

Special Report

Metaverse – Mapping Investment Opportunities



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Metaverse – A multi-decade theme for investors

1

Internet – Ripe for the greatest transformation into Metaverse

- COVID-19 drove consumers' desire for more satisfying and immersive ways to connect.
- Multi-player video games are early attempts in the metaverse space, with the focus shifting toward different use cases such as social interaction, workplace cooperation, and virtual experience. As the metaverse-based technology matures, more use cases will emerge online.
- The metaverse industry is expected to expand to USD 800 billion by 2024 and cater to one billion individuals by 2030.

2

Substantial population ready for metaverse adoption

- Young people are acquainted with the idea of gaming and spending a considerable amount of time online. The youth will naturally take to virtual realities or virtual worlds.
- Gen Z (~30% of world population) will lead the metaverse adoption that will see a gradual transition from gaming to other forms of human activities.
- Approximately 38% of Gen Z and 48% of millennials believe that the metaverse will become part of their lives in the next 10 years.

3

Big tech companies race to capture the top spot across the metaverse value chain

- Several tech and related companies see a lot of potential in this space and are investing heavily.
- Rebranding of Facebook as Meta Platforms and Microsoft's acquisition of Activision Blizzard set the tone.
- Others down the chain too are developing products or technologies to overcome various challenges related to the metaverse.

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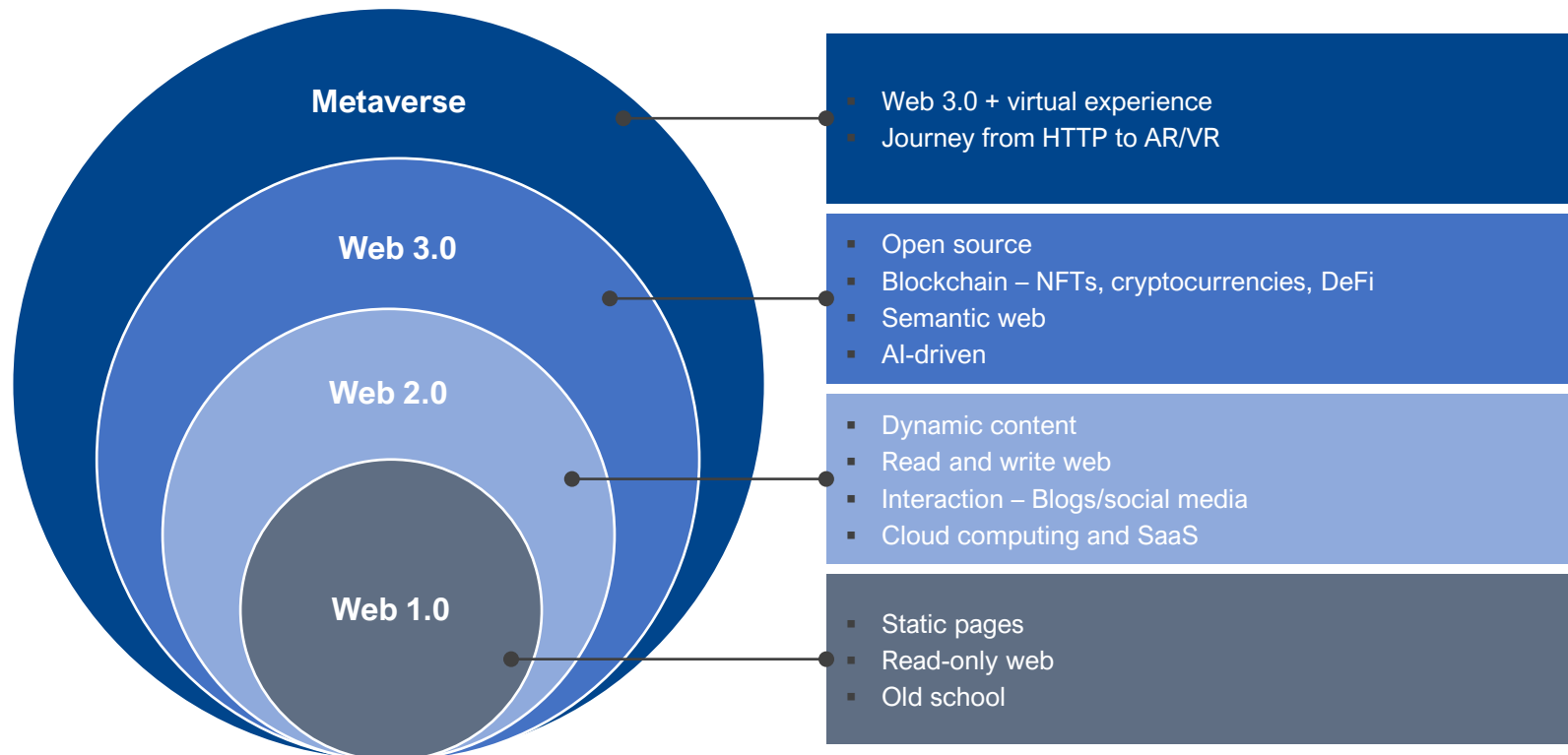
Metaverse-related investment products on the rise

