

# Futureverse Whitepaper





# Futureverse Whitepaper

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# Into the Futureverse

'Metaverse' is a growing buzzword that embodies the next generation of internet experiences. It has captured the world's imagination, but it is widely misunderstood.

The term Metaverse is not new. But, recently it has come to mean anything from virtual reality games, to immersive online malls, to avatars and content that are connected to non-fungible tokens... and everything in between.

Most of these concepts have been around for a while, under different names and categories. Our attempt to explain what is the Metaverse (and what it isn't) needs a more explicit approach - one that describes what's new and important and what's not.

Our society is rapidly becoming a more digital one. Everyday, artificial intelligence uses our data to drive small changes in our thought patterns, which combine to make major changes in our culture.

The time we spend in digital spaces has increased significantly as a result of the pandemic. If we look further ahead, it's not hard to imagine a future where the digital economy and our digital experiences form the majority of our interactions and economic activity.

If this is our future, then right now we are at a precipice.

Many of the applications and infrastructure that create the internet today are owned by a handful of people. This didn't matter when online activity, commerce, creativity and participation in democracy were all a minor part of our lives.

But, now that the digital economy is firmly ingrained in modern society, it matters a lot. Even more so where the major applications we use hope to become the next generation of the internet and economy, aka The Metaverse. If we accelerate our journey into this digital future, but keep things the way they are, then society remains controlled by a small group of influential infrastructure providers.

The Metaverse represents a deeper digital future where the boundaries between siloed digital experiences fall away, and what remains is a singular, immersive and open experience.

It's a powerful idea, of which the seeds are already visible. We can see an example in two technology silos within society that used to be independent: Communications and Media. We have seen them come together to form social media.

We're currently witnessing the fall of another silo, traditional commerce. Social discovery has already become the dominant way people find products. Soon it will be the dominant way people buy them as social commerce becomes the norm.



The next phase will merge finance, gaming into the mix.

We can observe a pattern where the same few companies continually consolidate the economy and our attention, economic value, and influence over how we think. The more time we spend in their worlds, the deeper that influence becomes. It's no wonder Facebook has spent \$10B preparing to capture this next phase of the internet.

If the same players who have consolidated media, commerce and communications continue to do so, we know how this ends. We have seen it already: when diversity is lost, society doesn't thrive. We can't go down this path because The Metaverse isn't just a VR game... it's the destination where everything we create, value and love will reside. The keys to our society and economy exist inside this future.

In order to take a different path we need a different structure.

# Enter the Open Metaverse

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The Open Metaverse is the next evolution of the internet and the digital economy; decentralized, trustless, community-owned and secure.

The Open Metaverse is grounded in two principles:

1. An immersive experience: The internet as it is, operates within many interconnected but separate siloes. The Metaverse removes the boundaries between the major categories we currently engage with e.g finance, gaming, social media, commerce. This creates a single experience that encompasses all the current features of the internet.
2. Ownership: The Metaverse is defined by users having control over their assets, data and transactions. Using open source code with open standards gives ownership back to users and control back to communities. It's a tug away from the mega-corporations that currently control almost all of the digital tangible value in our lives. In The Metaverse, users own their content, identity, data, avatar and intelligence that sits behind processes. They can move freely between applications at will.

No one can build 'A Metaverse'. There is only 'The Metaverse', the collection of user-owned assets that exist, and a collection of interoperable applications. Each participant can only build an app, a metaworld or a piece of content. Anyone saying they are building 'A Metaverse' misunderstands its core principles.

The Open Metaverse proposes a path to a digital world where boundaries between user experience silos are broken down. It proposes a better model than the current dystopian Web2 world, wherein everyone can shape how we engage with this future and democratize who controls it.

FLUF World has been leading the creation of an Open Metaverse Manifesto, a constitution for the digitization of our society. The Open Metaverse Alliance has over 1000 enterprises, start-ups and content creators committed to help shaping the best practices and values required for this remarkable new world to thrive.

You can read more about the manifesto here: <https://www.fluf.world/manifesto>.

# So how does the Open Metaverse come to fruition?

It starts with infrastructure. All applications exist on compute and storage. If our content, assets and applications all exist on someone else's computer and storage, that person has the power to turn off the computer. We have ceded ownership and control.

The solution to this problem lies in Web3: decentralized computing networks. Web3 technology helps users and communities own storage, computing and networking infrastructure collectively. No single user can be in control. Without Web3, there can be no Open Metaverse.

Next, we need protocols that provide the core building blocks for applications. These protocols can exist in community-controlled Web3 infrastructure (such as blockchains), and can be governed by those communities.

Then we need open interoperable content standards that allow us to bring portability to the table. This means visual, financial and other data-based assets will show up (and have value) wherever the owner chooses to use them.

Finally, we have the application layer. This is what many people think about when they talk about building a Metaverse, but in reality it's only the tip of the iceberg.

With decentralized computing and storage, protocols, and applications, we have the ingredients for creating a user and community owned digital future. But

challenges still remain to reach widespread adoption.

User numbers have been growing in the key entry points. Both crypto assets and crypto asset content (NFTs) are making their way into popular culture. However, the number of those users who utilize these assets in applications is still low.

This is largely due to poor user experience. Most Web3 infrastructure has not been built with friendly UX in mind. Given the Metaverse is all about a more immersive UX for the internet, we need to fix the experience if we want to reach the Open Metaverse.

