Metaverse Market Synopsis & Opportunities

August 2023

Contents

I. Market Overview

1.1 The Metaverse Industry

The metaverse refers to a virtual world in which users can work, live, shop, and interact with one another. Currently, computer screens connected to the internet offer the opportunity for individuals to perform these functions from the comfort of their own homes. However, the metaverse seeks to advance this further, creating a digital three dimensional realm in which a user's avatar can move from one experience to another, carrying their identity and money throughout their journey.

The metaverse became a household name when Facebook rebranded their corporate identity to 'Meta', pledging a minimum of $10B of investment into the concept. Since then, tech giants such as Google, Microsoft, Nvidia, and Qualcomm have joined in on the development of the nascent technology, individually allocating billions of dollars to R&D in the field.

Figure 1: The Impact and Essential Function of the Metaverse

In order to comprehensively understand the metaverse industry, it is essential to consider the peripheral and adjacent technologies and industries which contribute to the individual components of the metaverse concept. The metaverse is fundamentally a digital ecosystem which is built on 3-dimensional visual imaging technology, artificial intelligence, virtual and augmented reality hardware and software, real-time collaboration software, and blockchain-based decentralized finance methods. Other essential technologies which will contribute to the growth and adoption of the metaverse include brain-computer interfaces and spatial and edge computing. Currently, while the concept of the metaverse is largely limited to

entertainment and gaming, the end objective is to create a 3-dimensional immersive iteration of the internet.

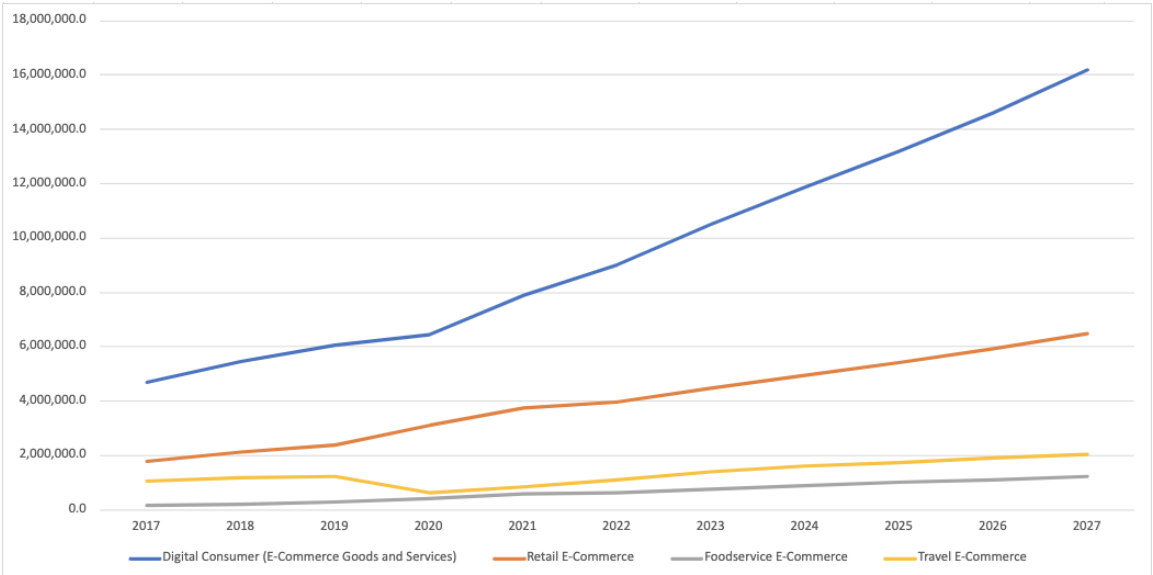
Therefore, the market for metaverse technology is relatively new, and to assess potential growth opportunities, it is important to consider these individual, established industries and how their evolution and growth will affect the creation and adoption of metaverse technology.

1.2 Forecast Analysis and Dynamics

The current industry spending value (as of 2022) stands at $61.8B and is expected to grow at a compounded annual growth rate (CAGR) of 47.2% over the period from 2022-2027, resulting in an industry spending value of approximately $426.9B by 2027 (Emergen Research). Fortune Business Insights forecasts an even steeper growth, expecting a CAGR of 69.2% from 2023 to 2027 and citing metaverse industry revenue as $2961.55B in 2032.

The rise in demand within the media, entertainment, and gaming sectors, along with the digitization of fashion, retail, and art industries will largely contribute to this growth. The metaverse will also be able to capitalize on the exponential rise of digital consumer e-commerce into the following several years (See Figure 2). Furthermore, brands are shifting their promotion techniques by utilizing virtual world simulators, exponentially increasing the demand for metaverse technology vendors to develop a 3-dimensional technologically-driven ecosystem. For example, automobile manufacturers can provide consumers with the opportunity to test out a car model virtually before purchase.

Figure 2: Retail Value RSP for E-Commerce Sectors, 2017-2027 (in USD millions)



Source: Passport, Euromonitor Research

Additionally, the increased demand for and adoption of extended reality (XR) systems—a broad term including virtual reality (VR), augmented reality (AR), and mixed reality (MR)—will directly contribute to a growing demand for metaverse technology. For instance, Apple recently released Vision Pro, a device to integrate augmented reality into daily life activities, and companies such as Oculus have already seen success creating VR headsets and games within the entertainment sector. Smartphones have been identified as the most promising physical devices to channel augmented reality for users, so demand for AR hardware technology is expected to rise dramatically over the next five years (expected CAGR of 48.0% for AR technology).

A key driver of the industry can be attributed to the increased demand within the gaming and entertainment industry as it has demonstrated the most rapid adoption of XR systems and technologies. The application of HUD and HMD (head-up display and head-mounted display) hardware combined with VR and AR softwares provides individuals with the ability to immerse themselves in a first-person perspective gaming experience that provides a user with extraordinary freedom and immersive experiences.

There also exists an opportunity within the industry for the potential incorporation of the metaverse concept into the aerospace and defense sector. This is expected to be used largely for training and simulation purposes—such as immersive flight simulators—and will likely lead to more effective training knowledge retention. The technology can also be used to simulate weapon and flight training in the defense sector, offering a unique opportunity for the metaverse industry to grow into.

A potential restraint, on the other hand, is that the current installation and maintenance costs of high-end metaverse technologies is very high. This is expected to be an inhibitor to wide-scale global adoption of metaverse technology in the near future, or until prices become affordable to the greater population. See the below table for a brief DROC (Drivers, Restraints, Opportunities, and Challenges) analysis.