- Roundhill Ball Metaverse ETF (Ticker: META), the world's first ETF, was launched in June 2021.
- Several such ETFs have hit the market since then across the globe.
- South Korea has been the pioneer in metaverse investments in Asia; 10 such ETFs are listed on the Korea Stock Exchange.

Source: Various, Business Insider – Harris Poll Research

Internet evolution

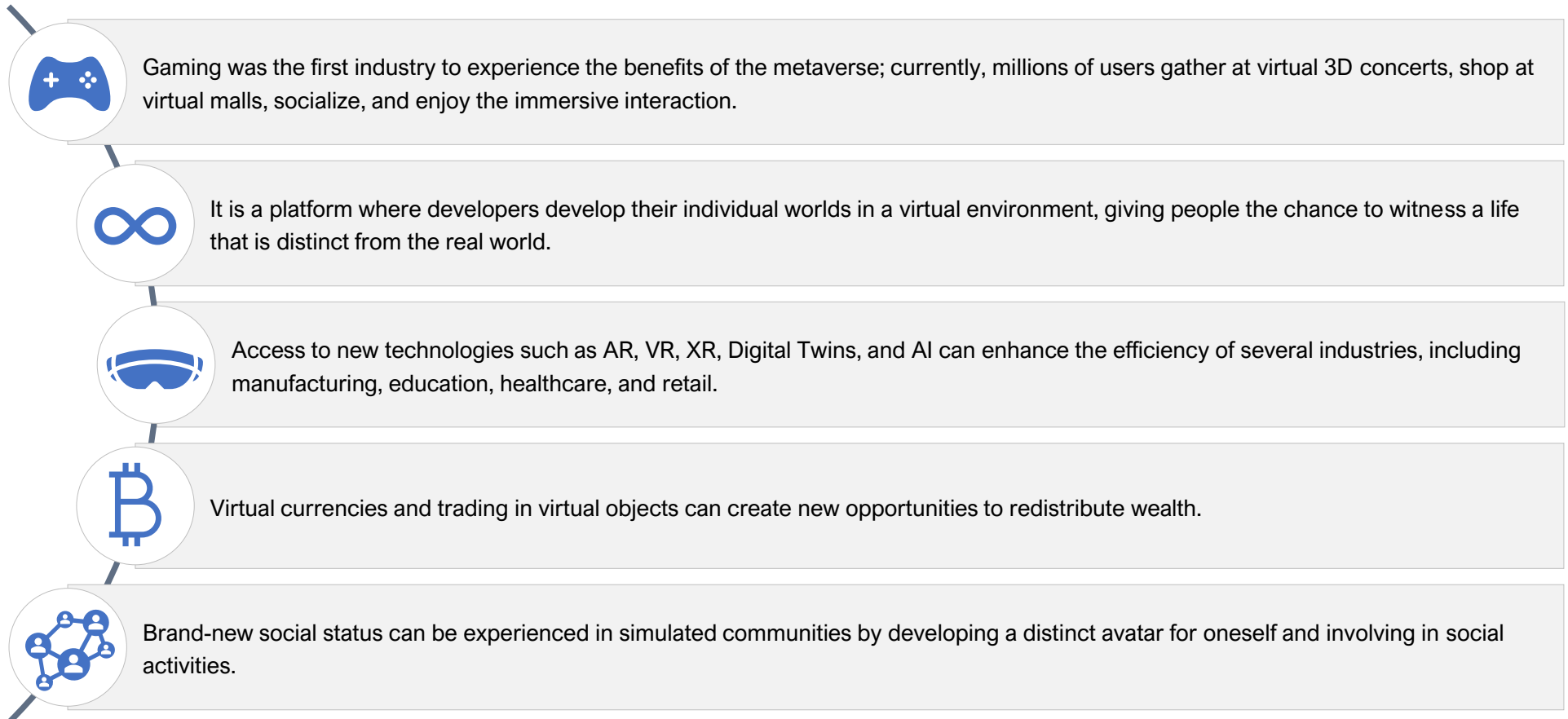
The first stage of the Internet's evolution was launched in 1991; it mainly included “consumers” of content with static pages hosted on ISP-run web servers. In 2004, Web 2.0 (the “social web”) was launched, enabling users to create content and alter the way web pages were used. The third stage of the Internet's evolution, Web 3.0, comprises Blockchain and Smart Contracts; on Web 3.0, also known as the “democratized web,” data is shared instead of being owned. The next stage of the Internet's evolution is related to creating an “alternate virtual experience” encompassing all the features of Web 3.0 plus new technologies such as augmented reality (AR) and virtual reality (VR). This is the era of the metaverse.