When we reach the content layer, a new problem is evident. Many so-called Metaverse companies are highly concentrated here, because it's the most familiar component and more have the skillset to execute it. Most lack comprehension of the scope of what's required to deliver on the things they promise. Every proposed game, app, or 3D city-world requires the hard stuff... the protocols and infrastructure to onboard, maintain and grow users.

# Enter the Futureverse

The Futureverse provides a set of tools at the infrastructure, protocol, content and application layer that are built with user experience in mind, and fully integrated to ensure interoperability.

Over this infrastructure, a rich content layer creates powerful community network effects.

The Futureverse is comprised of:

1. The Root Network: a decentralized blockchain network optimized for user experience and on-boarding.
2. A decentralized identity protocol and passport for users and assets to form the base data layer for interoperability and applications.
3. A decentralized delegation protocol allowing applications to provide layered access to assets, users and content.
4. A decentralized communications, notifications and storage protocol allowing users and applications to communicate with each-other between applications.
5. A decentralized artificial intelligence protocol enabling applications and avatars to leverage this technology in a community governed and user-owned way.
6. Payment networks and wallets designed to help onboard and connect physical goods. Financial rails of the Metaverse.
7. Content assets: a rich set of user-owned digital assets, designed with storytelling at their heart.

Together, these are the core elements necessary for developers to build a decentralized community-owned application, or for content creators to join The Open Metaverse.

Much of what's necessary for success goes far beyond content. The infrastructure stack is absolutely critical. This foundational layer is not glamorous, but it's critical if we want to reach and onboard new users, particularly a mass audience with expectations set from current consumer apps and the depiction of technology in movies. If their first experience with Web3 is a mess, they won't stay... and worse, they'll be lured into the corporate Metaverse mimics controlled by the same large corporations who created Web2.

The Futureverse brings together a team of 200 visionaries who have been developing the technology, protocols and content over the last 5 years to rapidly improve the Web3 Open Metaverse experience.

Here's a deeper dive into what's inside.



# The Root Network

At the heart of the network infrastructure and protocols in the Open Metaverse is The Root Network.

The Root Network is our core blockchain infrastructure. It's built by bringing together best-of-breed components from the Web3 community and runtimes with a deliberate focus on great user onboarding.

Onboarding is the most important facet of the experience for new users coming into Web3, and is currently worse than Web2 counterparts. For this reason, many commentators perceive the whole of Web3 as a terrible UX ... and many users who have tried to join would agree. Of those who have thus far, many have had negative experiences due to nonexistent safety features and leave quickly to never return.

However, once users are on-boarded, the experience can be superior to Web2. Web3 is privacy-centric by design; users can move between applications without signing up and move assets and data without permission, plus a host of other benefits.

The Root Network is designed to be best-in-class. It has 5 main elements:

## Substrate Core

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The Root Network uses Substrate at its core. Substrate has two major advantages: a large, well-established developer community, and the technical capability to customize the chain runtimes to optimize for user experience.

## EVM Support for Smart Contracts

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EVM runs within The Root Network protocol and is able to read Solidity smart contracts and execute them. This gives The Root Network developers access to smart contract functionality and also means that any code previously written for Ethereum can now run natively on The Root Network.

The EVM development ecosystem provides the broadest possible support for smart contracts and DApps, as well as compatibility with existing collections and assets in the NFT ecosystem.



## Custom Runtimes

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Our custom runtimes for Non-Fungible Assets, GAS Economy, Fungible Assets, Decentralized Exchange, Oracles and more, will provide the ingredients for creators to build applications and content without being a smart contract developer. They also provide a world-class onboarding experience.

## Non-Fungible Assets Runtime

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The Root Network NFT runtime provides a single unified network-wide experience for NFTs.

In other networks, NFTs exist at the individual contract layer. In The Root Network, NFTs exist in a core network runtime. This provides a common standard to build interoperability.

A uniform approach to minting, royalties and structuring, especially in the metadata and content formats, is essential for delivering the asset interoperability people imagine at the application layer.

The NFT runtime also has unique features like:

- Network-wide royalty enforcement
- Native multi-wallet split and tiered royalties for creators
- Native NFT to NFT swaps
- Native Static and cold minting options
- Build NFT DApps without needing to develop or deploy smart contracts

Fees from the NFT runtime are distributed to network stakers and validators.

The Root Network will also integrate the XRPL XLS-20 NFT standard as a runtime enabling compatibility with the XRPL NFT ecosystem and infrastructure.

## Multi-Token Economy

The Root Network has a unique multi-token economy that enables the optimization of both gas and initial user onboarding.

Gas is a key pain point for users, and in many single-token networks the success of the network leads to high or volatile network fees.

In the early days of running a network node on a single-token network, the GAS token is also used for block rewards. This puts price pressure on the network token as it is sold to recover yield for running staking infrastructure. It also impacts the security budget of the network.

Another issue that has emerged from single-token economies is that the block rewards are not liquid enough to incentivize large numbers of node operators. This limits the decentralization of the network.

In The Root Network, the primary network token is ROOT. It is designed as the network security and governance token used in the network's Proof of Stake consensus. It is isolated from the GAS token by design. To solve for the base liquidity of block rewards, we have partnered with Ripple and the XRPL to provide base block rewards in the form of XRP. XRP will also be used as a network gas token. This combination will allow The Root network token to grow in value and provide a high degree of liquidity for rewards for block producers.

One of the main obstacles for new users entering decentralized applications (and now content) is understanding the concept of GAS, and going through the arduous process of acquiring it to pay for transactions. This is like downloading Netflix, but having to buy and set up an AWS cloud subscription first... an absurd user experience and unnecessary friction point.