DROC Analysis			
Drivers	**Restraints**	**Opportunities**	**Challenges**
Adoption of metaverse in information technology and telecommunication	Issues with data privacy and security	Cryptocurrencies and NFTs	Digital inclusion and accessibility
Rise of blockchain and cryptocurrencies	Issues with identity and reputation in the metaverse	Converging digital and physical worlds through the internet	
Increasing accessibility to technology and technological advancement	Issues with convincing users to leverage payment systems in the metaverse	Growing online and virtual gaming industry	

Rising internet penetration and higher number of broadcast connections	High installment and maintenance costs		
Greater research & development and investment			

1.3 Segmented Analysis

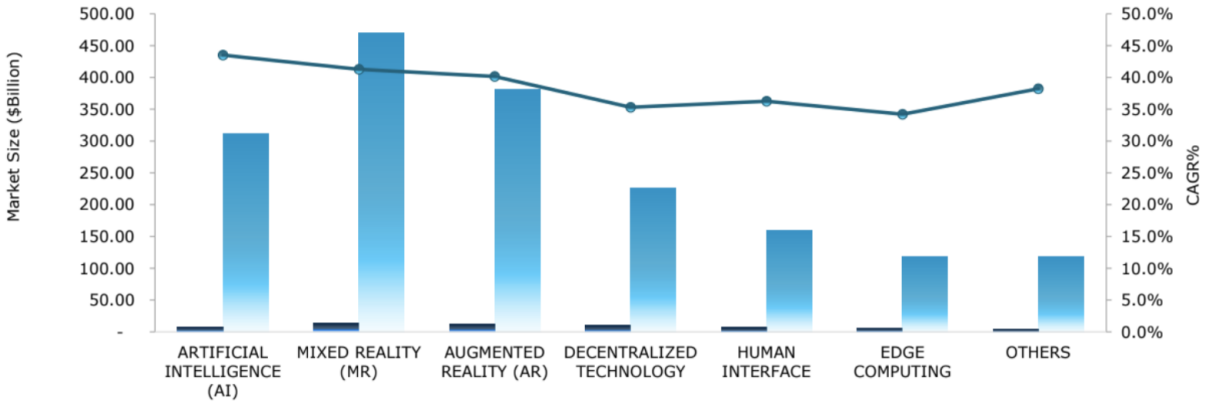
Key Takeaways: Highest CAGR Subcomponents of Various Segments

COMPONENT	HARDWARE	SOFTWARE	VERTICAL	REGION
The hardware is expected to grow at the highest CAGR during the forecast period.	The AR devices segment is expected to grow at the highest CAGR during the forecast period.	The metaverse platforms segment is expected to grow at a higher CAGR during the forecast period.	The industrial manufacturing vertical is expected to grow at the highest CAGR during the forecast period.	The Asia Pacific region is expected to grow at the highest CAGR during the forecast period.

1.3.1 Segmented by Technologies and Components

The main components of the metaverse industry include software vendors, hardware vendors, gaming companies, social networking companies, service providers, metaverse platforms, financial platforms, asset marketplaces, and finally end industries such as gaming, retail and commerce, and education. The metaverse industry is a culmination of several individual technological industries, all of which should be considered separately (see Figure 3).

Figure 3: Metaverse Technology Market Dynamics (2022-2032)

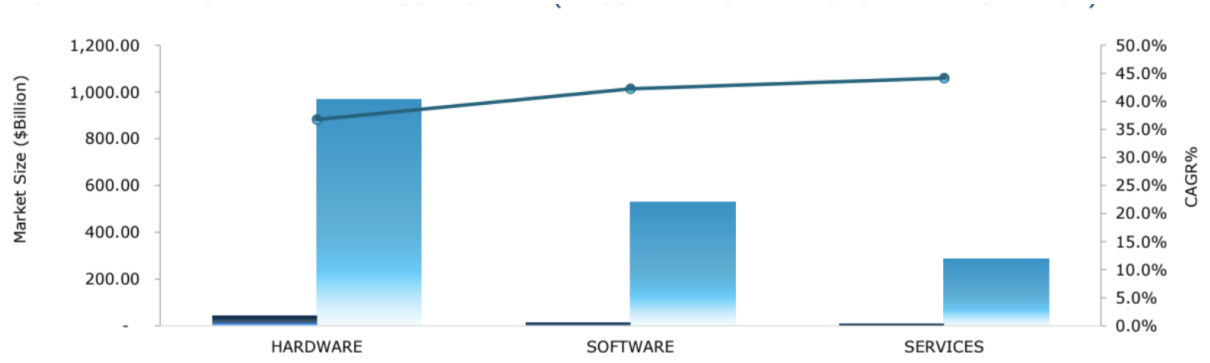


We can expect the Artificial Intelligence, Augmented Reality, and Mixed Reality technological sectors of the metaverse industry to grow the most and hold the most revenue share of the metaverse industry over the following ten years.

As the metaverse industry grows, the largest revenue shares will be allocated to AI, augmented reality (AR), and mixed reality (MR). Based on component, we can expect the software component to hold the largest market size in the given period of 5-10 years. Software that specifically enhances and develops extended reality is in highest demand. Within the software sector, there is a multitude of up-and-coming start-ups which seek to develop decentralized technologies and solutions such as cryptocurrency, blockchain, NFTs, and virtualization to be embedded within the metaverse.

Further, the hardware sector is expected to experience a high CAGR and hold the largest market share as the integration of head-up and head-mounted displays—which are vital to the immersive metaverse experience—is expected to boom (see Figure 4). The mixed reality market is currently dominated by Microsoft's HoloLens 2 and Magic Leap One, but with the recent release of Apple's Vision Pro, we can expect a high degree of competition in this market. We can expect the augmented and mixed reality subcomponents within the hardware sector to grow at the highest CAGR as compared to the hardware subcomponent for VR.

