METAVERSE – A VIRTUAL UNIVERSE

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Abstract: - The Metaverse is the post-reality universe, a perpetual and persistent multiuser environment merging physical reality with digital virtuality. It is based on the convergence of technologies that enable multisensory interactions with virtual environments, digital objects and people such as virtual reality (VR) and augmented reality (AR). Hence, the Metaverse is an interconnected web of social, networked immersive environments in persistent multiuser platforms. It enables seamless embodied user communication in real-time and dynamic interactions with digital artifacts. Its first iteration was a web of virtual worlds where avatars were able to teleport among them. The contemporary iteration of the Metaverse features social, immersive VR platforms compatible with massive multiplayer online video games, open game worlds and AR collaborative spaces.

Keywords: - Metaverse, Virtual Environment, Virtual reality, Augmented Reality

"The metaverse is here, and it's not only transforming how we see the world but how we participate in it – from the factory floor to the meeting room." ~Satya Nadella, Microsoft CEO.

1. INTRODUCTION

The metaverse is a concept of a persistent, online, 3D universe that combines multiple different virtual spaces. You can think of it as a future iteration of the internet. The metaverse will allow users to work, meet, game, and socialize together in these 3D spaces.

Although not required, Cryptocurrencies can be a great fit for a metaverse. They allow for creating a digital economy with different types of utility tokens and virtual collectibles (NFTs). The metaverse would also benefit from the use of crypto wallets, such as Trust Wallet and Meta Mask. Also, blockchain technology can provide transparent and reliable governance systems.

Blockchain, metaverse-like applications already exist and provide people with liveable incomes. Axie Infinity is one play-to-earn game that many users play to support their income. Second Live and Decentraland are other examples of successfully mixing the blockchain world and virtual reality apps.

When we look to the future, big tech giants are trying to lead the way. However, the decentralized aspects of the blockchain industry are letting smaller players participate in the metaverse's development as well.

The metaverse is a concept of an online, 3D, virtual space connecting users in all aspects of their lives. It would connect multiple platforms, similar to the internet containing different websites accessible through a single browser.

Besides supporting gaming or social media, the metaverse will combine economies, digital identity, decentralized governance, and other applications. Even today, user creation and ownership of valuable items and currencies help develop a single, united metaverse. All these features provide blockchain the potential to power this future technology.

Because of the emphasis on 3D virtual reality, video games offer the closest metaverse experience currently. This point isn't just because they are 3D, though. Video games now offer services and features that cross over into other aspects of our lives. The video game Roblox even hosts virtual events like concerts and meetups. Players don't just play the game anymore; they also use it for other activities and parts of their lives in "cyberspace".

2. CRYPTO'S RELATION WITH METAVERSE

Gaming provides the 3D aspect of the metaverse but doesn't cover everything needed in a virtual world that can cover all aspects of life. Crypto can offer the other key parts required, such as digital proof of ownership, transfer of value, governance, and accessibility

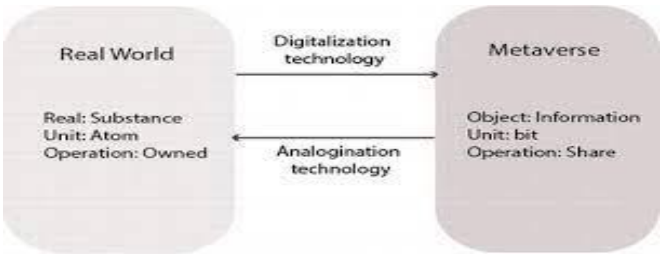
If, in the future, we work, socialize, and even purchase virtual items in the metaverse, we need a secure way of showing ownership. We also need to feel safe transferring these items and money around the metaverse. Finally, we will also want to play a role in the decision-making taking place in the metaverse if it will be such a large part of our lives.

Some video games contain some basic solutions already, but many developers use crypto and blockchain instead as a better option. Blockchain provides a decentralized and transparent way of dealing with the topics, while video-game development is more centralized.

Blockchain developers also take influence from the video game world too. Gamification is common in Decentralized Finance (DeFi) and GameFi. It seems there will be enough similarities in the future that the two worlds may become even more integrated. The key aspects of blockchain suited to the metaverse are:

1. Digital proof of ownership: By owning a wallet with access to your private keys, you can instantly prove ownership of activity or an asset on the blockchain. A wallet is one of the most secure and robust methods for establishing a digital identity and proof of ownership.

2. Digital collectibility: Just as we can establish who owns something, we can also show that an item is original and unique. For a metaverse looking to incorporate more real-life activities, this is important. Through NFTs, we can create objects that are 100% unique and can never be copied exactly or forged. A blockchain can also represent ownership of physical items.
3. Transfer of value: A metaverse will need a way to transfer value securely that users trust. In-game currencies in multiplayer games are less secure than crypto on a blockchain. If users spend large amounts of time in the metaverse and even earn money there, they will need a reliable currency.
4. Governance: The ability to control the rules of your interaction with the metaverse should also be important for users. In real life, we can have voting rights in companies and elect leaders and governments. The metaverse will also need ways to implement fair governance, and blockchain is already a proven way of doing this.
5. Accessibility: Creating a wallet is open to anyone around the world on public blockchains. Unlike a bank account, you don't need to pay any money or provide any details. This makes it one of the most accessible ways to manage finances and an online, digital identity.