In The Root Network, we solve this problem with an in-chain GAS fee exchange. Users can onboard and use the native token of the application, or developers can delegate and pay fees on behalf of users. Developers set up a liquidity pool between their native token and the network GAS token. Node validators can then receive these GAS tokens as a reward for producing blocks. For example users who have bridged from Ethereum can use ETH or users who onboarded via ASM can use ASTO or users who have downloaded the SYLO wallet can use SYLO. By default if no liquidity pool exists for your native token you can use the network gas token XRP.

Using this method means that stakers and validators can amass an index of the network's tokens and have exposure to the whole ecosystem of activity, and users can onboard without having to understand the underlying network economy or interact with exchanges.

## Fungible Assets

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Like the NFT runtime, users can create and launch standardized fungible tokens without having to deploy smart contract code, and compatible with XRPL fungible tokens. 1% of each new asset created in the Fungible Assets runtime is distributed to network node validators as a fee.

## Decentralized Exchange

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The network exchange runtime provides an in-chain DEX with a rich set of features that enable users and developers to trade assets, build liquidity pools and launch token price discovery, without having to deploy smart contract code. Exchange fees are collected by node validators. The In chain DEX will also be integrated to the XRPL DEX to draw liquidity from to bootstrap the network liquidity.

## Decentralized State Oracle

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The state oracle allows developers to link events that happen on other chains to actions inside The Root Network. For example, this would allow a DAO vote on ETH to kick off an asset transfer on The Root Network. Or, an NFT on one network can interact with utility on The Root Network. This provides developers with another easy way to build interoperability into their applications and content.

Using the state oracle, contracts can request the result of a remote contract call. The state oracle system will ensure the correctness of the result, returning the response to a predetermined callback function on the calling contract.

Interchain interoperability is critical to the success of the open metaverse.

## Liquidity and Asset Bridges

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The Root Network natively supports asset bridges through its general purpose bridging runtime. This means FLUF World assets on the ETH network or fungible and non-fungible assets on the XRPL can be bridged to The Root Network to gain additional utility. These two networks will be live at launch but others can be added as the ecosystem grows. The Root Network can also act as a hub for other Substrate-based and XRPL-based networks. This would apply to people who want to build interoperable content in the ecosystem, but require their own MetaApp chain.



# ROOT Token Economy

The ROOT token economy is driven by several key use cases:

## 1. Governance of The Root Network Protocol

ROOT is the network governance token. It will control core features like software upgrades, runtime upgrades and new runtime deployments, the block reward economy, and admitting new application chains who wish to use The Root Network hub.

## 2. Proof of Stake for Network Security

ROOT is also the network token used by node validators and delegators to secure the Proof of Stake network. Validators or delegators who stake ROOT will earn fees from various network activities to ensure there is sufficient incentive to operate a node and stake. The block rewards for staking will come in several forms.

- GAS spent in the network is distributed to block producers; the default GAS token
- XRP provides validators with instant real value for producing blocks.
- Initial bootstrap pool: 10% of the ROOT tokens will be distributed to block validators and stakers over the first 260 weeks.
- Fees generated by the various network runtime activities. Including:
- NFT trading fees from the Non Fungible Asset runtime.

- Token minting fees in the Fungible Asset runtime
- Trading fees for the DEX and the GAS Fee Exchange.

## 3. FLUF World Utility and Game Economy

ROOT is the primary in-game token for the FLUF World game ecosystem and can be used for a range of things such as, but not limited to:

- Land reward mechanics
- Game rewards
- Stake to earn content
- Charging up in game items
- Breeding
- New content purchases
- Stake to play

## 4. Data Marketplace

ROOT can be used to incentivize individual and community-owned-and-controlled data sharing with third parties, via the Token Service platform.

As it's a fungible token in its own right, ROOT can, of course, be used for any other type of utility. Developers can leverage the liquidity and community of ROOT to bootstrap their own activities and games. The nature of the multi-token economy means that the ROOT holder community can get access to these tokens via staking in the network.

# Token Distribution

The ROOT token supply is 12,000,000,000 tokens and will be distributed in several pools.

## **Community Rewards - 20% (increased by 100%)**

Each month, ecosystem challenges will be set on The Root Network, each with a number of rewards available. The total number of rewards per player will be determined by their FutureScore. The FutureScore is driven using FuturePass technology and will be calculated based on things like the type of assets you hold, the number of assets you hold, how long you have held them, the rarity of those assets, the activities those assets have been involved with, along with other contributions players have made to growing the ecosystem, such as social media activity. The score is dynamic, will evolve over time, and will be influenced based on your participation.

## **Land Mechanics – 20% (previously 15%)**

20% of the tokens will be allocated to game mechanics within The Third Kingdom. The upcoming Third Kingdom whitepaper will release more details on how this will work.

## **Ecosystem Development Fund – 10% (no change)**

10% of the tokens will be allocated to encourage new developers, artists and IP rights holders to build on the network.

## **Block Reward Bootstrap - 10% (increased by 100%)**

Validators and stakers will receive up to 10%

of the tokens over 260 weeks as a bootstrap, while the token fee economy gets up to speed.

## **CENNZ Burn to Mine - 10%**

Many of The Root Network's runtimes and technology have come from our collaboration with the CENNZnet team. We are rewarding CENNZ token holders with the ability to burn their CENNZ tokens into The Root Network and over time to receive:

1 ROOT for each CENNZ 1:1

## **Futureverse – 15%**

As the core developer, the Futureverse company will hold 15% of the tokens. They will be locked for 100 weeks then vested for a further 100 weeks.

