



Whitepaper

Confluence of Metaverse and DLT

CGI

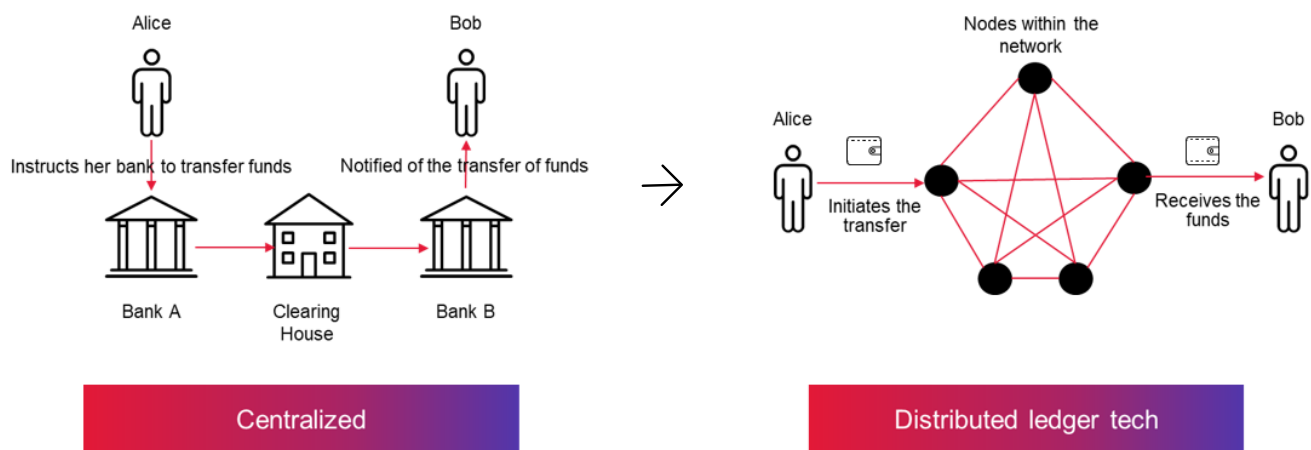
Executive summary

Metaverse as a concept has been around for many years. Currently, it is a big part of the gaming eco-system. The recent re-branding of Facebook to Meta, has generated considerable interest in other industries as well. JP Morgan, for example, announced its entry in the Metaverse by opening a virtual lounge in the virtual world called Decentraland. There is also growing adoption in the area of training and collaboration environments, virtual healthcare and IoT enabled smart places.

Also, there is now a renewed interest in it because the availability of affordable AR/VR (augment reality / virtual reality) devices and DLT's (Distributed ledger technologies) solve some long standing problems of the Metaverse. This paper brings out those synergies between Metaverse and DLT's. We at CGI would help you understand and navigate the complex world of Metaverse.

The paper begins with a basic introduction of DLT's. Followed by features of a DLT that find application within the Metaverse. We briefly discuss the Web-3 and finally conclude by showcasing a use case of Metaverse using a DLT – Decentraland.

Promise of DLT - a design canvas



Embedded financial incentives within a DLT builds TRUST within the network

Prior to Bitcoin, if Alice wanted to transfer money to Bob then she had to rely on centralized institutions like banks and a clearing and settlement agency to do so. Bitcoin now makes it possible for Alice to initiate transfer of value to Bob without the use of centralized institutions. She initiates the transfer from her wallet by creating a transaction and broadcasting it to a network of nodes. The network of nodes will validate the transaction. For example, it will check, on whether Alice indeed owns the Bitcoins that she is transferring to Bob. Any individual/entity can become a node and be a participant of the network. Financial incentives within the network will reward honest nodes that act

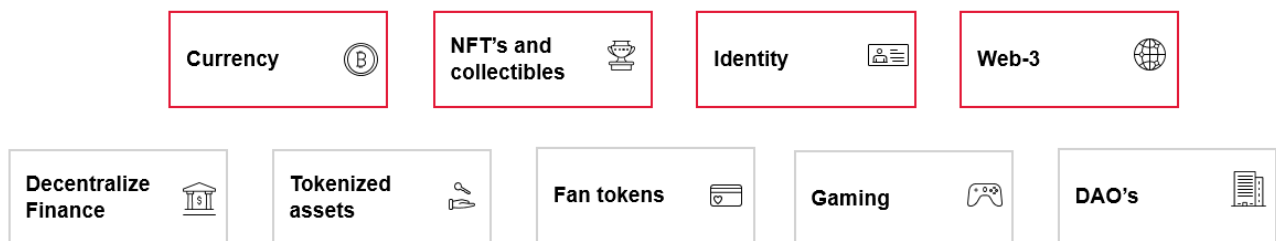
according to the rules of the network and will penalize dishonest nodes. Bitcoin network as exemplified in this case is able to build trust within the network.

