team and laid off about 100 employees working on the project ⁸	The team was formed in Oct. 2022 to deliver software for business use of the metaverse. The company noted that it wanted to prioritize shorter-term projects over those that need longer time to generate revenue.

Meta	Nov. 2022: laid off about 11,000 people; Apr. 2023: Laid off additional 4000 employees (also included metaverse-focused Reality Labs).	Reality Labs unit lost \$14 billion in 2022, the total loss since Q4 2020: \$30 billion ⁹ . The focus shifted to AI,
Disney	Mar. 2023: laid off all 50 employees working on metaverse projects ¹⁰ .	Sept. 2022: announced a plan to convert Disney plus into a metaverse-focused Next Generation Storytelling department
Walmart	Mar. 2023: shut down Universe of Play ¹¹ .	Sept. 2022: launched as part of the company's efforts to reach Gen Z consumers ¹² .

Disney's metaverse-style platform was targeted at 90% of the population that do not visit Disney parks. Disney, in a statement, had said that it wanted to make it possible for users to wear VR headsets to have experiences such as riding Haunted Mansion to "see how it works, see how those ghost dancers move"⁶. The team apparently did not make much progress on those goals⁷. In March 2023, Disney eliminated its metaverse development team¹³.

In light of the above observations, this article highlights some key factors that have contributed to the current decline in metaverse-related activities. These are related to the technology itself, business models, and the broader economic environment.

Lack of readiness

Key metaverse technologies such as AR and VR headsets were years away from being "metaverse ready." For instance, Microsoft demonstrated its HoloLens AR device in early 2015 but launched two commercial versions in 2016¹⁴. The initial target for HoloLens were businesses¹⁵. Microsoft started working with the U.S. Army in 2019 to develop mixed-reality headsets based on its HoloLens technology to rehearse and train in more realistic scenarios. Using the Integrated Visual Augmentation System (IVAS), the devices were expected to allow soldiers to see through smoke and around corners. In June 2021, Microsoft noted that the Army planned to start equipping soldiers with the devices in September 2021¹⁶.

Problems and deficiencies were identified during early testing. When combat exercises were held, the headsets disconnected from local wireless networks thus disabling built-in weapon

trackers. The headsets were heavy, uncomfortable, and the screens caused eyestrain. Based on an initial round of testing conducted in October 2022, the Army noted that while the headset met most of its criteria, there were areas in which the headset "fell short" and needed "additional improvements"¹⁷.

Likewise, in October 2022, Meta hosted a hands-on press demo of Meta Quest Pro (previously referred to as Project Cambria)¹⁸ which was among the more advanced VR headsets. A Wired article asserted that despite being more technologically advanced than ever before, Meta Quest Pro had various technical drawbacks and it failed to "make a great case for VR". The article pointed out that the headset is "a great escape from reality, but a good reminder that physical presence is better"¹⁹.

Privacy

The metaverse has the potential to increase the effectiveness of advertising and promotions. However, there remain significant privacy concerns due primarily to the fact that most metaverse users are underage. For instance, in 2023Q2, about 91% of metaverse users were children under 18³. Privacy of personal child information is paramount for any technology.

For example, in March 2023, Roblox adjusted its advertising policies, which made it difficult for companies to deliver ads in a way that ultimately increased brand awareness, loyalty, and sales. Additional guidelines have been announced around advertising and sponsorship disclosures. Brands are prohibited from redirecting users from the Roblox site to other sites using means such as QR codes and URLs. In regard to messages that are targeted at children, it has explicitly prohibited ads that are targeted at users under 13. This group is also referred to as Gen Alpha (Born early 2010s-2025)²⁰.