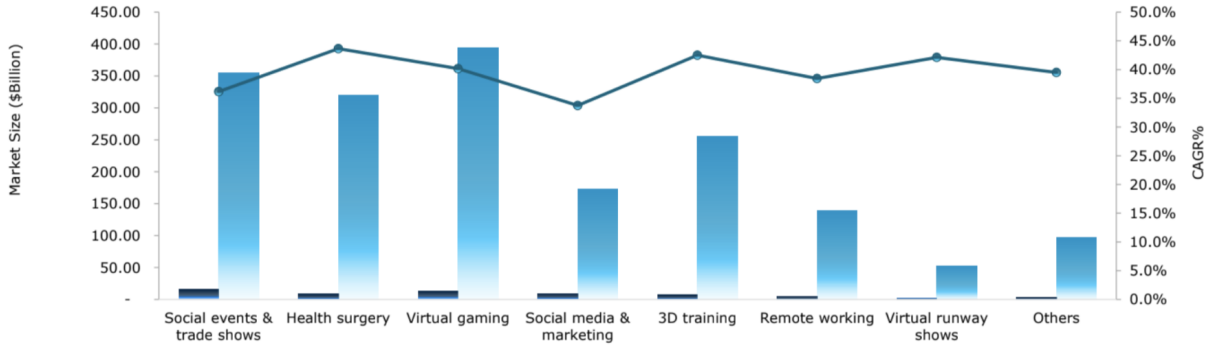
Figure 4: Expected Market Size and CAGR by Component (2022-2032)



1.3.2 Segmented by Vertical and End-use

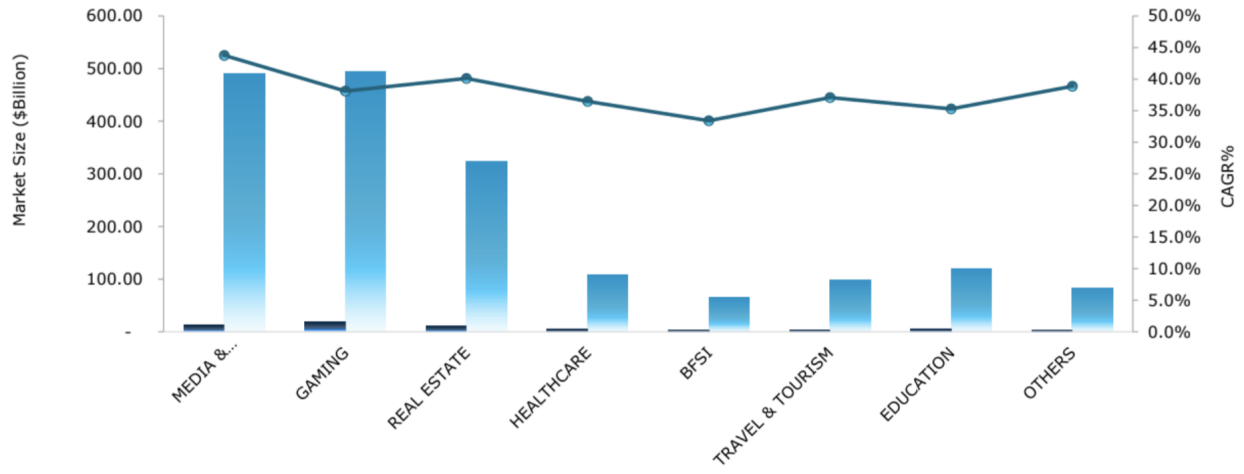
The verticals of the metaverse are diverse, spanning social events and trade shows, health surgery, virtual gaming, social media and marketing, 3-dimensional training, remote working, virtual runway shows, and others. The largest market size by vertical are social events, health surgery, and virtual gaming; however, all sectors are expected to demonstrate a notably high CAGR (See Figure 5). With this data, it is evident that the three aforementioned verticals should be the large focus of investment efforts into the metaverse.

Figure 5: Expected Market Size and CAGR by Vertical (2022-2032)



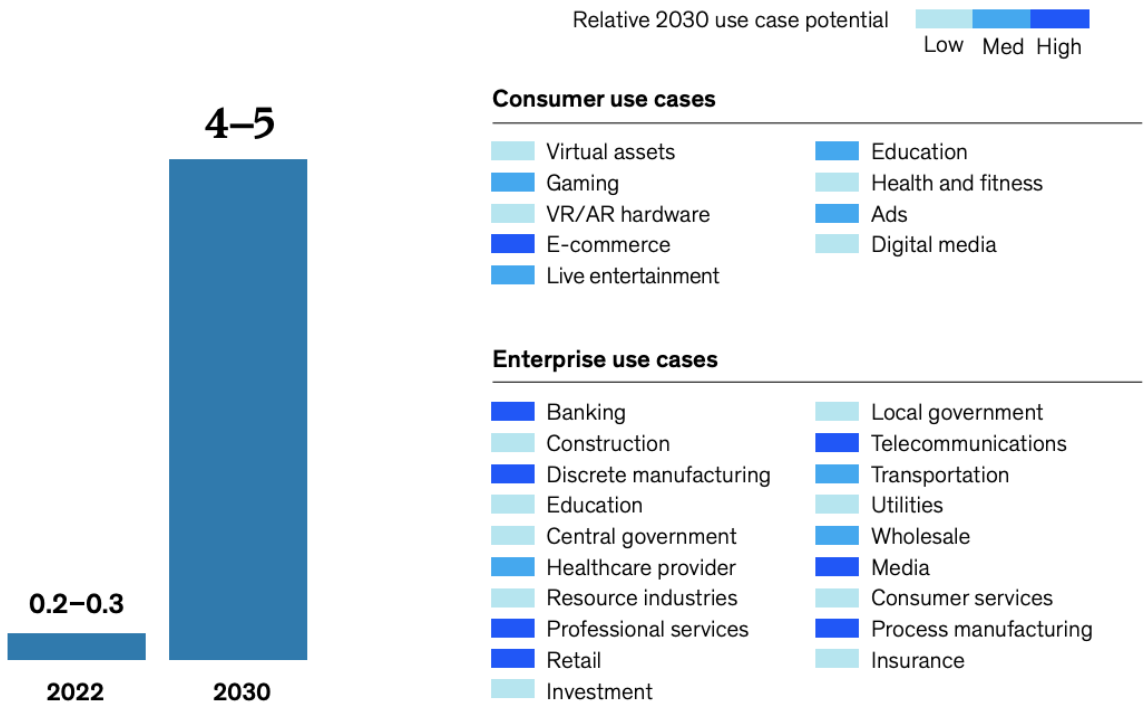
The end-uses of the metaverse are equally diverse, with applications that include media and entertainment, gaming, real estate, health care, BFSI (banking, finance services, and insurance), travel and tourism, education, and others. Within these, the highest market size is expected to be held by media and entertainment and gaming. As with the verticals, the end-use industry applications are all expected to grow at relatively high CAGRs (>30%) over the next ten years (See Figure 6). The highest CAGR is attributed to the media and entertainment industry.