Source: Various, WSJ

Living inside Internet – Metaverse

The COVID-19 pandemic drove the conjunction of physical and digital, together with the development of complementary and rising technologies. The metaverse is considered the next generation of the Internet, a virtual, interconnected reality seamlessly entwined with the physical world.



Source: Deloitte

New universe for new generation



Awareness

- **86% of Gen Z** and 81% of millennials are familiar with the metaverse.
- **More than 66%** of people in India, China, Peru, and Saudi Arabia are positive about the adoption of XR, compared to less than a third in developed nations such as Canada, the UK, France, and Germany.
- Consumers and businesses are continuously **exploring the potential** of the metaverse as it is still in its infancy.



Technology

- Children spend almost **8.5 hours a week** on VR devices, mainly for entertainment purposes such as playing video games or watching movies.
- For a metaverse experience, consumers use devices such as VR headsets and AR glasses. As per a survey, **43% of consumers** purchased a VR device for their children.



Gaming

- Approximately **77% of millennials** and 81% of Gen Z associated themselves with the gaming community in 2021.
- Gen Z and millennials spend around 11 hours a week playing video games; Gen X are not far behind, with almost **10 hours of gameplay per week**.
- Around **89% of people in Brazil, 78% in Germany, 75% in the UK, and 63% in Japan** play video games regularly.











Virtual Spending

- Around 25% of in-game shoppers are aged **26–46**, while 8% are over the age of 46 years.
- Gen Z are willing to try **new ways of online shopping** and adapting to novel technologies.
- Consumers spent around **USD 54 billion on virtual products** during 2020.
- **Around seven million people from over 200 countries** visited Nikeland, Nike's metaverse store, in less than six months of its inauguration.

Big tech companies positioning themselves to ride this long-term theme

Most big tech and media companies have made relevant moves in the metaverse theme, in line with their core business strengths. They see long-term potential in the metaverse theme.

Companies	Metaverse Initiatives
 Meta	Facebook has rebranded as Meta and plans to spend USD 10 billion on research efforts related to metaverse development. The company is likely to continue investing at this scale over the next few years.
 Microsoft	Microsoft's Mesh is a collaboration and communications platform that enables presence and shared experience from anywhere on any device through mixed reality applications.
 amazon	Amazon has incorporated early metaverse in its marketplace. Its AR shopping tool, Room Decorator, allows users to use their phone or tablet to see how the furniture or other home décor would appear in their space.
 NVIDIA	Nvidia launched the world's first technology platform, enabling global 3D design teams to collaborate in real time in a shared space at multiple software speeds. About 700 companies are evaluating Nvidia's " Omniverse platform. "
 Alphabet	Alphabet looks to deploy new products on a blockchain-based platform to tap into the huge opportunity stemming from multimodal searches via in-depth application of AI.
 Tencent	Tencent invented LuoBuLesi, an online gaming platform allowing users to play games developed by other users while operating a virtual avatar; it is called "Roblox of China."
 Qualcomm	Qualcomm has opened Extended Reality (XR) Labs in Europe to tap into a thriving AR/VR community and is committed to making XR the future of mobile computing.
	Apple's App Store has over 14,000 AR Kit apps that provide incredible AR experience for millions of people. The company sees a lot of potential in this space and is investing accordingly.