## **Liquidity providers - 5% (removed all pre-sale)**

Providers of liquidity will be eligible for up to 5% of the tokens

## **DAO treasury 5% (reallocated to community rewards and network rewards)**

The Treasury will manage a further 5% of tokens (among other tokens retained within the Treasury). These tokens will be locked for 50 weeks. The DAO will control their allocation.

## **Advisors - 5%**

Our core advisors and those who have bought significant IP to the network will receive 5% of the tokens. They will be locked for 100 weeks, then vested over 100 weeks.

## The Token Service

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The Token Service is a set of APIs or GRAPH endpoints which allow developers to interact with The Root Network without having to understand Web3 protocols. It also provides a range of services to help onboard users who may be new to Web3 and want help with key storage or asset custody. Users can opt to “be their own bank” and self custody at any time however as we drive mass adoption new to Web3 users can have the benefit of an additional safety layer when they start their journey.

Token holdings can be used to access secure digital and physical experiences, like a pass to a virtual space, or a ticket to a real life event linked to a user’s loyalty member benefits.

The Token Service also allows for the creation and management of people and organization profiles: event organizers, local or vertical driven marketplaces, decentralized autonomous organizations (DAO) and other stakeholders.

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The Token Service supports a range of token types:

- Fungible Assets: Assets used to create value in community sectors that are tied to physical and digital experiences.
- NFT-Backed Tickets: NFTs that hold gated access.
- PFP Collections: NFT digital artworks for individuals to represent themselves on the Metaverse. Build profiles on the Metaverse that have inherent and transferrable value. PFPs can be linked to the holder’s real-life identity, allowing PFP owners to seamlessly switch between their various Metaverse identities (and benefits).
- POAPs: Digital badges that show proof of attendance. These can be used to drive attendance (and post-event engagement) online, offline and on the Metaverse.

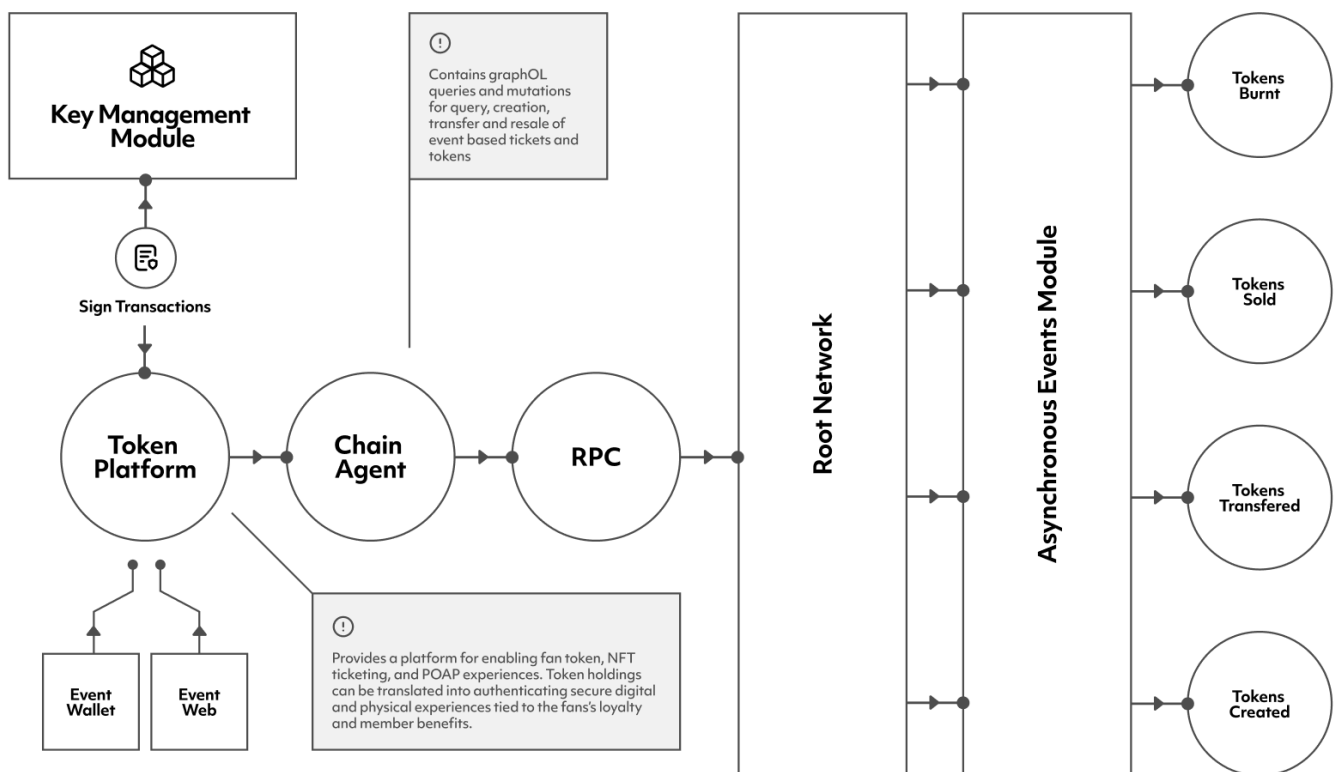
We have chosen these best-of-breed elements to give a deep level of decentralization, performance and flexibility. They optimize the user onboarding and on-chain user experience, as well as providing broad support for the existing developer community. Finally, they provide the best possible access to liquidity for users, stakers and validators.