Figure 6: Expected Market Size and CAGR by End-Use Industries (2022-2032)



The expected market impact potential is expected to increase from $200-300B to $4-5T from 2022 to 2030. The following graphic created by McKinsey demonstrates this rize in impact potential as well as the individual use case potentials organized by consumer and enterprise cases. We observe that e-commerce, followed by gaming, education, live entertainment, and advertising lead in use potential in the consumer sector. Banking, discrete manufacturing, professional services, retail, telecommunications, and media lead in case use potential in the enterprise sector (See Figure 7).

Figure 7: Metaverse Impact Potential by 2030, $ trillions (by McKinsey & Company)



1.3.3 Regional Insights

While we can expect high growth rates globally for the metaverse industry, North America is expected to hold the greatest market size throughout the forecasted period. North American companies are pioneering the use of AR technology—which is expected to experience the highest CAGRs compared to other technological components of the metaverse. Further, the United States is a developed economy with a high level of per capita income and widespread internet penetration, both of which are key drivers to the adoption of metaverse technologies. However, the Asia-Pacific (China, Japan, South Korea, Singapore) region as well as Europe (United Kingdom, Germany, France, Sweden) have been investing heavily in the development of the metaverse and will likely grow at similar, if not higher, rates in the forecasted period.

The Asia Pacific region is expected to witness highest growth rate during the forecast period of global metaverse market due to an increasing number of start-up organizations, including The Sandbox (Hong Kong), Bolly Heroes (India), Axie Infinity (Singapore), NextMeet (India), GuildFi (Thailand), Shenzhen Zhongqingbaowang Interaction Network Co., Ltd. (ZQGame Global), and miHoYo Co., Ltd. in China.

1.4 COVID-19 Impact

With restrictions on the movement of people and goods during the pandemic, people were pushed to rely on a virtual environment for shopping, entertainment, and socializing. Many companies, who already had their digital infrastructure in place, registered better margins and profits with employees working from home, while companies who lacked digital infrastructure made concrete investments in ramping up their digital technology. The market evolved during the Covid period owing to the increased amount of time spent in online gaming, calls, and virtual reality platforms. The pandemic has also normalized paying for digital goods for a new wave of consumers. This has also boosted the growth of the market during the pandemic.

The pandemic offered the unique opportunity for corporations to leverage digital means to market their products. For instance, in November of 2020, L'oreal and Snap Camera, an interactive desktop camera application, collaborated to offer consumers the opportunity to try out and wear virtual cosmetics when chatting on Google Hangouts, Houseparty, Skype, Twitch, Zoom, Microsoft Teams, and more. While the pandemic did hinder supply chain production, it spurred the demand for metaverse related technologies, a shift that we can still witness in the current world with increased remote work opportunities and greater usage of ecommerce.

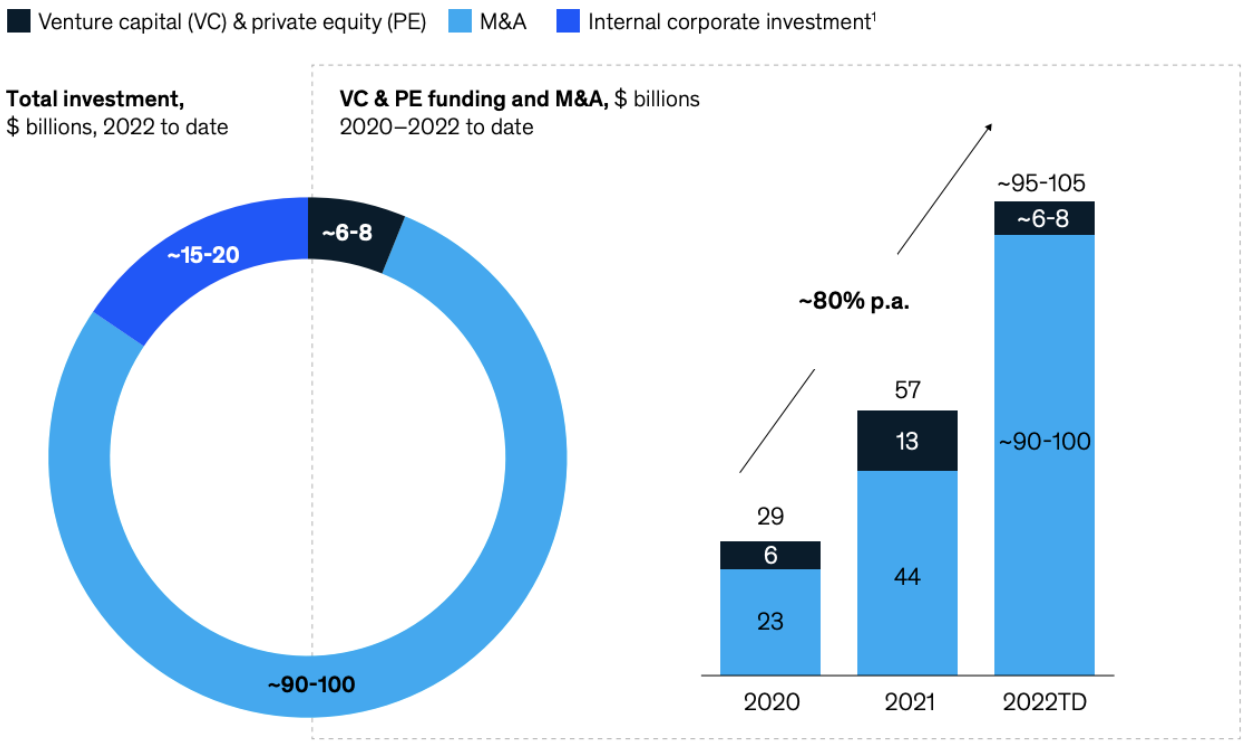
1.5 Summary of Current Investment Trends

In 2022, more than $120B flowed into the metaverse space, marking an increase of more than 100% from 2021, which saw $57B of metaverse investment capital. As more large companies, start-ups, and brands seek to capitalize on this growth opportunity, we can only expect this value to increase year over year. In May of 2022, Andreesen Horowitz launched Game Funds One, a venture capital fund dedicated to developing metaverse and virtual gaming infrastructure. Total investment into the metaverse is also

proving to be far larger than investment into AI. At a comparable stage in the AI development process, around 2016, AI was attracting approximately $39B. While private equity and venture capital investment numbers are similar ($6-9B for AI in 2016 and $6-8B for metaverse in 2022), mergers and acquisitions numbers are far higher for metaverse than for when artificial intelligence was developing. For example, Microsoft had proposed a $70B deal to acquire Activision Blizzard in 2022.

