
Metaverse

Research and Development
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What is Metaverse?

Neal Stephenson introduced the term “metaverse” in science fictional novel “snow-cash”.

Metaverse is a next stage in the development of the internet that **converge digital and physical world**.

Metaverse term is typically used to describe the concept of a future iteration of the internet, made up of persistent, shared, 3D virtual spaces linked into a perceived virtual universe.

It's the combination of multi elements of technology including **VR, AR, Decentralized payment systems** and **video** where the user live in the digital world.

Metaverse Uses Blockchain:

- Metaverse will also use blockchain technology in which users can **buy digital assets** such as clothes, even land and much more using cryptocurrency.
- Fashion companies experimenting with making virtual clothing which people Avatar can wear in metaverse environment.
- Metaverse offer new place for people to socialize, trade, game and even attend music

Metaverse is all about?

Metaverse will bring new experiences to users and interaction with full facial expressions.

It will **enhance knowledge** and **learning abilities**, **normalizing teleportation** and **increasing productivity**.

It will provide a Virtual environment and brings new opportunities to earn using cryptocurrency.

1. Experience:

Metaverse allow user to live in fantasies.

User could be:

- Slagging enemies in game
- Playing chess on the streets of New York.
- Even fly around the virtual world

Anything that one could imagine could be done with incredible realism and at the same one could be safe at home .

2. Expression:

In traditional social platforms user had profile picture to represent themselves but in Metaverse user will have an **Avatar**, a fully multi-dimensional living depiction of user and it would be like the way one wanted it to be

If user wishes of 3 inch taller now he could have to be, or with bigger forehead or with any race, creature he wanted to be.

Meta is also working on the tech to create completely life-like Avatars that are fully rendered with every real feature which will feel like real game.

Metaverse even enables **disable people** not only walk but even fly around the world and every person will have their own home space.

3. Teleportation:

In Metaverse teleportation will be equivalent of just clicking a link in your browser now.

According to Mark Zuckerberg, while in the metaverse, users can create a space of their own and invite others to join.

User don't have to be stuck in traffic or travel through dangerous route to attend a business meeting. They can do so from home.

4. Knowledge:

As now libraries get old fashioned as we can google exactly what we want to know. Metaverse is going to make “google it” just as old fashioned.

User will be able to learn about things just by **touching** them or even **looking** at them and obtain information in more interactive way.

5. Productivity:

User can learn faster, or can do remote work in most optimal environment.

Tech allows us to input faster. We grow-up writing with pen then it shifted to tapping keys on keyboard and now in metaverse we'll be using **voice gestures** and even making things happen by just thinking about them.

Metaverse is working now on **Electromyographic** or **EMG** input devices which detect and intercept the impulses in your nerves, translate the signal from brain to the corresponding actions in a virtual space or you can send message just by thinking about moving your fingers and you won't even need to physically move them.

6. Environment:

Metaverse will help in protecting the environment by reducing the **need of travel**.

Traffic jams do not suck us anymore and cities can save road for meaningful travel instead of wasting on things that can be done on internet.

Manufacturing is going to be another thing that we can do less of if the Metaverse takes off. Firing up millions of factories that produces rubber toys will be useless when many of such items can exist in virtual world for us.

7. New Economy:

Meta will develop stores within it called **Horizon marketplace** which is not just selling stuff to us but a platform where anyone can be a seller.

User could create virtual clothing and can craft a new virtual experience and charge to try it. User can design a completely new world and anything and in this we have an opportunities to earn and transaction will occur through **cryptocurrency**.

Problems:

These four things that we need to be careful about

- 1) Data Rights
- 2) What's Real?
- 3) Moderation
- 4) What About us?

1. Data Rights:

Facebook uses user's data in the past when internet was not that much extensive but in metaverse case **users become digital selves** and our profile is everything what we do in virtual world.

In Metaverse data collection is even at the level of **measuring your brain activities**.

2. What is Real?

We will be far away from the reality as we would see what we want to see.