3. OPPORTUNITIES IN METAVERSE

As we mentioned, the metaverse will combine all aspects of life in one place. While many people already work at home, in the metaverse, you will be able to enter a 3D office and interact with your colleagues' avatars. Your job may also be metaverse related and provide you with income directly usable in the metaverse. In fact, these kinds of jobs already exist in a similar form.

GameFi and play-to-earn models now provide steady income streams for people worldwide. These online jobs are great candidates for metaverse implementation in the future, as they show that people are willing to spend their time living and earning in virtual worlds. Play-to-earn games like Axie Infinity and Gods Unchained don't even have 3D worlds or avatars. However, it's the principle that they could be part of the metaverse as a way to earn money entirely in the online world.

4. METAVERSE EXAMPLES

SecondLive
SecondLive is a 3D virtual environment where users control avatars for socializing, learning, and business. The project also has an NFT marketplace for swapping collectibles. In September 2020, SecondLive hosted Binance Smart Chain's Harvest Festival as part of its first anniversary. The virtual expo showcased different projects in the BSC ecosystem for users to explore and interact with.

Axie Infinity
Axie Infinity is a play-to-earn game that's provided players in developing countries an opportunity to earn consistent income. By purchasing or being gifted three creatures known as Axies, a player can start farming the Smooth Love Potion (SLP) token. When sold on the open market, someone could make roughly $200 to $1000 (USD) depending on how much they play and the market price. While Axie Infinity doesn't provide a singular 3D character or avatar, it gives users the opportunity for a metaverse-like job. You might have already heard the famous story of Filipinos using it as an alternative to full-time employment or welfare.

Decentraland
Decentraland is an online, digital world that combines social elements with cryptocurrencies, NFTs, and virtual real estate. On top of this, players also take an active role in the governance of the platform. Like other blockchain games, NFTs are used to represent cosmetic collectibles. They're also used for LAND, 16x16 meter land parcels that users can purchase in the game with the cryptocurrency MANA. The combination of all of these creates a complex crypto-economy.

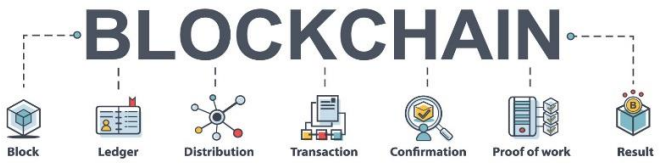
5. FUTURE OF METAVERSE

Facebook is one of the loudest voices for the creation of a unified metaverse. This is particularly interesting for a crypto-powered metaverse due to Facebook's Diem stablecoin project. Mark Zuckerberg has explicitly mentioned his plans to use a metaverse project to support remote work and improve financial opportunities for people in developing countries. Facebook's ownership of social media, communication, and crypto platforms give it a good start combining all these worlds into one. Other large tech companies are also targeting the creation of a metaverse, including Microsoft, Apple, and Google.
When it comes to a crypto-powered metaverse, further integration between NFT marketplaces and 3D virtual universes seems like the next step. NFT holders can already sell their goods from multiple sources on marketplaces like OpenSea and BakerySwap, but there isn't yet a popular 3D platform for this. At a bigger scale, blockchain developers might develop popular metaverse-like applications with more organic users than a large tech giant.

5.1 Extended Reality.
The metaverse moves from concept to reality, and VR/AR/MR is a necessary intermediate stage. To a certain extent, virtual environments are the technical foundation of the metaverse. The metaverse is a shared virtual space that allows individuals to interact with each other in the digital environment. Users exist in such a space as concrete virtual images, just like living in a world parallel to the real world. Such immersive technologies will shape the new form of immersive internet. VR will allow users to obtain a more realistic and specific experience in the virtual networked world, making the virtual world operation more similar to the

5.2 Artificial Intelligence.
The application of artificial intelligence, especially deep learning, makes great progress in automation for operators and designers in the metaverse, and achieves higher performance than conventional approaches. However, applying artificial intelligence to facilitate users' operation and improve the immerse experience is lacking. Existing artificial intelligence models are usually very deep and require massive computation capabilities, which is unfriendly for resource-constrained mobile devices. Hence, designing light but efficient artificial intelligence models is necessary.

5.3 Blockchain.
With the increasing demand for decentralised content creation in the metaverse, NFT is playing a more critical role. NFT enables the created properties to be traded with customised values. However, the research on NFT is still in the early phase. Currently, most NFT solutions are based on Ethereum. Hence, the drawbacks, e.g., slow confirmation and high transaction cost, are naturally inherited. Furthermore, blockchain adopts the proof of work as the consensus mechanism, which requires participants to spend effort on puzzles to guarantee data security. However, the verification process for encrypted data is not as fast as conventional approaches. Hence, faster proof of work to accelerate the data accessing speed and scalability is a challenge to be solved. Currently, more than 60$ is required to mine an NFT token, which is obviously too much for small-scale transactions. Anonymity is another challenge. Most NFT schemes adopt pseudo-anonymity, instead of strict anonymity, which may lead to privacy leakage.



6. CONCLUSION

Metaverse can potentially represent a new solar system where different platform will act as different planets with their own ecosystem and concepts.
On a final note, technology giants such as Apple and Google have ambitious plans for materialising the metaverse. With the engagement of emerging technologies and the progressive development and refinement of the ecosystem, our virtual worlds (or digital twins) will look radically different in the upcoming years. Now, our digitised future is going to be more interactive, more alive, more embodied and more multimedia, due to the existence of powerful computing devices and intelligent wearables. However, there exist still many challenges to be overcome before the metaverse become integrated into the physical world and our everyday life.

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