Source: Company websites

Metaverse-specific investments gathering pace

Microsoft – Activision acquisition



Transaction value: USD 68.7 billion

This acquisition will accelerate the development of Microsoft's gaming unit across platforms such as mobile devices, PC, cloud, and console while providing building blocks for the metaverse. The goal is to make it simpler for people to enjoy good games the way they want and structure what happens next for gaming as platforms similar to the metaverse emerge.

Take-Two Interactive – Zynga acquisition



Transaction value: USD 12.7 billion

Leading interactive entertainment developer Take-Two Interactive Software, Inc. has completed its combination with the mobile gaming giant Zynga. The latter is poised to launch its maiden NFT experience in 2022 and expand its roots into the Web3 Space as the company aims to enhance its virtual experience.

Alphabet (Google) – North acquisition



Transaction value: USD 180 million

Google, a pioneer in AR, stated that the North's acquisition would help the company realize its vision of ambient computing where ubiquitous connected devices work together.

Unity – Weta Digital acquisition



Transaction value: USD 1.6 billion

Weta Digital's innovative VFX tools could drive further development of Unity Software's RT3D (real-time 3D) technology that users can enjoy within the metaverse.

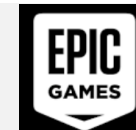
Sea Ltd – Refract



Funding round: USD 6.3 million

Sea Ltd.'s investment in a USD 6.3 million (USD 8.5 million) funding round for Refract marks its entry into the metaverse. The startup focuses on developing a wearable full-body motion-capture technology, called AXIS, as it aims to become a major contender in the extended reality universe.

Epic Games – Spaces acquisition



Funding round: USD 1 billion

Epic Games completed a USD 1 billion round of funding from Sony Group and several other investment partners to support its long-term vision related to the metaverse. Its vision includes accelerating the development of connected social experiences within games and empowering developers and creators with the required tools and services.

Source: Various, Yahoo Finance

Several renowned brands have already started exploring metaverse

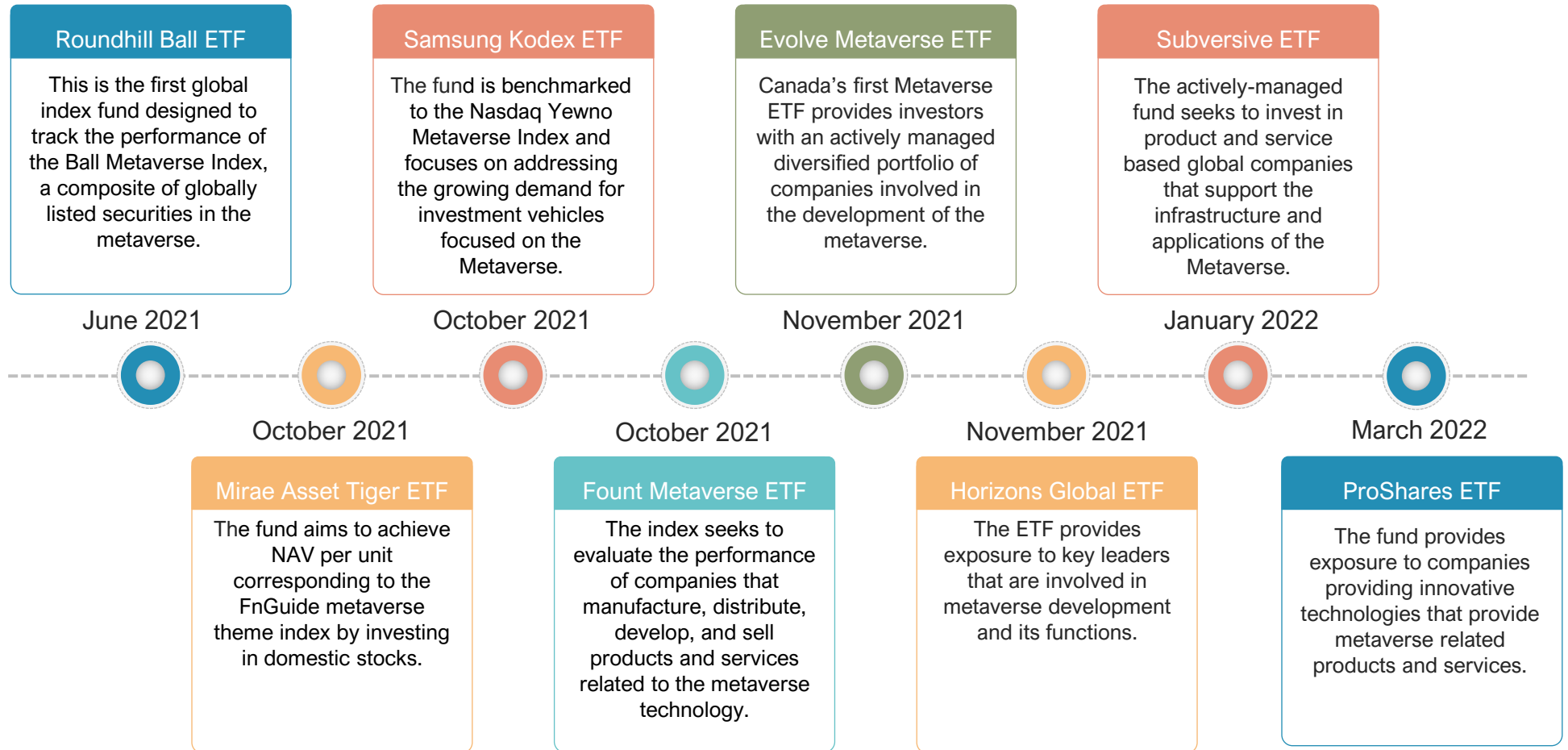
From launching virtual showrooms, providing immersive training programs, building virtual reality islands to improving collaboration, providing AR product visualization, and delivering virtual primary care, top brands across industries are exploring the metaverse to improve their overall business.