If user hate seeing homeless people, metaverse can pretend that they don't even exist.

If user think covid is not real, in his metaverse it would not be.

If user love 1 technology brand and hated others, in his metaverse that's all he wanted to see.

If one user got hacked, cyber criminal and he could be sitting in 1 room without even knowing.

3. Moderation:

In Metaverse scanning hate speech, terrorism, exploitation and protect it from spreading would be incredibly invasive as they have to watch every single design and items purchase for home space. What is written in Avatar's shirt says, every single action will have to be monitored.

4. What about us?

Where everything is shifted to virtual world while human still need to eat healthy, sleep well, drink lot of water and to get in touch with family.

Seizure Case:

Few years ago in the middle of VRChat session a user wearing a full body tracking suit apparently had a seizure. Everyone gathered around the red robot avatar. Nobody know what part of the planet this person lived on all they could do is just observe.

Metaverse is the future:

Nvidia's connection to metaverse comes through its **Omniverse** platform which is an open-source tool that allows users to build and connect virtual world.

According to the Nvidia CEO, metaverse will be much much bigger than the physical world as well as the economy of the virtual world as compare to physical world

Robot Learn Scenario:

The metaverse will be a place where robots can run through millions of scenarios to learn, then be uploaded into the physical world as a much smarter robot.

“We’ll have millions of robots in the physical world, but we’re going to have billions of robots in the Omniverse worlds, in the virtual worlds. And these billions of robots are learning to be physical robots — you could have a million of them learning how to be one good robot.” Huang CEO Nvidia

1. Nvidia:

Nvidia should be one of the biggest metaverse winners with its **Omniverse platform** and graphics chips.

Omniverse is based on open source technology developed by Pixar, called **Universal Scene Description** (USD). USD called as the **HTML of 3D**.

Omniverse supports 3D simulation and design collaboration which has potential market of \$40B per year.

Nvidia could have an even greater opportunity with its graphics chips. The demand for these chips will likely explode if the metaverse lives up to the hype. Nvidia is the leading provider of graphics chips for gaming today.

2. Meta Platform:

Meta is developing **VR** and **AR devices** and a **new operating system** for the metaverse. It's creating a **digital commerce platform**. The company is working on content studios and, a social platform for the metaverse.

Mark Zuckerberg said their goal is to "help a billion people use the metaverse and support hundreds of billions of dollars of digital commerce" by the end of this decade.

3. Unity Software:

Unity Software aims to be the company that provides creators the tools they need for the development of the meta.

The company already had the tools that programmers needed for building 3D games. Weta's visual effects tools enable Unity to meet artists' needs as well.

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Metaverse is a Near Future:

“Metaverse is the idea of taking information about things, locations, or historical events and actually locating that information out there in the world where it’s most relevant.”
by Leslie Shannon, Nokia’s Head of Trend Scouting.

Companies will need to transition their **marketing strategies** and **market research** on their new customers in the metaverse that how they act, their preferences and what they shop for real life.

Online shopping is given in metaverse, irrespective of digitally trying on clothes, people can purchase for real life and virtual assets have their own worth

What Metaverse Means For Developer:

Tree current initiative of metaverse by top companies.

1. Microsoft Metaverse Stack:

- Microsoft's conception of the metaverse is that it is very much modeled on the real world.
- It wants to provide a platform to digitally map and monitor everything in a real-world business environment — warehouses, factories, retail stores, and so on. It'll be like a 3D version of Microsoft Office and named this concept as **digital twins**.
- From a developer perspective, developer can apply complex **machine learning technology** to digital twins, or build a simple application on top of digital twin data using Microsoft's Power Platform (its low-code toolset).

2. Nvidia and the HTML of 3D:

- Nvidia announced an expansion of its Omniverse platform.
- Basically, it allows engineers to collaborate on building a physical product, by working together on a digital representation of that product. So it has the same **digital twin** philosophy as Microsoft.
- Users can portal in and out of Omniverse with workstations or laptops allowing them to teleport into the environment with VR. Or they can mix with AR and anyone can view the scene on Omniverse by streaming RTX to their device.
- Developers can learn about building “**Omniverse extensions and microservices**” at the Omniverse Developer Resource Center. There is a developer kit available, to get started building 3D scenes using USD.

