MetaCosmos

The OS of Metaverse

White Paper

1. Introduction

The listing of Roblox in March 2021 made the Metaverse concept detonate the market, and the market value of nearly 40 billion US dollars completely opened up the imagination of the "metaverse" industry. In the Metaverse, users no longer deliberately distinguish between physical real existence and digital virtual existence. More importantly, the Metaverse creates a brand new virtual connection between users and their family, friends, pets, favorite objects and experiences. The environment is the carrier of the next generation of social world. The concept of Metaverse was originally derived from the 1992 American science fiction writer Neo Stevenson's "Avalanche", which describes a parallel real world network world-Metaverse, all people in the real world have an avatar in the Metaverse. Among them communication and life. Metaverse includes 5G, AI, blockchain, content production and other elements. Its core is to continuously optimize users' digital life experience through virtual experience XR (Extended Reality), continuous iteration of XR technology and equipment; based on XR The digital services will continue to penetrate around various scenarios, which will bring breakthroughs in the subversive and immersive metaverse digital life experience, and become an important carrier for opening the metaverse era.

Following the desktop Internet era connected by PCs and the mobile Internet era connected by smartphones, Metaverse has detonated the imagination of the next era of information interconnection, creating an ideal virtual world through the perfect connection between virtual and reality. The sandbox game platform Roblox, as the "first stock of the metaverse", clearly proposed the concept of the metaverse in its prospectus, which has sparked heated discussions and pursuits in capital and related industries. Then Facebook changed its name to "Meta", which further stimulated the market's enthusiasm for the concept of the metaverse, and quickly brought the concept of the sci-fi metaverse into real life. The coexistence of virtual and real is a key feature of the Metaverse, which is reflected in six core elements, including immersion, virtual identity, digital assets, real experience, virtual and real interconnection, and a complete social system. In the future, the development of the Metaverse will, on the one hand, turn from real to virtual, to realize the digitization of real experience, and on the other hand, from virtual to real, realize the reality of digital experience.

The development path of the Metaverse includes two directions:

One is from the real to the virtual. Based on the imitation of the real world in the virtual world, through the construction of immersive digital experience, the digital experience of real life is enhanced, and the digitization of real experience is emphasized. In the era of mobile Internet, virtual worlds are mainly established in 2D forms such as text, pictures, and videos. In the future, in the metaverse era, the real physical world will be digitally reconstructed in the virtual world, and a completely virtualized parallel world will be established.

The second is to move from the virtual to the real, detached from the imitation of the real world, and self-creation based on the virtual world can not only form a value system independent of the real world, but also have an impact on the real world, emphasizing the realization of the reality of digital experience. For example, the augmented reality game "Pokemon Go" helps brands attract consumers' attention by setting up a method of issuing limited shopping coupons in specific locations linked to the brand, and realizes the drive of digital experience to real consumption.

The metaverse and the real universe are not separated from each other in parallel. In the mature stage, the metaverse will definitely integrate online and offline. The Metaverse will bring more possibilities to offline entertainment, especially offline immersive entertainment. Metaverse is a comprehensive platform. The content forms on the platform are built by users, which is different from the traditional form of products and services provided by Internet companies in a centralized manner. All users can participate in the creation and maintenance of the Metaverse, and users can obtain income or spiritual happiness through the content of the built ecosystem. In the foreseeable future, more users will interact, consume and experience the metaverse through interactive and immersive virtual platforms. Each virtual platform will serve as a sub-universe, and gradually form a complete set of standard protocols to realize the aggregation of each sub-universe and form a true metaverse; these sub-universes still maintain their independence, but the interface of interaction, economy, etc. will be integrated through standard protocols. Unified standardization realizes interconnection and intercommunication, and the Metaverse has entered the digital maturity stage of the Metaverse of thousands of industries.

After reaching the maturity stage of metaverse, people's social activity, study and work will move to the metaverse.

The Metaverse is not just a virtual space, a virtual economic system, a game, and various content platforms created by various users. The Metaverse is an always-on real-time world with a fully operational economic system that can span physical and digital world.