Source: Company websites

ETFs race to stay ahead in the game (1/3)

Several ETFs related to the metaverse have hit the market in the last 12 months, with more in the pipeline.



Source: Eikon Reuters, Evolveetfs, Roundhill Investments, Tigeretf, Fountetfs, Subversiveetfs, Horizonsetf, Proshares, Nasdaq

ETFs race to stay ahead in the game (2/3)

Name	Issuer	Inception	Geographic Focus	AUM	Description
Roundhill Ball Metaverse ETF	Roundhill Investments	June 2021	The US	USD 468 million	<ul style="list-style-type: none"> It holds equities, selected by a committee that uses information such as patent filings, third-party control data and metrics, technical updates, executive presentations, and consumer discussions in tracing companies that interact or enable the metaverse.
KODEX K-Metaverse Active ETF	Samsung Asset Management Co Ltd	October 2021	South Korea		<ul style="list-style-type: none"> The fund aims to actively manage its portfolio to provide returns closely replicating the performance of the FnGuide K-Metaverse Index.
TIGER Fn Metaverse ETF	Mirae Asset Global Investments	October 2021	South Korea		<ul style="list-style-type: none"> The underlying index consists of 20 stocks closely related to the metaverse. Text mining technology using analyst report is applied to item-selecting Process. The index's components must be listed on the KOSPI or KOSDAQ market.
Fount Metaverse ETF	Exchange Traded Concepts	October 2021	The US and Japan	USD 0.05 million	<ul style="list-style-type: none"> It is passively managed to provide a vanilla experience to entities that construct, develop, sell, or distribute goods and services related to the metaverse technology.

Source: Eikon Reuters and Issuer website

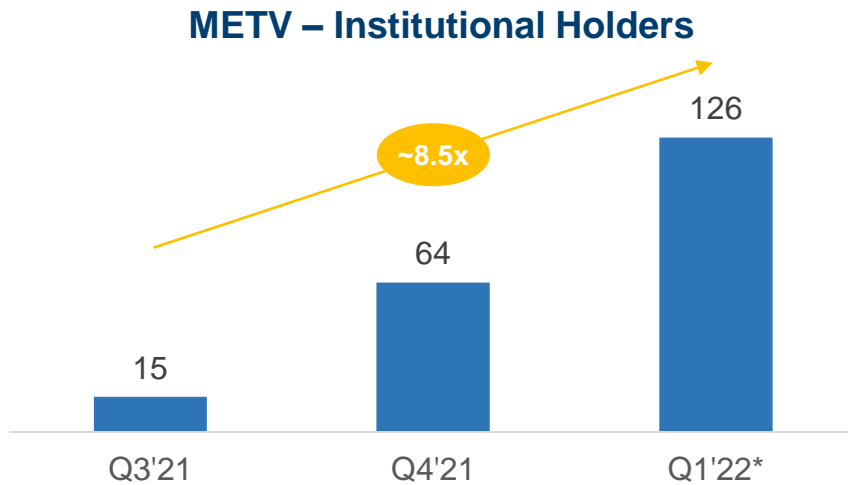
ETFs race to stay ahead in the game (3/3)