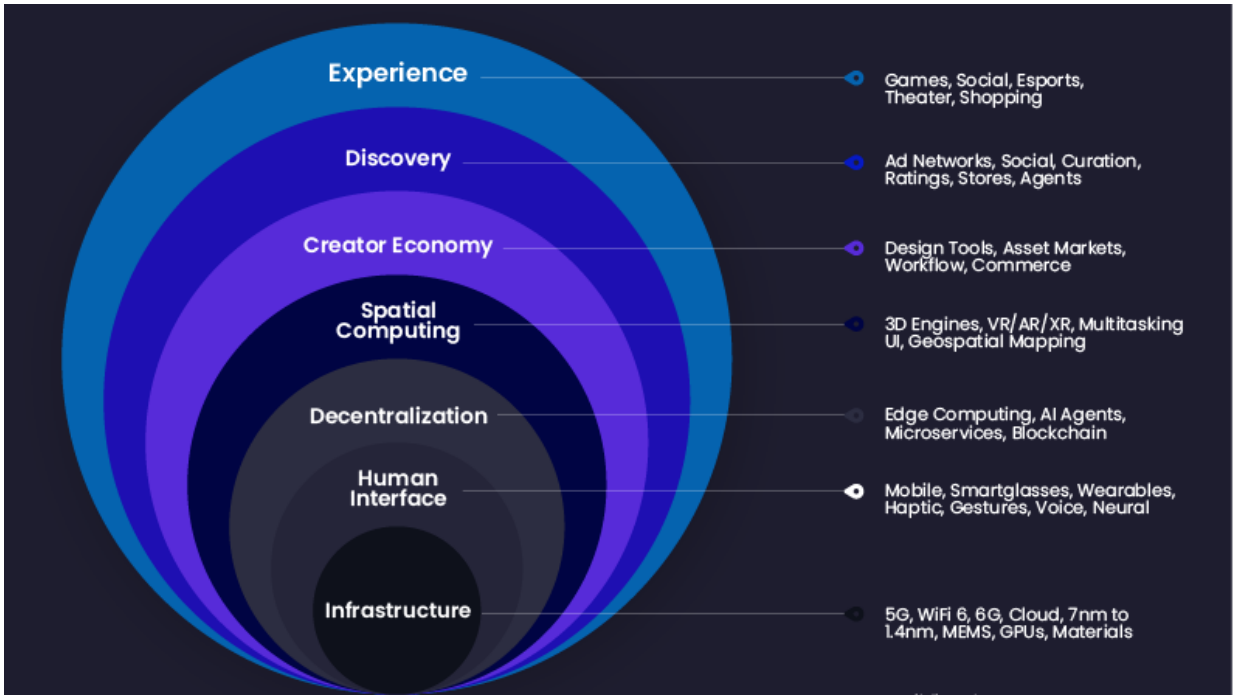
As seen in the below figure, the $95-105B in 2022 metaverse investment consists of $6-8B of venture capital and PE investment, and $90-100B in mergers and acquisitions. There is a large influx of capital into the development of metaverse technology, making it a solid growth investment for the coming years.

Figure 8: Investment into Metaverse Development (by McKinsey & Company)

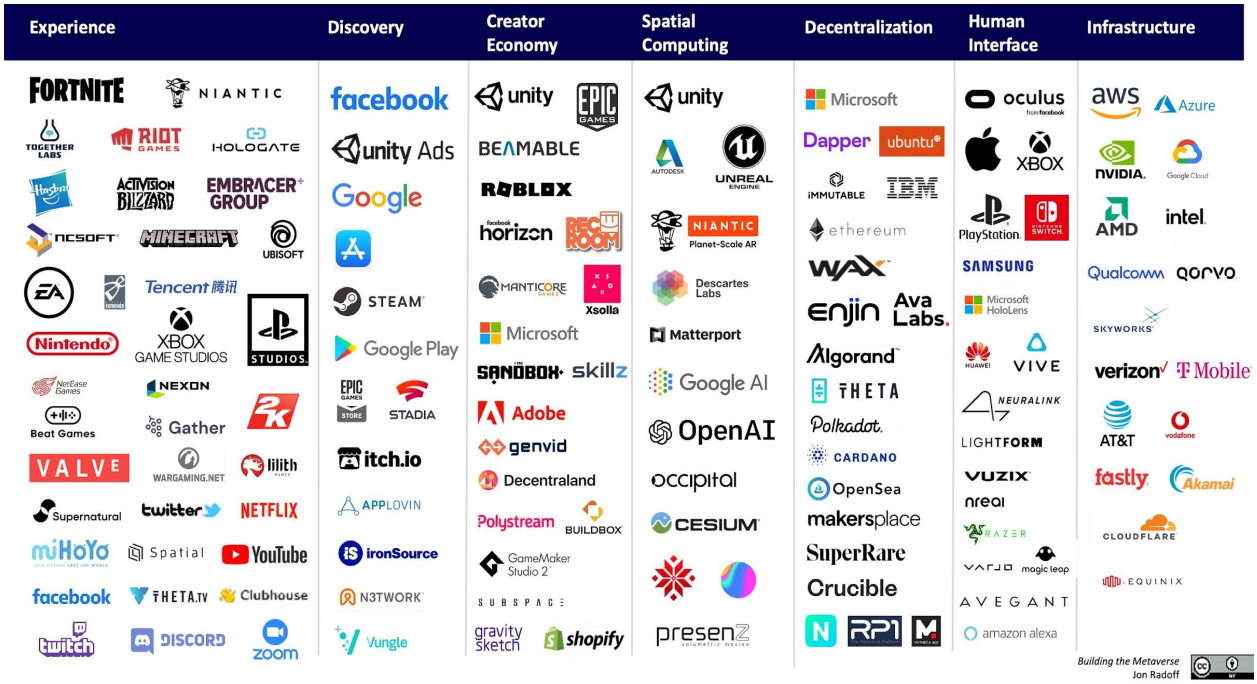


II. Corporate Ecosystem and Value Chain

2.1 Value Chain Diagram



2.2 Market Map



2.3 Overview of Value Chain Components

The experience layer refers to the end-use activities within the metaverse: immersive live entertainment, social interactions, and gaming experiences. A notable example is Fortnite, a third-person shooter game, which gained widespread popularity by hosting a virtual concert in 2020. This signals a glimpse of what the future holds, where the metaverse will likely become a hub for various engaging activities.