The concept of the metaverse came out of the games but the metaverse is far more than just games. It will extend to all walks of life, bringing with it all kinds of challenges and opportunities. Technology and digital infrastructure are only a part of it, and they also need a set of industry rules that belong to the metaverse as support—legal norms, ethical values, economic systems, currency systems, cultural systems, etc.

The metaverse will eventually encompass learning, work, play, and everything in life. Various subdivision platforms will meet various needs in metaverse.

Obviously, in the metaverse world, individual digital IDs and digital assets need to have suitable carriers. As in the real world, no one's ID and assets should be able to be arbitrarily deleted or removed in the metaverse. Therefore, any centralized company that stores and records the IDs and digital assets of individuals in the metaverse in a centralized manner is not trustworthy. Therefore, blockchain technology is the best choice for realizing the metaverse. In the future WEB3.0 era, it is necessary to use more advanced blockchain technology to solve many problems in the current Internet landscape, these problems include: data privacy, asset confirmation in the virtual world, network security, energy efficiency and "blockchain" The Trilemma". These issues and their solution framework are elaborated in Section 2. Next, in Sections 3 and 8, MetaCosmos - a new underlying protocol for blockchain technology will be introduced in detail. This article will detail all the functional solutions required, including analyzing the current problems, how to solve them, and how to build the platform to achieve its layering and governance. Finally, in Sections 9 and 10, a development roadmap and strategic committee are presented.

2. Background

Issue 1, Data privacy

There is an evident uneasiness in the general public regarding user data privacy. According to a global survey conducted in 2019 by CIGI-IPSOS ‘Global Survey on Internet Security and Trustworthiness’, more than three-quarters (78%) of global Internet users are ‘somewhat concerned’ about their online privacy. Moreover, this perception seems to be moving in an upward trend, as more than half of the respondents (53%) said they were "more concerned" about their online privacy that year than the previous year. Among those who responded, they were "more concerned,” the main factors that have contributed to the increase in their concern are cybercriminals (81%), Internet companies (74%), and other internet users (71%).¹

In this regard, perhaps the most fundamental cause behind this uneasiness is the way internet companies monetize user data. In short, in this business model, companies collect users' profiles and track their interactions' footprints on multiple platforms' services (often provided free of charge). Then, the raw data is stored, processed, analyzed, and transformed into applicable digital intelligence. At last, this refined data is used to monetize the various platforms by offering targeted online advertising, enhancing e-commerce operations, renting out cloud services – among other uses, depending on the company's market niche. As specified in the United Nations 2019 Digital Economy Report, the matter here is that "[o]nce the data 4 have been extracted, users typically have limited or no control over how these are used." As a matter of fact, in this model, there is a ubiquitous "risk of misuse of information, which can harm the user and to others."²

Path to solve problem 1: Data Sovereignty

To address the issue of data privacy earnestly, it is indispensable to provide users with a platform in which they have access to a sovereign and inalienable digital identity. This identity should be created and excluded only at the individual’s will. It should not be able to be revoked by any third party, be it a company, another user, or government. Regarding data, users should have full sovereignty over the data generated in this digital identity. This also implies that users’ data should be stored inviolably and should be monetized only at the individuals' will.

The best way to implement a solution with these characteristics today is on a blockchain platform. As observed in a recently released guide on cryptocurrencies by the World Economic Forum, with the advent of smart contracts on blockchains, there is the possibility that users "have full control over their data and use a smart contract to require payment for access to that data. This reverses ad-based internet monetization, where platforms sell user data to advertisers and share little if any profit or control with users."²3

Don Tapscott, the writer of the best seller "Wikinomics", goes further and outlines a promising vision for companies exploiting data in the near future: "as individuals 5 take back control over their data and form their avatar of data (...) the ability to secure those data sets in a distributed and trust-minimized manner and to help individuals manage and monetize their data will replace big data analytics as to the corporate capability that investors will value."²4

Problem 2: Sovereignty in the Metaverse

On October 28th 2021, Mark Zuckerberg announced that Facebook had changed its name for Meta and that the company will invest 10 billion dollars to build a wide range of metaverse experiences. This news was met with great enthusiasm by the expert public and the market. However, the company's plans have also raised important questions about the implications of such experiences being undertaken by a centralized provider.