Name	Issuer	Inception	Geographic Focus	AUM	Description
Evolve Metaverse ETF	Evolve Funds Group Inc	November 2021	The US		<ul style="list-style-type: none"> It actively invests in a diversified set of widely traded equity securities of issuers from North America and developed markets globally, engaged in the expansion of the metaverse.
Horizons Global Metaverse Index ETF	Horizons ETFs Management (Canada) Inc	November 2021	The US		<ul style="list-style-type: none"> It seeks to imitate the performance of the Solactive Global Metaverse Index, covering the performance of publicly listed companies expected to benefit from the implementation and use of technologies estimated to expand and strengthen the functioning of the metaverse.
Subversive Metaverse ETF	Subversive Capital Advisors LLC	January 2022	The US	USD 0.88 million	<ul style="list-style-type: none"> Eligible companies in the fund have theme-based exposure to any of the seven variants of the metaverse: discovery, creator, experience economy, spatial computing, human interface decentralization, and infrastructure.
ProShares Metaverse ETF	ProShares	March 2022	The US		<ul style="list-style-type: none"> The ETF provides investors access to the companies developing the next line of digital interactions. It tracks the performance of the Solactive Metaverse Theme Index.

Source: Eikon Reuters and Issuer website

Investor sentiment turns bullish towards this theme

The metaverse is still in its infancy; nonetheless, the world's first metaverse ETF, METV, highlights that investors are turning bullish on the sector, with institutional investors growing ~8.5x in just a couple of quarters.



Some prominent institutional investors' thoughts on metaverse are given below:

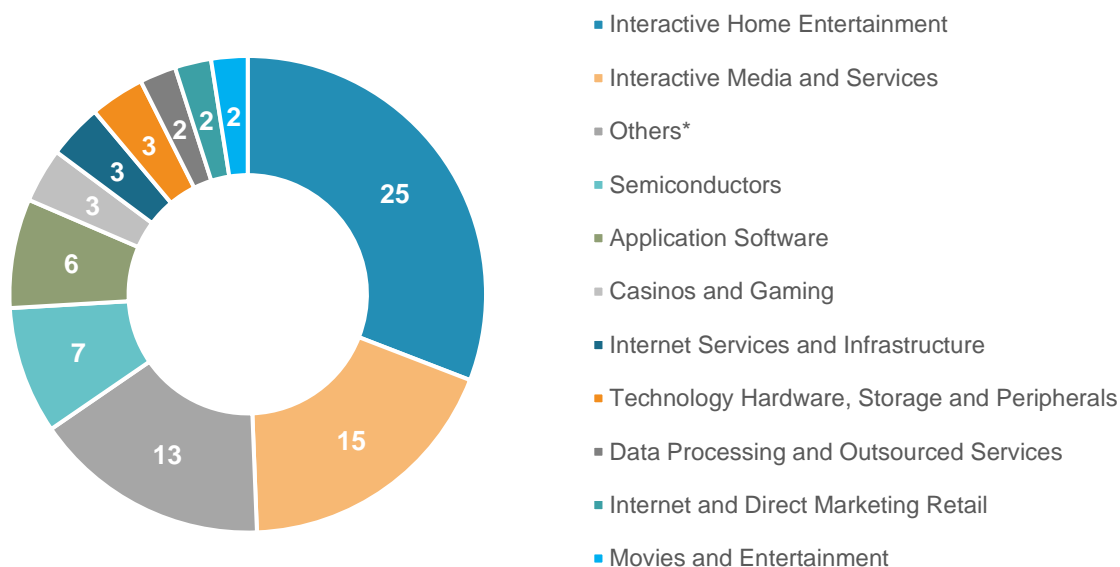
- **Morgan Stanley** calls the metaverse the **next big investment theme** and views metaverse as a USD 8 trillion market.
- **Goldman Sachs** believes that the metaverse can be a **USD 8 trillion opportunity**. The predictions are based on the recent dialogues at Goldman Sachs show titled *Understanding Metaverse and Web 3.0*.
- **Blackrock** believes that 2022 will be a **game changer** for the metaverse as technology giants are investing massively in this space.
- **GM Advisory Group (GMAG)** calls the metaverse the **next iteration of the Internet** where immersive and hyper-realistic digital experiences will be the new norm rather than expectation.
- **Raymond James & Associates, Inc.** believes that the metaverse has joined **cloud computing and 5G**, lifting business plans for tech spendings to record levels in future. The earning power of the metaverse will continue to explain its high valuations.