3. Facebook's Looming Presence:

Facebook announce 2 products:

1. **Portal** - a video calling device.
2. **Oculus** - It can teleport you into a room with another person regardless of physical distance.

Facebook described this as the type of “presence” that metaverses will require.

Microsoft and Nvidia's Practical Approach:

- Both companies showed a more practical and business-oriented approach to the metaverse than the consumer-focused version that Mark Zuckerberg and team presented.
- Microsoft and Nvidia focused on **team collaboration** and **business-to-business communication**.
- The Microsoft and Nvidia concepts seem much more targeted to certain environments in certain businesses.
 - Microsoft's Mesh for Teams is meant to work for most types of business meetings in theory.
 - Nvidia's offering is for the engineers, designers, and other creative professionals who are involved with creating 3D models and virtual worlds.

Blockchain, Metaverse and Web 3.0:

- Blockchain technology is central to the development of the metaverse and Web 3, Goldman Sachs said in a research report.
- For Web 3.0, blockchain allows for the elimination of centralized control.
- Technology that can “uniquely identify any virtual object independent of a central authority,”
- In future user will be able to login without the need of 3rd party such as Meta, Google or Apple etc.
- Web 3 is the third generation of internet services which have been made possible by decentralized networks.

Metaverse VS Web 3.0:

Similarities:

- Both are advanced technology, that will evolve gradually. These technologies will involve high level of artificial intelligence and advance user interface.
- Both are focusing on the next-generation internet technology by changing the way of sharing content through the internet. Both technology help users to dive into the digital world through IoT.

Differences:

Web 3.0:

The future is based on Web 3.0, which is essentially the *engine* that absorbs blockchain technologies. Every new blockchain concept and solution is immediately recognized to be integrated into Web 3.0, including Metaverse.

Metaverse:

Metaverse is new dimension that includes "gaming, cinema, concert, entertainment, social platforms, education, simulation based training" approaches that uses Web 3.0 innovations to fulfill its purpose. Many things that will be on web but not part of Metaverse, will still be within the context of Web 3.

What are NFTs:

- NFT (Non-Fungible Tokens) are not just about selling and buying digital artwork. They have a widespread set of real-world use cases as fashion brands and corporate companies are beginning to promote themselves by distributing their NFTs.
- From social media posts to celebrity assets, NFTs are the way to trade all of these items while retaining the original authorship of the product.
- NFTs have given gaming platforms a new lease of life as players have started to **“play to earn”**. Today, games can help users earn NFTs that can be traded on marketplaces for higher prices.
- Gaming assets in the Metaverse can be traded as NFTs with the help of Metaverse coins