For example, as discussed in an article in cointelegraph, future Metaverse users will need virtual reality and augmented reality interfaces that bring together multiple solutions into a single experience. However, if this solution does not "live and breathe decentralization", the metaverse will likely be bottlenecked and surveillance-ridden like today's internet, as discussed in the previous item.

Path to solve problem 2: Neutral Platform

A metaverse provider needs to be neutral and decentralized so that users can enjoy complete autonomy over their avatars, items, and other poses. Another advantage is that a neutral platform would also be better for innovation and creativity, as it would not impose standards and policies on system developers.

Problem 3: Cybersecurity

Another concern that is gaining momentum is cybersecurity. Since the emergence of COVID-19, people have started to rely even more on the digital economy to do their everyday activities. This, in turn, has led to a boom in cyberattacks, which has grown to such an extent that the specialized media has started referring to this phenomenon as a "cyber pandemic.鈥 鈦 鈦 鈦 In this respect, one type of cyber attack that has exploded is data breaches. According to Risk Based Security's 2020 End Year Report, even though publicly reported breach events were down 48% year-on-year, the total number of compromised records increased from 15.4 billion in 2019 to 37.2 billion in 2020. This represents a 141% increase compared to the previous year and, as stated by the authors, is "by far the most records exposed in a single year since we have been reporting on data breach activity." A worsening of the crimes committed was also noted, as the number of breaches that included ransomware as an element of the attack was doubled, and the severity of breach events, as measured by the institution's severity score, was increased by a factor of 10 over the year.鈦

Another related emerging issue regarding cybersecurity is cloud computing services. This transition has been happening fast, with cloud computing going from about $1 billion in Q4 2020 to over $45 billion in Q4 2021⁹. Cloud computing is a highly centralized management model. Once a network security breach occurs, it will cause immeasurable consequences.

Path to solve problem 3: Peer-to-peer decentralized encrypted cloud

As discussed until now, one of the main features of blockchain technology is the possibility of users exerting full control over access to their data. An example is the deployment of encryption and zero-knowledge proofs that, with the user's consent, can give a service provider access to limited parts of data without exposing the whole or sensitive pieces of data.¹¹ This, of course, unfolds in the safeness of a robust blockchain interface – i.e., a permissionless, trustless, and transparent environment that no third party can breach. One absolute advantage of decentralization is avoiding single points of failure. In light of this, Rayan Orr offers an interesting illustration: “Traditional, centralized databases are like castles with moats, you can fortify them as much as you want, but a hacker will always find a clever way to sneak inside the castle." In comparison, in the blockchain paradigm, "a breach in one node does not affect the whole, and the consensus mechanism prevents malicious actors from tampering [with] the system."鹿虏

Question 4: Inter-connectivity between the Metaverses

The mature metaverse is a virtual platform with layers of interconnections. The formation of the Metaverse requires a complete set of standard protocols, including a series of common standards and protocols for user identity, digital assets, social relationships, application APIs, etc. The ideal metaverse should be a super platform with platforms connected to platforms and platforms within platforms. Everyone can create their own private space and make it a private platform, connecting with other platforms under unified rules and interfaces. Invite friends to develop applications, games, entertainment, create, innovate and sell on private platforms. The most important thing about the Metaverse is to allow various platforms to be connected when they are relatively independent. This means the unification of standards, norms, protocols and even the underlying monetary system. A truly complete metaverse will only be formed when all the various types of platforms are connected together to achieve interactions, identity confirmation, information sharing, and mutual recognition of value. No one person, company, institution, or government can independently build a metaverse. The formation of the metaverse is a process of superposition of quantity, superposition of functions, and qualitative change from quantitative change.