Universe of Play, which was Walmart's new immersive experience, was negatively impacted by Roblox's new policies. The marketing efforts in Roblox featured interactive games

that allowed the use of virtual coins to buy virtual merchandise. Walmart said that the marketing was aimed at the 17-24 age group. However, the key brands associated with Universe of Play were Jurassic World, Paw Patrol and Razor Scooters. These brands allegedly appealed to a significantly younger audience. Ironically Walmart was approved to join the Children's Advertising Review Unit's (CARU), Children's Online Privacy Protection Act (COPPA) Safe Harbor Program in December 2022. Note that the Children's Advertising Review Unit (CARU) is a self-regulatory organization and is Safe Harbor Program under the Children's Online Privacy Protection Act (COPPA) in the U.S. It helps companies comply with laws and guidelines to protect children under 13 from deceptive or inappropriate advertising. Walmart had demonstrated that Universe of Play complied with the COPPA's requirements and CARU's Guidelines"²¹. In January 2023, in a letter sent to the Children's Advertising Review Unit (CARU), the ad watchdog Truth in Advertising (TINA) and other consumer groups complained that Universe of Play targeted young children. The complaint further alleged that Walmart marketed products without disclosing properly that its contents were actually ads²².

Economic downturns

Economic events such as recession and economic downturn are tightly linked to organizational investments in new technology. Recessions can lead to decreases in hiring and increases in layoffs²³.

In 2023Q1, Disney plus lost 4 million subscribers of the Disney plus platform, which led to a 40% decline in its stock price. The company set a goal to reduce costs by about \$5.5 billion²⁴. Disney began to cut its losses from the metaverse division and ended up eliminating its entire metaverse development team. The company's broad restructuring led to about 7,000 job losses¹³.

Reduced investor confidence

While some analysts view blockchain as a key building block of the metaverse, the number of Web3 metaverse users represents only a tiny fraction of the total number of metaverse users. Out of the 520 million metaverse users in 2023Q2, only 7.5 million (1.4%) were Web3 metaverse users³.

In the case of Web3 metaverses that are built on blockchain such as Decentraland, the Sandbox, and Voxels, a low investor confidence in crypto-asset markets has resulted in a slow growth of such metaverses. A number of high-profile failures of crypto firms such as FTX, BlockFi, Three Arrows Capital, Celsius Network, Voyager Digital and Genesis Global Trading caused investors to question their trust in the crypto market (and blockchain in general). According to PitchBook, in 2023Q1, venture capital investment in crypto and blockchain companies was \$2.53 billion, which was 79% lower than \$12.27 billion in 2022Q1²⁵.

Web3 metaverses have been unable to secure additional funding to further develop their platforms to attract users. According to a report published by Lithuania-based data acquisition and analysis company DappRadar, which tracks decentralized applications (dapps) across multiple blockchains, despite their \$1 billion valuations, Decentraland and The Sandbox each had fewer than 1,000 daily “active users” in October 2022. In the first week of that month, Decentraland had 38 such users and The Sandbox had 522²⁶. DappRadar defined active users as only those with unique wallet addresses and interacting with the platforms’ smart contract.

Other breakthrough innovations

There has been a diversion of investment from the metaverse to generative AI (GAI). Meta has shifted its focus to AI as part of its most recent restructuring. In 2023Q1 earnings call, Meta announced that it would spend \$33 billion in 2023 to support its AI initiatives²⁷.

In their 2023 first quarter (Q1) earnings calls, Alphabet, Microsoft, and Meta placed more emphasis on AI when compared to other technologies. The term “AI” was mentioned 50 times in Alphabet’s call, 49 times in Meta and 46 times in Microsoft’s²⁸.

Following the launch of ChatGPT, Microsoft has embedded GAI across its product portfolio such as the new OpenAI-powered Bing in February 2023 and GAI-powered Copilot 365 to “change work as we know it” in March 2023²⁸.

Technology giants’ plans to harness the power of AI have received strong feedback from the stock market. In the first five months of 2023, Meta shares were up 129%²⁹. Note too that in the first ten months of 2022, Meta shares fell by about 70%³⁰.

The metaverse is not dead!

Although many companies recently downsized or even closed their metaverse units, they have not abandoned metaverse initiatives. For instance, Meta views AR, VR, and other metaverse initiatives as “a long-duration investments” and has committed to increase investment in these areas despite expected losses in the short and medium terms³¹.