The financial incentives within the network are used to build trust within the network. The example above illustrates the use of the DLT to build trust in the transfer of value (Bitcoin) within the network. In a sense, DLT is a design canvas and it can be used to build different applications on top of it. Those applications could be Payments, Tokenization, NFT, Fantokens, Identity, Web-3 etc.

Confluence of DLT and metaverse

Metaverse by definition does not require DLT. For example, the biggest metaverse, Second Life, does not use DLT. However, DLT adds value to Metaverse that cannot be ignored. In this section, we discuss the features that DLT brings to the Metaverse.

Prominent DLT applications



Applications of DLT that make it relevant for Metaverse

1. Payments

Using cryptos for payments in the Metaverse carry the same benefits as using cryptos for payments in the real world. Apart from the most commonly known features such as secure and incorruptible the other two worth mentioning from a Metaverse point of view are Programmability and Irreversibility.

Programmability is by far the most significant feature DLT contributes to Metaverse. It can enable, for example, streaming of payments. A user can agree to pay a cent for every minute spent in an NFT gallery. Very low transaction fees for cryptocurrencies make it possible to have such a model. It can enable an immersive 'metaverse native' payment method. Moreover, programmability makes payments a Lego block into a wider Metaverse.

Irreversibility – Crypto payments do not use any third-party intermediaries and are irreversible in nature. This makes it ideal to use in a trustless environment. For example, an individual can buy an NFT using credit card and then reverse the transaction by calling her bank. This is not possible via crypto payments.

2. NFT's

NFT's make digital ownership possible in the Metaverse. In the virtual world, a user can own a digital asset that cannot be copied and pasted. A user can, for example, buy land in the Metaverse and be assured that it is authentic and cannot be duplicated.

The NFT's are created using a pre-defined open-source contract. The contract restricts the number of NFT's to be generated by the contract thereby lending

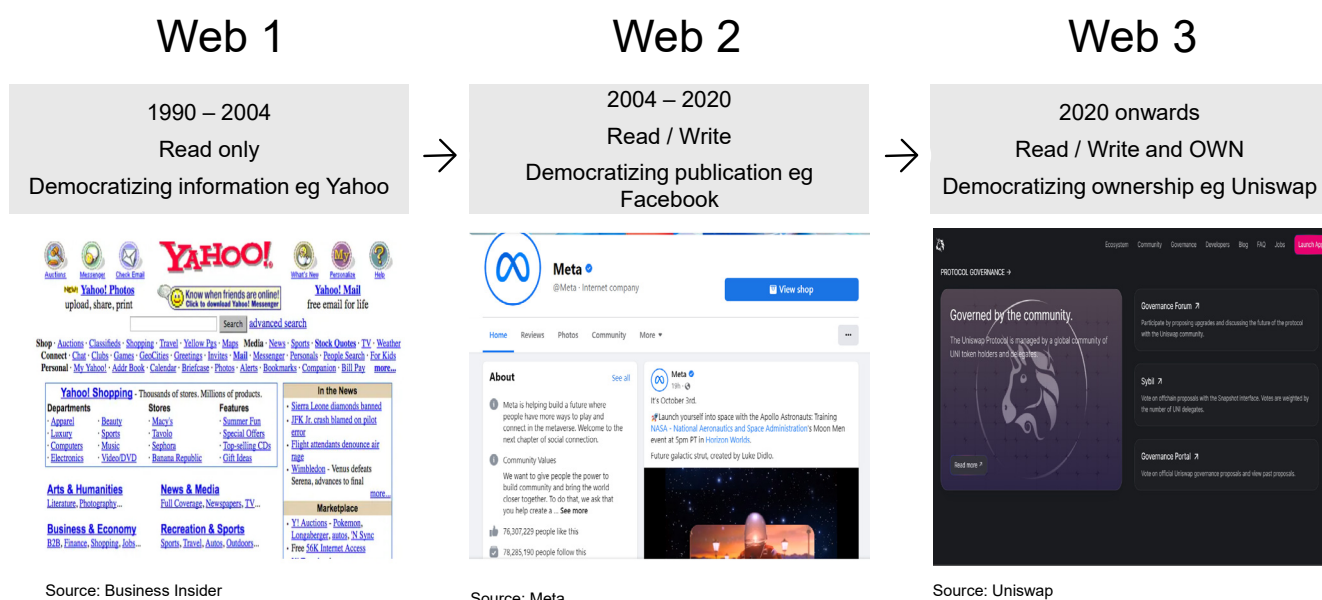
auditability to the NFT's generated in the Metaverse. This makes it ideal to issue unique access passes. These access passes can give unique privileges to its holders. For example, an access pass issued from a Bank's lounge would give the holder a shorter waiting time to avail services in the Metaverse lounge.