Path to solve problem 4: Establish the underlying protocols of the Metaverse

Based on this protocol, users can freely develop their own metaverses. Since these metaverses apply the standardized underlying protocols, they have all the characteristics of blockchains, such as point-to-point encryption, distributed storage, and open and transparent sources code, consensus mechanism, etc., and can solve the problem that the current metaverses are incompatible and cannot communicate with each other. Using the open source and standardized characteristics of a series of underlying protocols, the metaverse developed by users based on this will realize the unification of user identities, digital assets, social relations, application APIs, etc., and at the same time, it can also develop internal ecosystems belonging to each metaverse, including economic, social, entertainment applications.

Problem 5: The Blockchain Trilemma

Since it is clear that the solution path encompasses blockchain technologies, it is now important to look into a pivotal limitation of such solutions. Ideally, a blockchain should combine the following three properties:

Scalability: be able to increase the number of processed transactions without significantly increasing transaction time or costs.

Decentralisation: be able to operate without a trusted third party, whether that is a single central administrator or a small group of nodes.

Security: be able to resist coordinated attacks from a large percentage of nodes (at least 25%, but 50% would be the ideal).

With this in mind, Vitalik Burtin described a "Blockchain Trilemma" in which no blockchain project seems to achieve excellence in all these three properties applying "simple techniques".鹿鈦 Consequently, blockchain projects are faced with a trade-off in which developers tend to choose only two of the three properties and waive one of them. The image below shows the types of projects that this trade-off usually produces.

Path to solve to solving problem 5: Layer-one and layer-two scaling solutions

Sharding is arguably the one layer-one scaling solution that has been gaining the most attention and adoption recently.¹⁶ ¹⁷ ¹⁸. Although the terminology may differ in some cases, in essence, this approach consists of splitting the network into subsets and reaching consensus within these. Each shard/committee/parachain works on a particular set of transactions, rather than the entire network working on all transactions at the same time. As a result, the network can scale up easily as the number of shards grows, without compromising security nor decentralization. At the same time, layer-two solutions (a.k.a. off-chain solutions) are mostly implemented outside the main blockchain. Typically, these solutions run part of the transactions (usually the smaller ones, such as micro-payments) outside the main blockchain. Then, these transactions are accumulated and recorded as balances in the main blockchain afterward. After systematically comparing fourteen different layer-one and layer-two scalability solutions based on their advantages and disadvantages, Hafid et al.(2020) suggest that it is "an interesting idea is to combine first and second layer solutions at the same time" to deal with scalability issues more efficiently.¹⁹

1. METACOSMOS

When analyzing the set of challenges presented so far, it is clear that a completely new blockchain standard underlying protocol is the key to solving them all. More specifically, it is only through the combination of decentralized capacity scalability, blockchain, and a private full-stack application environment that it is possible to address the set of next-generation Internet challenges discussed earlier. Therefore, the solution proposed here is a completely new and complete underlying protocol based on the blockchain technology standard, which combines these functions in a novel way to provide an Internet that truly guarantees user data sovereignty, efficiency and decentralization . MetaCosmos is an open standard underlying protocol of the next generation Internet WEB3.0. It is an evolutionary version of the current metaverse exploration stage. Users can develop their own independent economic, social and entertainment metaverse system based on it. At the same time, it realizes the interconnection and interoperability of a series of functions such as user identity, digital assets, social relations, and application APIs with other metaverses also developed with this underlying protocol. An overview of the three overlapping layers of METACOSMOS is as follows:

Layer Zero: METAGRID

The Metagrid is a distributed peer-to-peer network of computers that deliver capacity (computing, storage, and network). This network allows for trustless deployments, as the peers providing capacity have no way to read, access, or modify any third-party data they are hosting. The network is self-healing and automatically reconstructs missing or unavailable data (due to power outages or hardware malfunction) in new locations.

Layer One: METACHAIN

The Metachain is a blockchain solution running on the Metagrid decentralized capacity. It hosts MetaCosmos's smart contract and validates transactions in the main platform.

Layer Two: METASPHERE

The Metasphere is the application layer containing unlimited Unispheres. Each application on the Metasphere is deployed in its own Unisphere. Those applications enjoy total user privacy, high security, and immunity to censorship or data espionage, as well as blockchain-like reliability and immutability – all with the performance of regular cloud applications. Each Unisphere is an independent sub-Metaverse and the user can hold one ID to explore different Unispheres. Within each Unisphere, it is possible to have countless private UNIWEBs, METAAPPs, UNIAPPs, UNICHAINs, and Metaverse experiences presented in more detail in Section 7.