Alongside these core network components, The Root Network comes with a wide range of bootstrap applications and SDKs, including:

- Node software
- Wallet Plugin and Wallet SDKs
- DEX UI
- NFT Marketplace UI
- Explorer and telemetry
- Infrastructure APIs
- Metamask support



## TOKEN SERVICE





# A Decentralized Identity Protocol and Asset Passport

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For the Open Metaverse to work in the way we all imagine, we need to be able to provide a uniform way to identify 'things' in the system. That ID layer needs to be richer and more portable than a public key.

Examples of datapoints that leverage identity include PFPs, NFTs, and holder specific data such as eligibility, membership tier, provenance, previous owners, achievements, and awards for past performance.

Our W3C Decentralized Digital ID (DID) protocol provides a way for users and assets to interact with applications across The Metaverse, in a way that preserves privacy and enables interoperability.

DIDs and the Attestations protocol allow developers and users to create off-chain identities. These identities are portable between applications for users and assets, as well as assign attestations for content formats, like a passport stamp. They enable metaworlds to both, understand what assets are compatible with their worlds, and gate those they feel are unfit.

Importantly, users will be provided with an easy way to see where they can take their asset at a glance when trading them. This is critical: portability is a cornerstone to value.

In addition, users are able to receive attestations against their ID for potentially sensitive data (e.g. age) using our stateless eKYC engine, which stores no user Personally Identifiable Data. This will allow application developers to provide experiences like age-gated content.

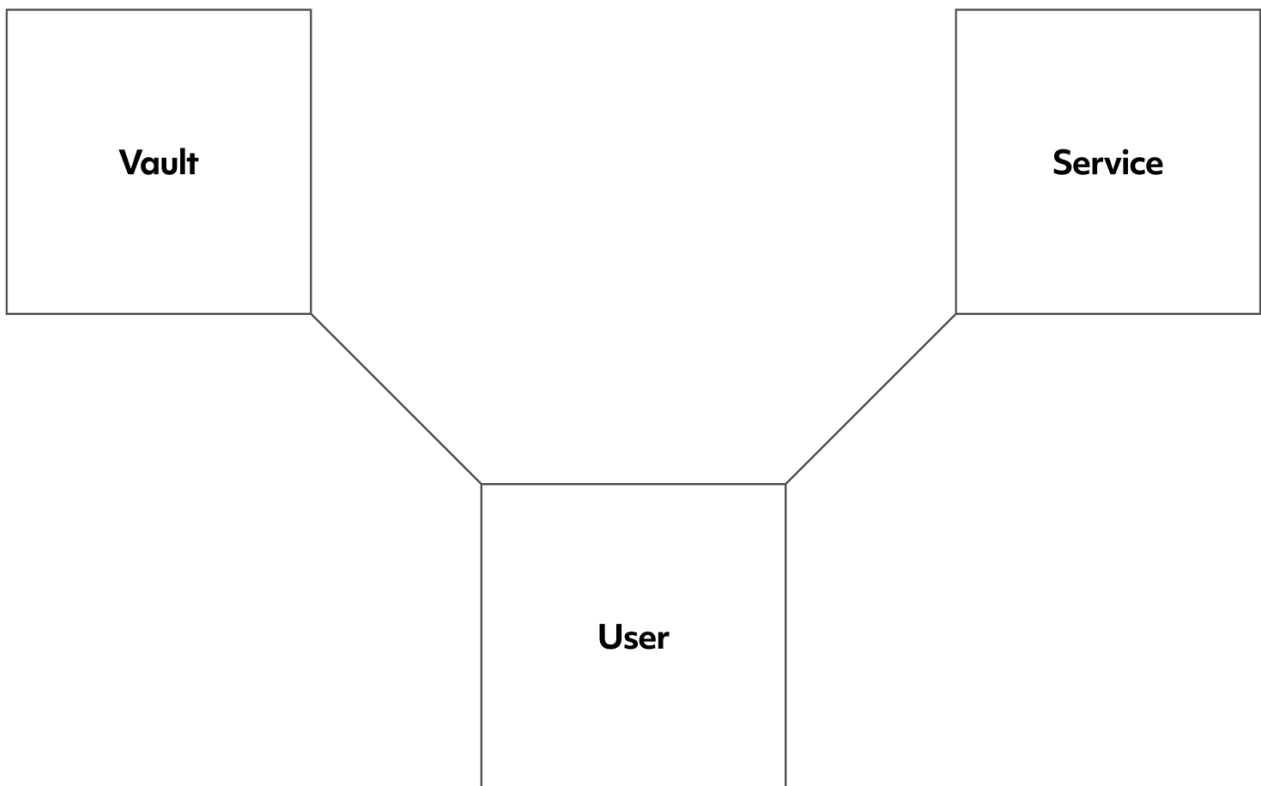


# Key Functions Library

Our key functions library has features for signing, key pair generation and encoders that create ease of use experiences for developers building on the Futureverse. This library was built using a low level programming language (Rust), which means it supports services on the backend as well as the frontend. This makes possible the export of consistent interfaces to a wide array of languages and platforms.

The key functions library provides an easy way to manage accounts and identities, and sign transactions on the blockchain. This facilitates our vision of identifying things in the Metaverse by encoding various cryptographic data related to the DID subject (whether asset or identity). These cryptographic materials can be used for use cases such as:

- Authentication
- Assertions
- Key Agreements to Establish Secure Communication
- Capability Invocation and Delegation on The Metaverse





The library contains 4 key components:

### 1. KeyPairs

Key pairs encapsulate cryptographic operations like sign, verify, encrypt, and decrypt. Two types of key pairs exist, signing key pairs and encrypting key pairs. Where signing key pairs are used to sign and verify payloads, and encrypting payloads can be used to encrypt and decrypt payloads. Currently supported key pairs are: SR25519, Ethereum, BLS12381, ED25519.