Companies have also revised and repurposed their metaverse strategies after disappointing results. In March 2023, Microsoft and NVIDIA announced a collaboration to provide access to industrial metaverse and AI supercomputing resources to Microsoft enterprise users with via the cloud. The collaboration involves Microsoft cloud computing platform Azure hosting NVIDIA’s two new cloud offerings: NVIDIA Omniverse Cloud (a platform-as-a-service model that can be used to “design, develop, deploy and manage” industrial metaverse applications); and NVIDIA DGX Cloud (an AI supercomputing service to provide access to the infrastructure and software for enterprises to train advanced models for generative AI and other applications). Additionally, the collaboration aims to bring together the two company’s

productivity and 3D collaboration platforms by connecting Microsoft 365 applications with NVIDIA's industrial metaverse platform, Omniverse³².

Likewise, Disney has not given up on the Metaverse. When Apple revealed its Vision Pro mixed reality headset at Worldwide Developers Conference (WWDC) 2023 in June 2023, Disney CEO Bob Iger announced that immersive experiences for the Apple Vision Pro will be available via the Disney Plus streaming service after the launch of the headset in 2024³³.

The metaverse has been an overhyped innovation, which has been experiencing a slowdown³⁴. Promises of rapid transition from physical to immersive world overlooked several hurdles. Necessary infrastructure, compelling non-gaming content, device affordability, users' well-being impacts, and lack of regulations for misconduct haven't been adequately addressed, which are essential for providing true immersive experiences³⁵. These substantial challenges require more time to surmount than originally envisaged, leading to the current hibernation of the overhyped metaverse.

Conclusion

We've provided a brief survey showing the roller-coaster ride of the Metaverse. Many companies have downsized or even closed their metaverse divisions, due to the slowing growth of the innovation. The arrival of GAI has led to a diminished interest in the Metaverse.

Web3 metaverses have faced additional challenges. Due to high profile crashes of a number of crypto platforms, investor confidence in the crypto market has plummeted, which has hindered the development of new metaverses. However, it's far too early to write the Metaverse off – it may just be taking a cyclical pause until users catch up to its large potential.

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References

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- ¹ S. Rose “‘The metaverse will be our slow death!’ Is Facebook losing its \$100bn gamble on virtual reality?” 7 Dec 2022 <https://www.theguardian.com/technology/2022/dec/07/metaverse-slow-death-facebook-losing-100bn-gamble-virtual-reality-mark-zuckerberg>
 - ² P. Olson “Zuckerberg’s New Focus Pulls Meta Back From The Brink”, February 2, 2023 https://www.washingtonpost.com/business/zuckerbergs-new-focuspulls-meta-back-from-the-brink/2023/02/02/cd04d194-a2d1-11ed-8b47-9863fda8e494_story.html
 - ³ J. Ridley “Meta to lay off over 11,000 employees including in VR Reality Labs division” November 09, 2022, <https://www.pcgamer.com/meta-to-layoff-over-11000-employees-including-in-vr-and-metaverse-reality-labs-division/>
 - ⁴ K. Barr “Meta Layoffs Begin and Even the Game Developers Aren’t Safe” April 19, 2023, <https://gizmodo.com/meta-layoffs-begin-game-developers-metaverse-1850353319>
 - ⁵ “Metaverse Monthly Active Users Q2 2023”, <https://www.metaversed.consulting/blog/metaverse-monthly-active-users-q2-2023>
 - ⁶ B. Mitchell “Disney+ to transform into “experiential lifestyle platform” offering virtual theme parks”, 13 Sep 2022 <https://blooloop.com/theme-park/news/disney-plus-metaverse-virtual-theme-park-experience/>
 - ⁷ M. K. Carr “The metaverse is the first to go with Disney’s belt tightening”, March 28, 2023, <https://www.avclub.com/disney-metaverse-layoffs-1850273796>
 - ⁸ “Microsoft Pulls the Plug on Industrial Metaverse Team – Here’s What Happened” Feb 11, 2023., <https://cryptonews.com/news/microsoft-pulls-plug-industrial-metaverse-team-heres-what-happened.htm>
 - ⁹ R. Thubron “Meta’s Reality Labs lost \$3.99 billion last quarter, bringing its total losses since 2020 to \$30 billion” April 27, 2023 <https://www.techspot.com/news/98475-meta-metaverse-focused-reality-labs-lost-399-billion.html>