3.1. IDENTITY: Only one User’s ID exists in the MetaCosmos

In order to ensure that users have complete data sovereignty, users only need to digitally establish a digital identity, which is the only existence in the system, and any data access to the user depends entirely on the authorization of this identity. In MetaCosmos, all information is collected in this one digital identity, and users will decide how any other application can obtain and use these backup data to a limited extent, and have full sovereignty over these data. User identities are stored and managed by Isphere, which is managed by smart contracts created for this specific purpose. Users can use their own digital IDs to freely interpolate between different sub-metaverses, access and use them according to their own settings of different sub-metaverses in the system. The different sub-metaverses are unified by the LSPHERE smart contract to verify the user's digital identity.

KYC Policy

The Isphere will not provide a built-in Know Your Customer (KYC) verification solution. Instead, applications in the Metasphere will be able to interface with centralized KYC providers to confirm users’ identity in whatever adequate requisites to their use. To ensure users' sovereignty and privacy, KYC verifications performed by applications in the Metasphere will not be compiled nor stored in the Isphere.

3.2. Holistic Decentralization

To conclude this overview, MetaCosmos is a complete solution that contains within it all of the following peer-to-peer functionalities: applications, blockchain, network, storage, computing, DEFI, smart contract, and metaverse user interface.

This solution presents a sharp contrast to the Web 1.0 and 2.0 paradigm that are fundamentally based on client-server relationships. As discussed in Section 2, this centralization of powers in the hands of Internet service providers has led to issues regarding data privacy, cybersecurity, and energy efficiency. Some experts argue that Web 3.0 is emerging from blockchain applications, which could (at least potentially) tackle some of these issues.²⁰ ²¹ However, this has been poorly delivered so far, since Web 3.0 solutions have difficulty scaling up and still rely heavily on centralized providers for a significant portion of their processes.

MetaCosmos tackles this inconsistency in Web 3.0 radically. It simultaneously gives users full control over their data and provides a complete decentralized solution; thus, peers ultimately become Internet protagonists. Both of these are necessary conditions for the deployment of a neutral, fair, secure, reliable, and more efficient Internet.

1. METAGRID

The Metagrid is the IT capacity layer that provides computation power to the Unispheres and the Metachain. It consists of an autonomous decentralized Internet infrastructure that replaces the traditional client-server model. This technology is a combination of easy to deploy nodes provided by peers and a self-healing operating system that spreads capacity usage across the network. As a result, the Metagrid is capable of delivering a truly infrastructure, making public ledger and decentralized applications genuinely decentralized.

4.1. ONODE

ONode is a computer device that delivers storage, network, and computation capacity to the Metagrid. ONode owners are rewarded with MCT tokens as they provide capacity for the Metagrid.

4.2 Zero-OS

Zero-OS is the open-source operating system used in the ONodes. It is characterized by its ability to operate autonomously, that is, not requiring maintenance by ONODES owners nor system administrators. Another key feature is that its single elements are stateless, meaning that the state is stored in the grid and no single point of failure can bring the whole system down.

Some other advantages are:

• No installation is required

• Up to 10x more efficient for certain workloads (e.g. storage)

• A smart contract for IT layer allows groups of people to deploy IT workloads with consensus and full control

• All workloads that can run on Linux can also run on Zero-OS

• All files are deduped for the Virtual Machines, containers, and the Zero-OS itself – no data duplicated filesystems is needed

• Regarding security:

- Every file is fingerprinted and gets checked at launch time of an application

- There is no shell or server interface on the operating system

- The networks are end-to-end encrypted between all nodes

- It is possible to decouple computation and storage from the network service, which implies that attackers have minimized chances to get data

1. MCT

MCT is the enabler of the MetaCosmos ecosystem. Its utility consists of the following applications:

● Paying for computing, storage, network services, as well as the setup and maintenance of Unispheres: Users will pay in MCT. Note that 30% of the MCT used for these payments is getting burned.