In addition to the standard features associated with key pairs like signing and verification, our key pair functionality includes locking, unlocking and derivation functionality (which assists in key recovery and has benefits over random key pairs).

### 2. Encoders

Encoders convert keys (or other data) from or to a particular format. The input (I) and the output (O) parametrize their interface to make them generic. The Key Functions module contains encoders that are commonly used on the blockchain including PKCS8, Base 58 and QR codes.

### 3. Accounts Management

Our account management feature has the ability to create accounts, generate accounts from a mnemonic, backup and restore accounts and check for pre-existing accounts.

An account is a public and private key pair randomly generated for the party. The owner of the key pair can use the private key to sign transactions or messages, for example, to prove ownership. A valid signature may only be created by using the private key.

### 4. Secure Storage and Recovery

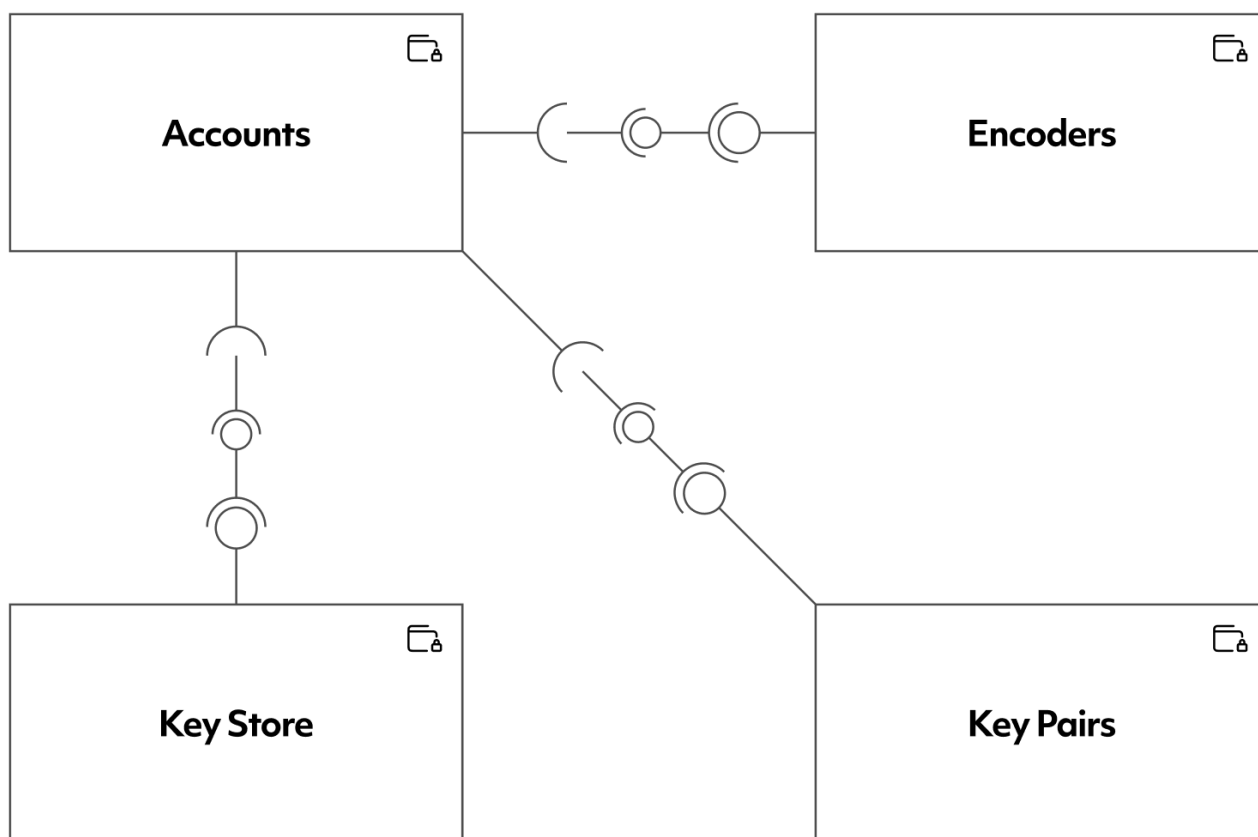
Secure storage is responsible for storing key pairs securely. Capability to store a serialized key pair and get a serialized key pair as well as delete a key pair (secure remove)



# Foundation Vault

Foundation Vault is a Wallet storage infrastructure and system designed to eliminate the risks of a “honey pot” (a large bucket of sensitive data) created by a centralized key storage.

Foundation Vault achieves this by spreading out the risk to three sites of interests; the vault, the user and the service. It has been designed to enable a better user experience for customers of organizations who are still not well equipped to handle the requirements of Web3 by providing a more well understood and simplified interface using magic links and SMS messages to verify identity.



# Foundation Principles

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1. User binding authentication through a simple interface with the vault.
2. Service key pairs for obfuscating data.
3. A dedicated storage device (vault) for storing encrypted data only.

request access to a user's wallet stored in the vault (Wallet Retrieval) only through specific consent from the user, which is now enforced by the vault authenticating the user on each delegated access request from the service. The authentication will be made through a direct communication channel between the vault and user. The user will have to present this data to the service so it may access the wallet on the user's behalf.