The process of discovering metaverse-related experiences, known as discovery, can occur through both active searches and unsolicited marketing efforts. Social curation and the sharing of experiences on virtual platforms, like social media and gaming-specific applications such as Steam, Epic Games, and Unity, play a pivotal role in shaping this layer. Notable players like Google and Facebook also have a significant impact on this aspect.

The creator economy layer is a crucial component where creators utilize an array of technologies for crafting experiences within the metaverse. These technologies encompass design tools, animation systems, and avenues for monetization, supporting the creative process and enabling diverse experiences to flourish.

Spatial computing, a vital software realm, bridges the gap between the real and virtual worlds. It encompasses technologies like object and voice recognition, gesture recognition, data integration, biometrics, and user interfaces. These features are essential for creating, manipulating, and presenting 3-dimensional spaces that facilitate seamless interaction between the two realms.

The decentralization layer is at the core of democratizing the metaverse ecosystem. Blockchain technology plays a pivotal role in this movement by freeing financial assets and transactions from centralized control. This innovation ensures democratic and efficient microtransactions for gaming and metaverse experiences, fostering a more balanced and open ecosystem.

Enabling the connection between humans and the metaverse, the human interface layer involves critical hardware components like wearable technologies, VR headsets, smart glasses, and potential future innovations like neural networks. These components serve as the conduits through which users can immerse themselves in the metaverse.

Lastly, the infrastructure layer provides the foundational technologies required to bring the various components of the metaverse to life. Semiconductors, material science, cloud computing, and telecommunication networks collectively create the backbone that supports the metaverse's diverse functionalities and connects devices seamlessly.

In summary, the metaverse's multifaceted layers, including experience, discovery, creator economy, spatial computing, decentralization, human interface, and infrastructure, collaboratively shape this emerging digital landscape, promising a future defined by immersive interactions and boundless possibilities.

III. Key Players and Investment Opportunities

3.1 Key Player Overviews

T-Mobile

NASDAQ:TMUS

Applicable component(s) of value chain	Infrastructure
Key products and services	T-Mobile provides telecommunication services and wireless networking which constitutes essential infrastructure for the metaverse. 5G, and eventually 6G, will be a vital mechanism through which participants can connect to the metaverse across the globe. T-Mobile recently launched the 'T-Challenge' in which they sponsor emerging AI and extended reality technologies that have the potential to transform the retail industry. Further, T-Mobile is investigating how their 5G networks can be used alongside their cloud computing services for innovative purposes such as holographic medical imaging, which has key implications on metaverse related 3-D rendering and imaging.

Forward P/E	18.69
PEG	0.34
Price/Sales	2.14
Price/Book	2.45
EV/Revenue	3.40
EV/EBITDA	11.06
Operating Margin	19.07%
Return on Assets	4.64%
Return on Equity	9.05%
FCF/EV	2.80%

Activision Blizzard

NASDAQ:ATVI

Applicable component(s) of value chain	Experience
Key products and services	Activision is a company that operates primarily in the gaming industry, providing interactive softwares, entertainment content and services, video game consoles, and PCs (personal computers). Microsoft's pending acquisition of Activision has significant implications on both companies' effort to develop the metaverse; Microsoft's computing infrastructure can bring Activision's end-use gaming softwares and services into the metaverse. Activision's key games include Call of Duty, Overwatch, Diablo, World of Warcraft, and Candy Crush, alongside e-Sport entertainment through Major League gaming. These services will be pivotal to the expansion of the gaming sector of the metaverse.

Forward P/E	23.31
PEG	2.31
Price/Sales	8.33
Price/Book	3.46
EV/Revenue	7.19
EV/EBITDA	20.37
Operating Margin	25.58%
Return on Assets	5.20%
Return on Equity	11.10%
FCF/EV	4.51%

Nvidia Corporation

NASDAQ:NVDA

Applicable component(s) of value chain	Infrastructure
Key products and services	Nvidia creates Graphics Processing Units (GPUs) to accelerate computing. This includes creating hardware and software necessary for cutting-edge AI technology, 3-D graphics imaging and rendering, cryptocurrency mining, and more. Nvidia's Omniverse is their proprietary platform to develop and operate custom 3-D pipelines and industrial metaverse applications. Nvidia has also partnered with Microsoft to provide their cutting-edge industrial metaverse and AI super computing services to users via the cloud. Nvidia also plays a key role in evolving the Universal Scene Description (USD) which was initially created by Pixar for creating visual effects. Nvidia is in the process of building out the USD, enabling it to better support metaverse applications in architecture, engineering, manufacturing, scientific computing, robotics, and industrial digital twins.

Forward P/E	60.24
PEG	2.55
Price/Sales	43.79
Price/Book	45.75
EV/Revenue	43.22
EV/EBITDA	173.71
Operating Margin	17.37%
Return on Assets	6.27%
Return on Equity	18.85%
FCF/EV	0.49%

Meta Platforms, Inc.

NASDAQ:META

Applicable component(s) of value chain	Experience, Discovery, Spatial Computing, Human Interface
Key products and services	Meta is often considered the pioneer of the metaverse as a concept, championing it as the next evolution in social connection and the successor to the mobile internet. When they announced a company name change from Facebook to Meta, they also announced their efforts in developing the metaverse, including the Presence Platform, a tool-kit for individuals to build new mixed-reality experiences. Meta also produces the Quest 2, a fully-immersive VR head-kit. Oculus, acquired by Meta in 2014, continues to be a leader in the VR wearable hardware that is necessary for the human interface aspect of the metaverse.