● Remunerating Capacity Providers: Capacity Providers (Miners), who provide the system with computing, storage, and network capabilities, will be rewarded in MCT tokens. Miners will be able to provide hardware and network capacities following MetaCosmos's technical specifications. They will be remunerated according to the utilization, installed and operating capacity, and the number of active nodes. These mechanics will be presented in more detail in Section 4.

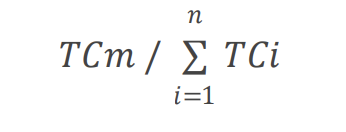
● Transactions: Each MCT transaction is subject to a fee that is paid in MCT.

● Staking: MCT can be staked in two ways:

1. To earn MCT mining rewards, miners are required to stake MCT in relation to the capacity they are providing to the network.
2. Users can stake MCT to achieve discounts in capacity prices.

5.1. Overview of capacity provider remuneration

The total amount of MCT paid to miners will be based on a monthly pool model with diminishing returns. It will start at a total of 5M MCT per month (60M per year) for the first six years, and then the mining rewards will be cut in half every six years. The amount each miner will receive is a function of the share of the total weighted capacity available calculated as follows:



Where, TCm (Total weighted Capacity made available by Miner m) = 40\*UCm+24\*SUm+NUm

CUm is the amount of Computing Units made available by Miner m;

SUm is the amount of Storage Units made available by Miner m;

NUm is the amount of Network Units made available by Miner m.

To understand how the pooling works, let's assume that these parameters are constant and equal for all miners. In this scenario, the allocation would be as follows:

Year: 1

Monthly pool: 5M MCT

Miners: Alice and Bob

Alice gets 2.5M MCT per month, and Bob gets 2.5M MCT per month.

Year: 2-6

Monthly pool: 5M MCT

Miners: Alice, Bob, and Carol

Alice, Bob, and Carol each get 1,66M MCT per month.

Year: 7-9

Monthly pool: 2.5M MCT

Miners: Alice, Bob, and Carol

Alice, Bob, and Carol each get 0.83M MCT per month.

Year: 10-12

Monthly pool: 2.5M MCT

Miners: Alice, Bob, Carol and David

Alice, Bob, Carol, and David each get 0.625M MCT per month.

5.2. Discount based on staking mechanism:

An MCT staking incentive program will be implemented. It will offer users discounts on Metagrid's capacity layer. The parameters could be as follows:

● Staking the equivalent to 12 months of capacity usage would grant the user a 40% discount;

● Staking the equivalent to 24 months of capacity usage would grant the user a 50% discount;

● Staking the equivalent to 36 months of capacity usage would grant the user a 60% discount;

5.3. Token scarcity driver:

To limit token inflation, 30% of the MCT tokens spent to access capacity will be burned and removed from circulation.

5.4. MCT use cases

This part describes how MCT is used to buy capacity. All incomes described below are after staking discount described in Section 5.2

Case I: When Distribution Network buys capacity

(The majority of business during the first six months is expected to come through MetaCosmos's Distribution Networks)

- 30% is burned;

- 5% is going to MetaFoundation;

- 10% remunerates miners for their capacity in addition to any mining rewards they receive;

- 55% goes to sales channels, which can have a multi-level allocation, as voted by MetaCosmos's Governance.

Case II: When miners themselves buy capacity

- 30% is burned;

- 5% is given to MetaFoundation;

- 65% is paid back to miners.

Case III: When capacity is bought by a person as referred to by the miner.

- 30% is burned;

- 5% is given to MetaFoundation;

- 50% pays miners as a reward of finding new users to the grid – CU/SU only;

- 15% goes to the sales channel, which can have a multi-level allocation, as voted by MetaCosmos's Governance.