Source: Eikon Reuters, WSJ, Morgan Stanley, GMAG, Raymond James & Associates, INC, Goldman Sachs, Blackrock. *Indicates latest available data as of Q1'22.

Interactive home entertainment, and media and services sectors attract top ETFs

The emphasis is more on investing in global companies actively involved in the metaverse. The ETF sector allocation is based on holdings of the top three metaverse ETFs – METV, MESH, and MTRV.

ETF Sector Allocation
(81 companies)



- As per **METV**, the metaverse will be formed with **countless persistent virtual worlds** that interoperate with one another as well as the physical world. The key attributes of its holdings include computing, networking, virtual platforms, interchange standards, payments, services, and hardware.
- According to **MESH**, the metaverse theme is an **immersive 3D next-generation version** of the Internet, developed by the AR or VR technology space where users will be able to socialize. It is a digital, work and play.
- **MTRV** defines the metaverse as the **future iteration of the Internet** comprising constant, communal, and 3D virtual spaces connected to a superficial virtual universe. The four key components of MTRV’s holdings include AR, life log, mirror world, and virtual world.

**Note: Others include systems software, specialized REITs, research and consultancy services, real estate services, leisure products, leisure facilities, footwear, financial exchange and data, electronic equipment and instruments, consumer electronics, asset management and custody banks, alternative carriers, and aerospace- and defense-related companies*

METV - The Roundhill Ball Metaverse ETF; MESH - Evolve Metaverse ETF; MTRV – Fount Metaverse ETF

Source: Capital IQ, Roundhill Investments, Evolve ETFs, Fount ETFs

Understanding metaverse value chain

While the eventual focus will be on enhancing user experience, an effective metaverse will be built on a fast-paced network using future tech devices and cutting-edge computing power.



Brief Explanation

A fully interactive 3D metaverse involving real-time processing of massive volumes of data will require chips using advanced process nodes. Furthermore, faster and powerful telecommunications networks will be required for digital worlds to function efficiently.

This involves using a hardware to access the metaverse. While computers, laptop or phones may be used currently to enter an existing metaverse, a true immersive experience will come from devices that are built on future technologies.

This is also known as the processor of the metaverse including computing, programming engines, virtual platforms, asset creation and avatars.

The use cases and applications of the metaverse will be immersive, placing the consumer in a shared virtual environment. Metaverse experience will be the decisive dematerialized form of objects, physical space, and distance that will enhance the virtual experience.

Inclusions

- Semiconductor chips
- Tiny sensors
- Light technology
- 5G/6G network
- Poly-reduction algorithms
- Internet of Things (IoT)
- Microelectromechanical systems
- GPUs
- Wi-Fi 6

- Game controllers
- Haptics
- VR/AR
- Smartglasses
- Brain-computer interface
- Voice
- Neural
- Wearables

- Cloud computing
- Blockchain computing
- 3D engines
- Geospatial mapping
- Data integration
- Voice/gesture recognition
- Simulations/environment/worlds
- Virtual content and assets
- Avatars

- Digital currencies/cryptocurrencies
- DeFi
- NFTs
- 3D social events
- Gaming
- Virtual shopping
- Virtual work and learning space

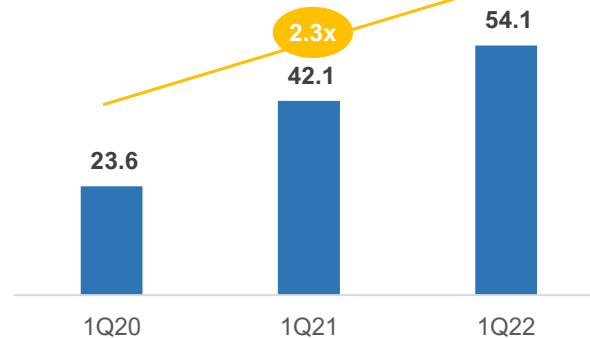
Case Study: Simpler version of metaverse experience provided by Roblox Corp (NYSE:RBLX)

Roblox, a virtual gaming platform provides tools to millions of developers to produce immersive games/experiences. This has attracted billions of users wishing to experience content that is “immersive and social.” Comscore rated Roblox as one of the top online entertainment platforms for audiences <18 years based on monthly visits and time spent.