Forward P/E	25.00
PEG	1.00
Price/Sales	6.93
Price/Book	6.08
EV/Revenue	6.62
EV/EBITDA	20.81
Operating Margin	29.22%
Return on Assets	11.69%
Return on Equity	17.36%
FCF/EV	2.54%

Microsoft Corporation

NASDAQ:MSFT

Applicable component(s) of value chain	Creator Economy, Spatial Computing, Decentralization, Human Interface, Infrastructure
Key products and services	Microsoft is pioneering a set of diverse efforts to develop the metaverse. With their hands in everything from metaverse software to hardware to end-use experiences, Microsoft will play a pivotal role in the growth of this industry. Microsoft has significant investment in AI technology, namely in Open AI—a non-profit dedicated to cutting-edge research in artificial intelligence. Microsoft also produces and sells the Microsoft HoloLens, an augmented/extended reality immersive headset. The company also has a thriving gaming sector, owning the gaming console Xbox as well as beginning the acquisition of Activision Blizzard. In 2022, Microsoft developed and launched Mesh for Microsoft Team, a feature coming AR and XR technologies to allow individuals from varying geographical locations to join collaborative and shared holographic experiences.

Forward P/E	29.76
PEG	2.42
Price/Sales	11.64
Price/Book	11.89
EV/Revenue	11.33
EV/EBITDA	22.84
Operating Margin	41.77%
Return on Assets	14.25%
Return on Equity	38.82%
FCF/EV	1.97%

Qualcomm, Inc.

NASDAQ:QCOM

Applicable component(s) of value chain	Infrastructure
Key products and services	While Qualcomm is specialized in 5G, Wi-Fi, and cutting-edge AI development, their product catalog includes platforms, chipsets, and software for OEMs (Original Equipment Manufacturers) and developers to launch new products. This will provide the necessary technological infrastructure for the development of metaverse-related products such as wearable devices and hardware. Qualcomm's dedication to streamlining and optimizing broadcast and telecommunication networks will be crucial to establishing the basic infrastructure to connect individuals within the metaverse.

Forward P/E	12.59
PEG	1.11
Price/Sales	3.49
Price/Book	6.44
EV/Revenue	3.63
EV/EBITDA	11.67
Operating Margin	26.03%
Return on Assets	13.08%
Return on Equity	47.02%
FCF/EV	4.51%

Alphabet, Inc.

NASDAQ:GOOG

Applicable component(s) of value chain	Discovery, Spatial Computing, Human Interface, Infrastructure
Key products and services	As the parent company of Google, Alphabet Inc. is a large, diversified conglomerate which produces and develops artificial intelligence, automation, cloud computing, computer hardware, internet, and software. Google AI recently announced their AI chatbot, Bard, and continues to perform research in generative AI, which is key to content creation in the metaverse. Google has announced Project Starline, a video-chat booth that Google is reportedly working on to offer a highly-immersive 3-dimensional social experience which leverages blockchain and extended reality technology. Google also recently acquired Raxium, a company devoted to AR and VR solutions, building on Google's own efforts to create AR/XR hardware and software such as Google AR Glasses and Lens.

Forward P/E	23.26
PEG	1.48
Price/Sales	5.88
Price/Book	6.23
EV/Revenue	5.43
EV/EBITDA	17.73
Operating Margin	26.44%
Return on Assets	12.96%
Return on Equity	23.33%
FCF/EV	4.35%

Unity Software, Inc.

NYSE:U

Applicable component(s) of value chain	Discovery, Creator Economy, Spatial Computing
Key products and services	Unity's cornerstone product, known as Unity Pro and Unity Plus, includes a subscription-based platform which provides users with an advanced tool-kit to create 2-dimensional, 3-dimensional, VR/AR video games and simulations. Unity has used its software and gaming engine to transition into various industries, including entertainment, film, automotive, architecture, and more. As Unity enables individual creators to design and implement VR/AR simulations, images, and applications, the company will be vital to content creation in the metaverse.

Forward P/E	75.19
PEG	N/A
Price/Sales	7.77
Price/Book	4.45
EV/Revenue	9.21
EV/EBITDA	-28.62
Operating Margin	-50.77%
Return on Assets	-9.16%
Return on Equity	-33.10%
FCF/EV	2.05%

Shopify, Inc.

NYSE:SHOP

Applicable component(s) of value chain	Creator Economy
Key products and services	Shopify is fundamentally an e-commerce platform for online stores and point-of-sale systems. Their proprietary software equips individuals to design, manage, and sell their products across a diverse set of sales channels. Shopify claims that commerce is shifting to the metaverse, citing one in three shoppers use some form of VR/AR when shopping. Shopify will leverage its leading e-commerce software system to pioneer purchases and transactions of retail products in and through the metaverse.

Forward P/E	111.11
PEG	N/A
Price/Sales	11.65
Price/Book	9.90
EV/Revenue	11.14
EV/EBITDA	-18.88
Operating Margin	-10.56%
Return on Assets	-4.07%
Return on Equity	-25.04%
FCF/EV	0.20%

NetEase, Inc.

NASDAQ:NTES

Applicable component(s) of value chain	Experience, Discovery, Creator Economy
Key products and services	NetEase develops premium content in the gaming industry. It has established a gaming ecosystem which encompasses some of the most popular and longest-running mobile and personal computer (PC) games in China. Its primary subsidiary, Yuodao (NYSE:DAO), develops intelligent learning and offers a wide range of solutions to integrate the Chinese language with English content including education digitization solutions, translation and search engines, and smart devices. This will be essential in integrating the Chinese market to the global metaverse. NetEase also develops NetEase Pay, an online payment platform, and NetEase mail, China's leading email service provider, alongside various other value-added services.

Forward P/E	18.87
PEG	1.98
Price/Sales	5.18
Price/Book	4.59
EV/Revenue	0.60
EV/EBITDA	2.39
Operating Margin	21.78%
Return on Assets	7.90%
Return on Equity	20.16%
FCF/EV	32.98%

Akamai Technologies, Inc.

NASDAQ:AKAM

Applicable component(s) of value chain	Infrastructure
Key products and services	Akamai is a content delivery network, cybersecurity, and cloud service company, with products spanning the web and internet security industries. Akamai Connected Cloud, a centralized edge and cloud computing platform, empowers businesses to build, secure, and run high-performing applications. Akamai Security Research provides businesses and individuals with services to better secure their virtual assets and information, including App and API Protectors, Page Integrity Manager, Prolexic, a defense against DDoS (Distributed Denial-of-Service Attack) cyberattacks. Akamai's content distribution services such as CloudTest, DataStream, Ion, and mPulse are catered towards business seeking to optimize their applications and websites.