-
- ¹⁰ K. Francis “Disney’s ‘Metaverse’ Reportedly Canceled as Next Generation Storytelling Department Cut in Layoffs”, March 28, 2023 , <https://wdwnt.com/2023/03/metaverse-canceled-next-generation-storytelling/#:~:text=It%20seems%20Disney%20will%20no,50%20employees%20has%20been%20cut.>
- ¹¹ “Advertising Standards”, March 2023 <https://en.help.roblox.com/hc/en-us/articles/13722260778260>
- ¹² P. Adams “Walmart winds down Roblox play as metaverse lands in privacy crosshairs”, March 28, 2023, <https://www.marketingdive.com/news/walmart-closes-roblox-experience-metaverse-marketing-Gen-Alpha/646159/>
- ¹³ R. Nambiampurath “Disney Axes Metaverse Team as Part of Cost-Cutting Measures” 28 March 2023, <https://beincrypto.com/disney-axes-metaverse-team-cost-cutting-measures/>
- ¹⁴ M. Foley, “Microsoft's next HoloLens device may not debut until 2019: Report,” Feb. 20, 2017. [Online]. Available: <https://www.zdnet.com/article/microsofts-next-hololens-device-may-not-debut-until-2019-report/>
- ¹⁵ M. Foley, “Exclusive: CEO Nadella talks Microsoft's mobile ambitions, Windows 10 strategy, HoloLens and more,” Jul. 14, 2015. [Online]. Available: <https://www.zdnet.com/article/ceo-nadella-talks-microsofts-mobile-ambitions-windows-10-strategy-hololens-and-more/>
- ¹⁶ D. Bach, “U.S. Army to use HoloLens technology in high-tech headsets for soldiers,” Jun. 8, 2021. [Online]. Available: <https://news.microsoft.com/source/features/digital-transformation/u-s-army-to-use-hololens-technology-in-high-tech-headsets-for-soldiers/>
- ¹⁷ A. Tilley “Microsoft's Struggles Enter the Metaverse – WSJ”, Dow Jones Institutional News, 27 Oct 2022. <https://www.wsj.com/articles/microsoft-headsets-augmented-reality-hololens-metaverse-11666793622>
- ¹⁸ W. Greenwald, “*Project Cambria Hands On: Take a first look at the meta quest pro VR headset*,” *PCMag Middle East*. (2022) Available at: <https://me.pcmag.com/en/vr/13870/project-cambria-hands-on-take-a-first-look-at-the-meta-quest-pro-vr-headset.>
- ¹⁹ L. Goode “*The bizarre duality of Meta's new quest pro VR headset*,” *Wired*. Conde Nast. (2022) Available at: [https://www.wired.com/story/meta-quest-pro-vr-headset/.](https://www.wired.com/story/meta-quest-pro-vr-headset/)
- ²⁰ M. Debczak, “These Revised Guidelines Redefine Birth Years and Classifications for Millennials, Gen Z, and Gen Alpha,” Dec. 6, 2021. [Online]. Available: <https://www.mentalfloss.com/article/609811/age-ranges-millennials-and-generation-z>
- ²¹ J. Karabus, “Walmart runs creepy 'advergame' on Roblox, where kids can make toy wish lists,” Jan. 25, 2023. [Online]. Available: https://www.theregister.com/2023/01/25/walmarts_advergame_on_roblox_pushes/
- ²² C. von Hoffman “Walmart pulls Universe of Play off Roblox platform after consumer groups’ complaint” April 4, 2023, <https://martech.org/walmart-pulls-a-game-off-the-roblox-platform-after-consumer-groups-complaint/#:~:text=Universe%20of%20Play%20was%20one,ages%20of%2017%20and%2024.>
- ²³ J. Liu “Mass tech layoffs don’t signal a recession, but this trend could” Jan 31 2023, <https://www.cnbc.com/2023/01/31/mass-tech-layoffs-dont-signal-a-recession-but-manufacturing-jobs-could.html>
- ²⁴ L. Volontè “Disney is in dire straits, partly thanks to IOF” April 13, 2023 <https://ifamnews.com/en/disney-is-in-dire-straits-partly-thanks-to-iof>
- ²⁵ J. Melinek “Investors unfazed by Q1 crypto funding decline” March 31, 2023, <https://techcrunch.com/2023/03/31/crypto-q1-decline-analysis/>
- ²⁶ C. Thompson, “It’s lonely in the metaverse: Dappradar data suggests Decentraland has 38 ‘daily active’ users in \$1.3B Ecosystem”, CoinDesk. October 7, 2022 Available at: [https://www.coindesk.com/web3/2022/10/07/its-lonely-in-the-metaverse-decentralands-38-daily-active-users-in-a-13b-ecosystem/.](https://www.coindesk.com/web3/2022/10/07/its-lonely-in-the-metaverse-decentralands-38-daily-active-users-in-a-13b-ecosystem/)