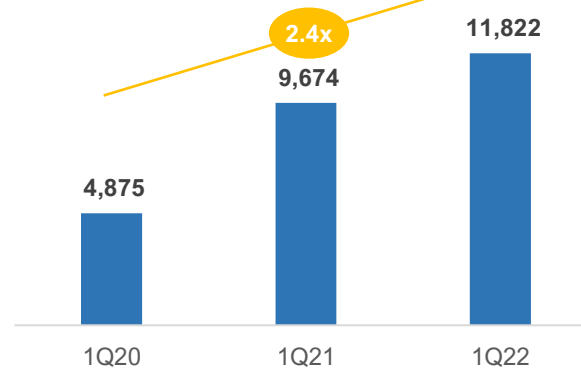
Facts



Daily Active Users (DAUs) (in mn)



Hours Engaged (in mn)



Top brands partnering with Roblox

- **McLaren** deal closes a big week for brands on Roblox.
- **Alo Yoga** has entered the metaverse through Roblox.
- **The National Football League** partners with Roblox to enhance its presence in the metaverse.
- Roblox will launch a VIP party and musical show for **The Brit Awards**.
- **David Guetta** will perform as an avatar for the first time on Roblox.
- **Ralph Lauren** develops expansive holiday-based experience on Roblox.
- **The British Fashion Council** presented a trophy for the best Roblox design.
- **Nike** partnered with Roblox to develop a virtual world called Nikeland.
- **Chipotle** brings Halloween to the Roblox Metaverse.

Key investment areas in metaverse

Hardware	These are the devices and technologies employed to interact with, access, or enhance the metaverse. These could include consumer-facing hardware (VR/AR devices, haptic gloves, etc.) and enterprise hardware (industrial cameras, projectors, tracking systems, scanning sensors).
Infrastructure	Dense computing, massive storage, and varying latencies are necessary for the metaverse to function efficiently. Truly persistent and immersive computing will require massive increase in computational efficiency, in turn, requiring powerful chips. Furthermore, the speed of transmission of information is crucial for the metaverse. Latency issues can be resolved with a 5G/6G network in the future. Moreover, an increase in metaverse adoption would lead to a requirement for data centers with enhanced sustainable technology.
Virtual Platforms	Virtual platforms provide creators/developers with the tools and services to create virtual content, wherein consumer spending would be shared with on-platform creators/developers. Nvidia's Omniverse Platform for industrial use or Roblox for enhancing user experience are examples of virtual platforms. Other aspiring virtual platforms include blockchain-based Decentraland and The Sandbox.
Payments	A thriving virtual economy depends on strong consumer spending, capital mobility, profitable organizations, and competition. This requires payments service and technology to facilitate transactions, including settlements and commitments, and scale them up simultaneously. Blockchain and digital payments could provide the necessary metaverse marketplace for digital settlement of assets including NFTs, cryptocurrencies, and stablecoins, among others.
Content	A computer-based environment to allow users to explore, participate, and communicate. Some examples of user-generated content include virtual art exhibitions, virtual offices, immersive video games, social events, virtual museums, virtual music concerts, virtual education, and virtual stores.
Assets	These are basically in the form of NFTs, reflecting ownership of items such as digital files, avatars, skins, or even virtual land. Many major brands such as Coca-Cola and Disney have launched their official NFTs to explore how to engage users in the virtual economy.



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Connect with our Team



Clarence Menezes

Senior Manager – Investment
Research

+91.22.3937.9999
ciarence.menezes@aranca.com



Kartik Sahni

Senior Analyst – Investment
Research

+91.22.3937.9999
kartik.sahni@aranca.com



Rishi Kabra

Analyst – Investment Research

+91.22.3937.9999
rishi.kabra@aranca.com

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