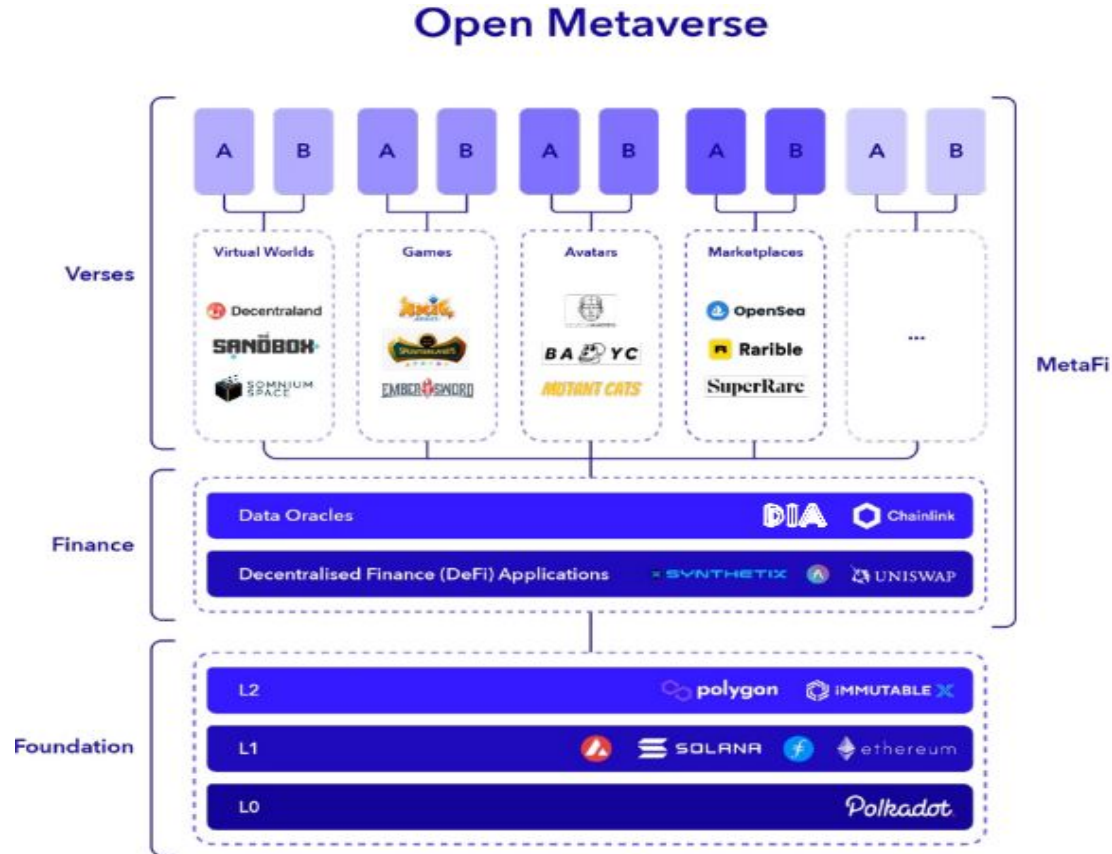
NFT Accessing the Metaverse:

- NFT-based augmented experiences are set to act as pillars for next-generation social networks.
- NFTs are capable of disrupting the traditional social network paradigm of user interaction, socialization, and transaction in the metaverse.
- NFTs are the bridge to the metaverse, and facilitate **identity, community** and **social experiences** in the metaverse
- With NFTs, users can have **full ownership** of their virtual lands and spaces in the metaverse. The underlying blockchain enables users to prove ownership of the asset and develop their virtual real estate.
- The **play-to-earn** gaming economy will engage and empower players of blockchain games via NFTs.

What is DeFi:

- Decentralized finance or DeFi is a system by which financial products become available on a public decentralized blockchain network. That makes them open to anyone to use, rather than going through middlemen like banks etc.
- DeFi rely heavily on **cryptography, blockchain** and **smart contracts**.
- Smart Contracts are the building blocks of DeFi.
- Smart contracts that **automate agreement terms** between buyers and sellers or lenders and borrowers make these financial products possible.
- The components of DeFi are stablecoins, use cases, and a software stack that enables the development of applications.

MetaFi Framework:



MetaFi: DeFi of Metaverse

- MetaFi is term for **protocols, product** or **services** enabling the complex financial interplay between **non-fungible** and **fungible tokens**.
- MetaFi comprises fundamental building blocks of the blockchain space, such as foundations as layer zero, one and two, the DeFi stack and various verses.
- Economic activity in the Metaverse will promote **generational wealth** transfer favoring the upcoming generations, not the legacy world.
- It will bring inclusion to the **individuals** who have digital value that is not recognized by the traditional financial system.

Summary:

A new iteration of the internet is being worked on and this will have massive implications for society. Marketing, communications, and branding professionals will face new challenges but also new opportunities. This new era of the metaverse will unleash amazing creativity and open up new frontiers and horizons for brands and businesses.