## Delegated Access

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Typically services require users to create their own wallets to interact with the blockchain. This can be quite a large barrier to entry for most consumers since it results in quite a cumbersome on-boarding process. To improve this process cloud wallet can be employed but this results in a honey pot of valuable wallet credentials for bad actors to exploit. To greatly reduce the risks of cloud wallets while enabling convenient customer access, delegated access via Foundation can be used.

After user binding authentication is achieved between the vault and the service's user, the vault can create a wallet for a service user in a sandbox environment, encrypt it using the service's public key and finally commit it to storage. From here on the service can

Further risk mitigation can be enabled via:

1. Service IP whitelisting to the vault
2. Wallet never leaves the vault and service bubble
3. Service access audit log and access pattern checking
4. Spreading out data required to access a wallet between 2 parties(the vault and the service)
5. The vault is not privy to wallet data and therefore is not a honey pot



# Self-Sovereign Data Store (SSDS) SDK

The SSDS SDK manages account creation, data encryption, and Vault access. Typically, the SDK will be embedded in a website or mobile app. Access is granted by Username and Password serialized into an access key and an encryption key using Key Stretching (Scrypt / PBKDF2). The access key grants Vault access while the encryption key allows the SDK to encrypt a secondary access keypair stored in the Vault.

Key rotation is also managed by the SDK to ensure ongoing security. Both sides of the CentraPass decentralized OAuth 2.0 SSO flows are managed by the SDK.

Verifiable Credentials are stored in SSDS and signed by trusted parties. These files can be created by an issuer and given to the user to own through the Vault, through login access, or given back to the user to store. These credentials are used by users to present attested data to verifiers such as restaurants, events, construction sites, online services and the Metaverse. VCs can be transmitted using any of the available sharing schemes.





# DID SDK

Our DID SDK has features for creating, updating and resolving DIDs in the Metaverse.

Specific Metaverse assets and identities will have their own schemas.

Key attributes of identities and assets on the Metaverse can be stored in a globally distributed key value database (verifiable data registry), and attributes can be resolved via the DID resolver component of our SDK.

Identities that are created and assets that are digitized on the Metaverse in this manner will be unique, interoperable, persistent, tamper-proof and verifiable.

The schema will hold information that will be important for digital content applications such as the Unreal Engine or Unity engine with service links for resolving digital assets which will be hosted by the issuers and therefore they will also be the controllers of the DIDs.



# Decentralized Delegation Protocol

Doughnuts (aka Decentralized Cookies) are a patent-pending Proof-of-Delegation Protocol. They exist between two or more cryptographic keypairs, and enable us to prove that one address delegates something to another address.

Doughnuts have been developed to help improve user experience and user safety for Web3 applications. They are a way for applications to be specific about how they interact with users' assets, data or in-app experiences, without having to rely on centralized permissions infrastructure.

Using Doughnuts helps make wallet transactions safer by allowing fine grained access to assets, for example to allow an app only one-time access, or allow a time based access.



# Decentralized Communications, Notifications & Storage Protocol

Within a truly decentralized Metaverse operating system, differing degrees of consensus and transparency are required.

For asset value exchange (usually fungible and non fungible tokens) every node in the network needs to agree on the current state of the ledger. Within Futureverse, this functionality is provided by The Root Network.

However, there is a whole subset of data exchange and interaction that has no need for network-wide consensus, but are still crucially important to ensuring decentralized applications work reliably and with great UX: services such as communications, events, and notifications.

It is essential to the Open Metaverse that these non-value based exchanges are as decentralized as the blockchains beneath them.

There is little point in decentralizing assets and identities if the only way for them to interact is via centralized services. The Sylo Network and Seekers NFT project uses gamified, off-chain, decentralized infrastructure to solve this problem.



## The Sylo Network

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The Sylo Network provides reliable, decentralized, off-chain services for decentralized applications.

- Real-time events
- Asynchronous messaging
- Notifications
- State management
- Real time calling
- Real time data exchange

These decentralized services are provided by Seeker Nodes and are paid for using Tickets, an incredibly efficient off-chain payment method that allows for every network event to be granularly charged.

The Sylo Token is at the core of this functionality set. It is a utility token used to pay the essential costs of running a Seeker Node - human time, hardware resources and electricity.

The Sylo Token's unique 'layer two' (off-blockchain) probabilistic micro-payment system makes this possible without high transaction fees. The cost is similar to services set up centrally on a traditional cloud service like AWS.

Sylo Tokens are also used to measure an individual's level of participation in the Sylo Network. The amount of Sylo that a Seeker Node has staked determines how much work it is responsible for completing, and as a result, how much that node can earn in exchange for providing those services.

Seeker Nodes are also rewarded or penalized based on the quality of the service that they provide. This incentive structure ensures that node operator incentives are aligned with those of the network, ensuring a high standard of service no matter who operates each individual node.

## The Sylo Metaverse SDK

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The Sylo Metaverse SDK is the SDK implemented by any Open Metaverse app to utilize the Sylo Network for events, notifications, asynchronous messaging and real time communication between wallet addresses.

Through the use of the Sylo Metaverse SDK, any distributed application can unlock high-performance decentralized communication for its users.

They can use the user's wallet, or items held in their wallet, as the basis of their online identity. These wallet addresses (or NFTs) can be allowed to communicate within a DApp without any requirement to provide additional information.

The DApp does not have to build in communications functionality, or manage memberships, groups, and the corresponding server infrastructure.