3. Identity

DLT makes it possible to identify oneself in a secure way. New technologies such as the zero-knowledge proof make it possible to securely share identification information without the fear of it being misused. For example, assume a scenario in a banking lounge in Metaverse wherein the bank would like to check the age of the individual before they enter the lounge. The individual would be very hesitant to share the passport details in the Metaverse with the fear of it being misused. But with Zero-knowledge proof, it becomes possible to verify the age without actually sharing the information itself (date of birth). Technologies such as self-sovereign identities help individuals to manage their digital identities in a decentralized manner.

4. Web-3

By far, the most critical application of DLT to Metaverse is that of the Web-3 ethos. To understand the Web-3, one must understand the evolution to Web-3.



Web-1 – 1990 to 2004 – Democratize information

The best way to think of internet in the Web-1 era is to visualize it with a yahoo homepage from the 90's. The Web-1 was built on open protocols. It gave innovators the confidence to build on the internet without the fear of being de-platformed. The value earned on the internet was accrued by the builders. Platforms like Google, Amazon, Facebook etc were built in the Web-1 era.

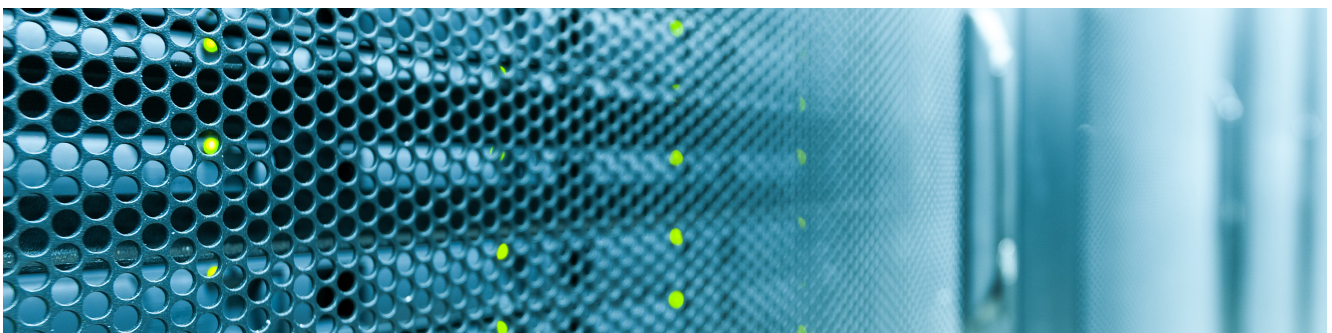
Web-2 – 2004 to 2020 – Democratize publishing

The Web-2 era was built on centralized platforms. Google, Facebook, Instagram, Amazon are best examples of the Web-2 era. It gave creators/innovators a wider audience but their reach was dependent on algorithms and it was monetized using advertisement. Most of the value accrued on these platforms was taken by the platforms. For example, out of every dollar that a video makes on Youtube, the platform takes 45 Cents from it. Also, the creators are always at risk of being de-platformed by the centralized entities. For example, twitter changed their policy on support of API's in 2011. This change impacted start-ups whose business models was based on these twitter API's. More recently, Apple changed their privacy settings that will impact advertisers on platforms such as Meta. These centralized decision-making impacts innovation in the long run.