Case IV: When any Grid User buys capacity

- 30% is burned;

- 60% is given to MetaFoundation;

- 10% pays miners for their capacity\_sidechain;

5.5. Utilisation Examples

MCT will be used in various cases for MetaCosmos. To make it more tangible, here are some examples with prices in dollars (values may change):

● Deployment of 1 Unisphere = 100 USD

● Fee per user = 0 USD (at the start, maybe charged later)

● Transaction on UniChain = 0 USD (at the start, but will range between 0.01-0.1 USD later)

● Use of capacity:

○ 1 CU (Computing Unit) = 20 USD

○ 1 SU (Storage Unit) = 12 USD

○ 1 NU (Network Unit) = 0.5 USD

5.6. Token Allocation

MCT tokens are divided into three parts:

● Team accounts for 5% of the total MCT. There is no initial release of this part of MCT. The release starts three months after the main net launch.

● MCT holders account for 10% of the total MCT.

● Capacity providers (Miners) account for 85% of the total MCT. As the system goes online, this part will be gradually released according to the following Section’s mining model.

1. METACHAIN

6.1 Consensus Engine

METACHAIN uses a consensus engine using Polkadot/Substrate blockchain technology. This sturdy blockchain construct runs METACHAIN and maintains consensus on a global scale. Another key advantage is that this system has been designed to be compatible with multiple blockchains.

Overview graph:

Node components:

- Blockchain Node (parity node)

- Explorer = rest + GraphQL interface to METACHAINBC

- GraphQL is a user-friendly query language to make it easy for everyone to query for info

- Consensus Engine

- Multi-signature engine running on Substrate based blockchain (METACHAIN)

- Multi-signature is done for the Digital Currency BlockchainAccounts

- Checks the AccountMetadata versus reality and if ok, will sign, allowing transactions to happen after validation of "smart contract."

- SLA & reputation engine

- Monitor\_Engine is checking each node uptime

- Also, bandwidth will be checked in the future (starting 3. x)

- Each Monitor\_Engine checks uptime of X number of nodes (in the beginning it can do all nodes) and stores the info in local DB (to keep the history of check)

Consensus engine in relation to MCT Mining Rewards in METACHAIN:

The consensus engine checks the mining rules as defined in

- [mining logic 3.0](omnigrid:mining\_reward)

- [mining reward calculator](omnigrid:mining\_calculator)

- if uptime + 99.5% per month, then the MCT will be rewarded to the miner.

All the data of the miner and the ONODES are registered in the metagrid\_db.

Consensus 3.0 Oracles used

Oracles are external resources of information. The METACHAIN captures and holds that information, so we get more certainty about the accuracy.

MetaCosmos has oracles for price and reputation (e.g., METACHAIN Miners and ONODES).

These oracles are implemented on METACHAIN for IGRID 3.0.

6.2. METACHAIN 3.0 Wallets

The MCT token has a mobile wallet that will be compatible with the METACHAIN backend (Substrate) and any other Digital Currency Blockchain it supports.

This provides a secure digital currency infrastructure with advantages such as:

● Flexible smart contracts;

● Safeness, reliability, and scalability;

● Compatible with multiple other blockchains.

Generic overview:

6.3. Link between different Digital Currency Blockchain & METACHAIN

METACHAIN is a blockchain based on Parity/Substrate that builds a consensus layer to bridge between different Digital Currency Blockchain easily. One instance of Digital Currency Blockchain supported today is the Stellar blockchain – though many more are surfacing.

The MCT main chain will be on Parity/Substrate (MetaCosmos's own Digital Currency Blockchain), but because of this mechanism, it will also be compatible with more chains. Another goal is to bridge the MCT main chain with Polkadot/Kusama.

Below is a diagram that shows how MetaCosmos's consensus engine can deal with Substrate and multiple Digital Currency Blockchain at the same time.

1. METASPHERE

7.1. UNISPHERES

Unispheres are decentralized environments running on top of MetaGrid. They work as private environments for each specific community – meaning, each application is deployed in its own UNISPHERE.

All applications enjoy full user privacy, data sovereignty, and immunity to censorship or data espionage.

Regarding security and reliability, all data and apps are deployed so that data cannot be lost and uptime is optimal.