Forward P/E	16.64
PEG	1.47
Price/Sales	4.17
Price/Book	3.48
EV/Revenue	4.68
EV/EBITDA	13.92
Operating Margin	19.42%
Return on Assets	5.34%
Return on Equity	11.51%
FCF/EV	4.48%

3.2 Consolidated Table of Financials

Company	Forward P/E	PEG	Price to Sales	Price to Book	EV to Revenue	EV to EBITDA	Operating Margin	Return on Assets	Return on Equity	FCF to EV (FCF yield)
T-Mobile US	18.69	0.34	2.14	2.45	3.40	11.06	19.07%	4.46%	9.05%	2.80%
Activision Blizzard	23.31	2.31	8.33	3.46	7.19	20.37	25.58%	5.20%	11.10%	4.51%
Nvidia	60.24	2.55	43.79	45.75	43.22	173.71	17.37%	6.27%	18.85%	0.49%
Meta	25.00	1.00	6.93	6.08	6.62	20.81	29.22%	11.69%	17.36%	2.54%
Microsoft	29.76	2.42	11.64	11.89	11.33	22.84	41.77%	14.25%	38.82%	1.97%
Qualcomm	12.59	1.11	3.49	6.44	3.63	11.67	26.03%	13.08%	47.02%	4.51%
Alphabet	23.26	1.48	5.88	6.23	5.43	17.72	26.44%	12.96%	23.33%	4.35%
Unity Software	75.19	N/A	7.77	4.45	9.21	-28.62	-50.77%	-9.16%	-33.10%	2.05%
Shopify, Inc.	111.11	N/A	11.65	9.90	11.14	-18.88	-10.56%	-4.07%	-25.04%	0.20%
NetEase, Inc.	18.87	1.98	5.18	4.59	0.60	2.39	21.78%	7.90%	20.16%	32.98%
Akamai	16.64	1.47	4.17	3.48	4.68	13.92	19.42%	5.34%	11.51%	4.48%

3.3 Multi-factor Relative Rating Model

A simple model was constructed in order to compare the above eleven companies by their metrics as shown above. The companies' values were normalized for each metric and a weighted average was calculated using the priorities[1] and weights outlined below:

Metric	Priority	Weight
Forward P/E	Low	15.0%
PEG	Low	10.0%
Price to Sales	Low	5.0%
Price to Book	Low	10.0%

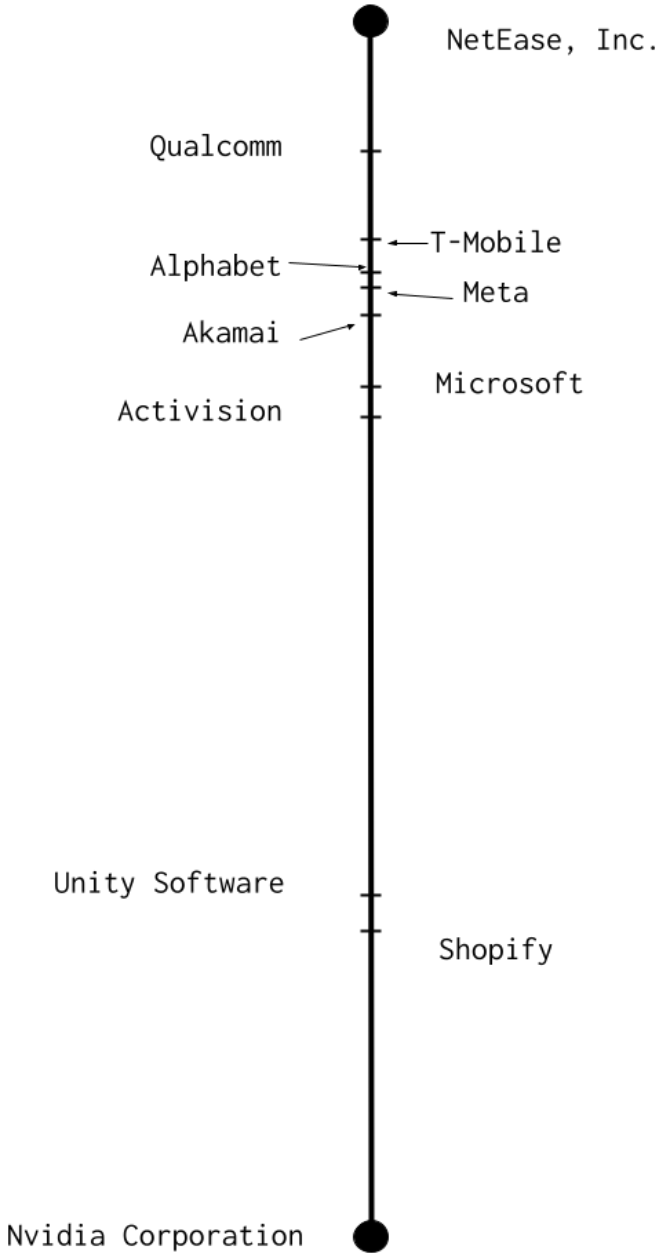
[1] Referring to whether a lower value or a higher value of the metric is preferred. For instance, a higher Return on Assets is favorable whereas a lower Price to Book is positive from an investment recommendation perspective.

EV to Revenue	Low	5.0%
EV to EBITDA	Low	15.0%
Operating Margin	High	10.0%
Return on Assets	High	7.5%
Return on Equity	High	7.5%
Free Cash Flow to EV (FCF yield)	High	15.0%

The following table displays the normalized score of the companies. This score ranges from 0 to 10, and by default, the lowest scoring company out of the eleven will receive a score of 0 and the highest a 10. This is simply to illustrate the relative rankings of the eleven companies and how they compare to one another based on the ten metrics alone.

Company	Relative Score
NetEase, Inc.	10.00
Qualcomm, Inc.	8.97
T-Mobile US	8.23
Alphabet, Inc.	7.92
Meta Platforms, Inc.	7.86
Akamai Technologies, Inc.	7.60
Microsoft Corporation	7.00
Activision Blizzard	6.75
Unity Software, Inc.	2.84
Shopify, Inc.	2.52
Nvidia Corporation[2]	0.00

[2] Nvidia Corporation rates low in this score due to its current price which is trading at a significant premium as a result of its recent 2023 boom. This makes its Forward P/E, P/S, P/B, EV/R, EV/EBITDA very high and therefore pushes its score in this particular model lower.


NetEase, Inc.
Qualcomm
T-Mobile
Alphabet
Meta
Akamai
Microsoft
Activision
Unity Software
Shopify
Nvidia Corporation