Web-3 – 2020 onwards – Democratizing ownership

The Web-3 builds internet services on decentralized platforms. The ownership of the platform is tokenized and the users' own tokens of the platform based on their contribution to the platform. For example, Uniswap, a de-centralized exchange, distributed 15% of its total supply of tokens to the past users of the protocol. Moreover, 60% of the tokens will be allocated to the users of the platform in the four years from its genesis (the remaining to the team, investors and advisers). The value accrued by the platform goes to the actual users of the platform. The users stand to benefit from the growth of the platform. Also, the owners of the tokens have a vote in the governance of the platform. This model fundamentally changes the relationship of the user with the platform. It makes them feel a part of a larger social movement and creates a culture where users contribute based on their skills.

Tying this back to Metaverse – the builders across the Metaverse would be much more comfortable in building a decentralized world where they would have a say in the platform and are able to accrue value from its growth. It brings together the best of both worlds – open protocol of Web 1 with the reach of Web 2.



The use of the term “Democratizing” above is used in the meaning of “available for everyone”. No ethical implication is intended: Like all technologies, they can be used across the full ethical spectrum – from good to evil. Organizations applying them should be aware of the potential abuse, such as the spread of dis-information enabled by the global reach of Web-2 platforms and the well-known criminal uses of decentralized crypto-currencies. In this paper, we focus instead on the positive potential offered by the emergence of the Metaverse.

Metaverse example

What exactly, is it?



Source: Decentraland

The best way to explain Metaverse is with an example. Decentraland is a virtual world split into land blocks (around 90,000 of them). Each land block is an NFT and its ownership is established in the Ethereum DLT. Users can buy a land block and use tools provided by Decentraland to customize it and build content on it. J.P Morgan, for example, bought land in Decentraland and built a lounge in it. Others have built places for gaming, music, NFT galleries, virtual concerts, conferences etc.

Users can create their own digital avatar in the Metaverse and adorn it with wearable digital clothes (which by the way could also be an NFT). Users can traverse the virtual map of Decentraland and visit

locations in it. Users can interact with the content in the Metaverse, for example, play games, listen to music or they can interact with others in the Metaverse.

Currency and governance in the Metaverse

MANA is the currency of the Decentraland. Users can buy land with the MANA token. The owners of land and MANA tokens together form the DAO (Decentralized autonomous organization). The DAO would decide on all matters related to Decentraland – ranging from content moderation to determining the allowed length of the buildings to token allocation etc.

Conclusion

Metaverse built with the principles of DLT's will give entrepreneurs a platform to innovate without fear of being de-platformed. Overall, DLT's would also improve the experience of using the Metaverse. In the long run, this will help in building an interoperable Metaverse.

However, it is still work in progress. Protocols within the DLT ecosystem are built with the principles of de-centralization. However, at present, due to lack of participation within the community - the decision making is still carried out by only a few entities within the DAO. The DAO's governing the Metaverse have not been battle tested and their decision making ability is still not proven.

Involvement of companies like Meta in the Metaverse have generated huge hype and speculation around the technology. The developments around the Metaverse cannot substantiate the hype as yet.

Nevertheless, it certainly has the right ingredients to make it a success.



About the author

Shrenik Shah is a Director Consulting Expert with extensive knowledge in Payments and Cards. He has 17+ years of experience in Banking and Financial services. Has worked as a business consultant in many multi-year transformation programs in the area of Payments, Investments, Fraud management and Digital transformation. Shrenik has a keen interest in the area of 'crypto assets and programmable money' and frequently blogs on this topic. Shrenik holds a Masters in Finance degree (with tech specialization) from University of Amsterdam. He is a Certified Financial risk manager (FRM) from GARP.

References:



1. [Chris Dixon, Why Web3 Matter](#)
2. [Chris Dixon, Ryan Sean Adams, David Hoffman, 5 Mental Models for Web3 Digital finance package](#)
3. [Andrew Singer, Does the Metaverse need blockchain to ensure widespread adoption?](#)
4. [Coinbureau, Decentraland Review: Best NFT Crypto Play??](#)
5. [Cryptopedia staff, Decentraland \(MANA\) : A Virtual World Built on Ethereum](#)

**All references where accessed on 31st July 2022*



About CGI

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

Our commitment: Insights you can act on.

[cgi.com](https://www.cgi.com)