A Unisphere contains:

● A blockchain per Unisphere (the starting point)

● Identity management system

● Currency per blockchain (optional)

● Compute storage capacity to host any Uniapp

● Compatible with docker, ... (legacy world)

7.2. UNICHAINS

UNIContract

UniContract is a smart contract for deploying Unispheres using Uniapps inside the MetaCosmos. A contract inside the MetaCosmos has the following properties:

● Location, where should the MetaCosmos be hosted, specifically country, city, number of places. Users can deploy backups in case any of the chosen primary locations goes offline.

● Compute and storage capacity required in the MetaCosmos;

● Size of the blockchain (number of nodes, consensus required, etc.);

● Which apps need to run inside the MetaCosmos.

7.3. META-APPS:

Meta-apps are running inside Unispheres. Some examples of applications are:

● Social media, network app

● P2E Games

● Video conferencing system

● Office tools like google docs alternative

● E-learning apps

● Video publishing system (alternative to youtube)

● Marketplace (e-commerce)

7.4. UNIAPPS

UNIAPPS are decentralized and custom-developed apps for UNISPHERES. They are fully integrated with UNICHAINS and UNISPHERES. Their core functionalities can be synced and linked to the UNIConctract in all kinds of ways.

7.5. UNIWEBs

UNIWEBs connect UNISPHERES to the existing Internet. It consists of a bridge between UNI/META-APP and the rest of the Internet by making the interface with older protocols such as HTTPS and SMTP. An interface to interact with a UNISPHERE would typically be a javascript website.

7.6. META-ARCHIVE

Meta-archive is a peer-to-peer storage system that is a universal backup and archive solution for all UNISPHERES. User data is archived outside the UNISPHERES in a way that it can never be lost or corrupted. It is a patented deduping technology that facilitates high efficiency – especially for versioning.

7.7. METAVERSE OS

The Metaverse OS is an unfoldment of Web 3.0 principles, pushing the user interface to a whole new level. Changing the internet to an Virtual augmented reality world, enabling people to communicate, gather, share, consume, like never before.

8. GOVERNANCE

MetaCosmos will be governed by a DAO (Decentralized Autonomous Organization) in order to ensure the community's ownership and governance of the project. The voting power is conferred by the MCTD token, which will be used specifically for this purpose.

**VOTE MECHANISM**

The DAO model proposed by MetaCosmos will be of liquid democracy (also known as delegative democracy). This means that MCTD token holders can either i) vote directly on proposals or ii) delegate the power relative to their token to other users so as to vote in their place.

In other words, MCTD token holders can participate in MetaCosmos governance votes at any given time, either through their own interaction with the governance proposals' smart contracts or indirectly by delegating their voting role to another address in the MetaCosmos blockchain.

When voting power is delegated to another user, that user does not receive MCTD tokens but rather temporarily accesses the voting power that has been delegated to them. If the MCTD token holder reverses this delegation, or if the tokens are transferred, the users that have been delegated lose their voting power immediately.

1 MCTD = 1 vote

MCTD voting requires 1% of the vote, 5% in favor, and more than 5% against.

The scope of the DAO decision may encompass changes to the economic variables and protocols of the platform, or even change governance protocols. In the beginning, proposals for change will only be submitted by the MetaCosmos team. As the DAO matures, this attribution will be delegated to other MCTD token holders, according to a phasing to be detailed in a specific road map.

**MCTD Tokenomics:**

* The MCTD has a total supply of 100 billion tokens.
* The MCTD tokens run on the BSC Chain.
* A 2% charge applies to sales of MCTD tokens. No charges apply on purchase or transfer.

9. DEVELOPMENT ROADMAP

**February 2022:**

* Project Launch
* Issue the MCT token version 1

**April 2022:**

* Launch the wallet version 1.0
* Setting Strategic Council

**December 2022:**

* IDO Pads (MCTD Governance token)
* DAO Governance launch (MCTD Governance token)
* Set up MetaCosmos developer community

**April 2023:**

* TestNet Launch
* MetaCosmos developer conference

**December 2023:**

* Decentralized Capacity Deployment

**February 2024:**

* Main Net Launch
* Shift MCT token to Main Net

April 2024

* MetaCosmos eco-system version 1.0 launch

10. STRATEGIC COUNCIL