-
- ²⁷ “Meta to spend up to \$33 billion on AI, as Zuckerberg pledges open approach to LLMs”, 04/27/23, <https://thetack.technology/meta-ai-investment/>
- ²⁸ S. Goldman , “Google, Microsoft and Meta each said ‘AI’ nearly 50 times on earnings calls. Here’s why we should all care”, April 27, 2023, <https://venturebeat.com/ai/google-microsoft-and-meta-each-said-ai-nearly-50-times-on-earnings-calls-heres-why-we-should-all-care/>
- ²⁹ K. Vanjani, “Meta Stock Has Been on a Tear Lately”, Jun 5, 2023 <https://www.barrons.com/livecoverage/stock-market-today-060523/card/meta-stock-has-been-on-a-tear-lately-IUuUNNQ2ZUJIQ2XeRA8L>
- ³⁰ J. Vanian “Facebook parent company Meta is now the worst performer in the S&P 500 this year”, November 3 2022 <https://www.cnbc.com/2022/11/03/-facebook-owner-meta-worst-performer-in-the-sp-500-this-year.html>
- ³¹ T. Hatmaker “Meta’s Reality Labs lost \$13.7 billion on VR and AR last year”, February 3, 2023, <https://techcrunch.com/2023/02/03/metass-reality-labs-lost-13-7-billion-on-vr-and-ar-last-year/>
- ³² “NVIDIA and Microsoft to Bring the Industrial Metaverse and AI to Hundreds of Millions of Enterprise Users via Azure Cloud”, March 21, 2023, <https://nvidianews.nvidia.com/news/nvidia-and-microsoft-to-bring-the-industrial-metaverse-and-ai-to-hundreds-of-millions-of-enterprise-users-via-azure-cloud>
- ³³J. Weatherbed, Jun 5, 2023 “ Disney Plus is coming to Apple’s Vision Pro headset” <https://www.theverge.com/2023/6/5/23749382/apple-vision-pro-headset-disney-plus-tv-movies-sports-wwdc>
- ³⁴R. Mullins, “Is the metaverse dead? A conversation”, May 10, 2023 <https://www.youtube.com/watch?v=Zgv0YobBR7w&t=1781s>
- ³⁵E. Mogaji, J. Wirtz, R. W. Belk & Y. K. Dwivedi, May 4 2023. Immersive time (ImT): Conceptualizing time spent in the metaverse. International Journal of Information Management, 72, 102659. <https://www.sciencedirect.com/science/article/pii/S0268401223000403>