## Seekers & Gamified Infrastructure

In decentralized systems, community participation in network infrastructure provision is usually very low. However, the Open Metaverse relies on community-run infrastructure. We solve this apathy through gamification of network infrastructure.

The Sylo Network is the first network to gamify node infrastructure by closely associating the Node infrastructure itself (Sylo Nodes) with Metaverse characters (The Seekers) and introducing social mechanics and game rewards to incentivise participation.

Typically the reward for running Nodes is limited to token rewards, in line with the network tokenomic incentives. By coupling the Seekers NFT with Sylo Nodes, we create in-game features that encourage more network participation and therefore resilience of the network.

The Seekers are standalone Metaverse characters in their own right, plus they are the only NFT that can be used to run a Sylo Node; combining the two assets creates Seeker Nodes. A Seeker is the personification of your Sylo Node, acting as a conduit to connect the different worlds of the Metaverse through

communication. This is supported by their compelling backstory (Lore), which frames them as explorers and connectors of the Open Metaverse. In order for your Sylo Node to participate in the incentivised network, it needs to be paired with a Seeker; it literally needs to become a Metaverse character.

In addition, the Seekers have the concept of Orders, Factions and Clans built into their gameplay; groups that can only be joined by contributing to the network itself... either by running a node, or by delegating stake against it.

Orders, Factions and Clans will have elevated rights, be able to participate to a greater extent in the game, and are openly recognised as meaningfully contributing to the infrastructure that powers the Open Metaverse.



# A Decentralized Artificial Intelligence Protocol

As our world becomes increasingly digitized, AI is playing a bigger role in shaping the way we think, behave and solve problems.

The impact AI will have on the world in the near future is profound, most people don't know what it does or how it works. It's crucial that everyday people gain an understanding of AI, and even more critical that communities have ownership of it. This will help them understand the positive benefits as well as the risks, and have a say in how it impacts their lives.

## Altered State Machine

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Altered State Machine is a Web3 protocol for Artificial Intelligence.

ASM's vision is expansive: to create a world where the value of AI flows back to those who create it, and where anyone can create it.

ASM's product is a platform and protocol for the ownability, tradeability, composability, and interoperability of AI (GANS and ML reinforcement models), using NFTs. It provides the world's first open infrastructure for any individual (rather than companies) to provably own, build, and govern their own AI. This "individually ownable AI" is called non-fungible intelligence.

ASM seeks to improve the understanding and usage of AI, by taking consumers on a content and game driven journey. Through this they'll gain an understanding of how it works, how they can interact with it, then how they can own and apply it in their lives. With a greater understanding amongst everyday people, society can make better governance decisions about AI.

Beyond this, ASM seeks to bring life to what can be very dull and empty Metaverse environments. Anyone who has been inside a Web3 Metaverse world will tell you they are largely empty. ASM enables developers and communities to bring life to these spaces by integrating ASM Agent Non-Playing Characters (NPCs). These NPCs can become in-world autonomous avatars, pets, vendors, quest givers, lore tellers, companions and more.

# What ASM Enables

# ASM Protocol

ASM provides other Web3 applications the ability to:

- Define interoperable specifications for AI/ML models for use in apps across the Metaverse
- Use ASM infrastructure to create “training gyms” (cloud GPU processors) where end users can train their own ML models
- Attach those ML models to a “Brain” NFT that is provably owned by a customer
- Compose multiple AI capabilities under a single Brain NFT to create complex and highly capable AIs
- Pair Brains with an NFT form (skin) to create autonomous Agent ready for the Metaverse

ASM is suitable for a wide range of use cases including games, open world experiences in the Metaverse, financial agents, personal assistants, and many more.

Altered State Machine works across two major axes: The ASM Protocol and the ASM Platform.

The ASM Protocol is the economic base providing the fundamentals for the ASM economy. It enables distribution of \$ASTO (ASM’s token), release of liquidity into the market, and supports token demand through genome mining.

This includes:

- Token distribution, vesting contracts, liquidity mining and transactions
- Brain NFT proof-of-ownership and ML model storage
- Genome (Brain) Mining
- The ASM Dashboard (a front end to access protocol features and economic benefits)
- The ASM DAO (the ASTO token governance body)

ASM’s protocol development is supported by our Data Science department.



# ASM Platform

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The ASM Platform is the toolset that Web3 developers need to create use cases for non-fungible intelligence using ASM.

This includes:

- ML Gym Training contracts
- Executables for commonly used Metaverse environment tools (e.g. Unity)
- Open specifications for interoperable mappings of AI agent properties
- Docker infrastructure
- Intelligence mining economics
- Intelligence mining cluster setup
- SDKs

ASM's platform development is supported by our AI/ML Research team and Data Science department.

ASM's product also includes an NFT Asset Drop Platform (which enables ASM to manage high-volume NFT drops robustly and at scale).





# The Content

Most Metaverse companies start and end at content. But this is only the tip of the spear. Great content is the key to onboarding and sustaining diverse, engaged communities.

The Futureverse has approached building content out in three ways.

## 1. Best-In-Class First-Party Content Ecosystem

All great content properties are built on great stories, many of the Web3 Metaverse approaches jump straight to creating a world which in almost all cases leads to an empty unused wasteland.

The correct way to go about scaling content in Web3 is to follow the path below.

Stories and Lore > Characters > Content > Small Spaces > Activities > Large Spaces > Game **[AM1]**

In each step, you must take time to allow the community to co-create the narrative and content, growing the scale of content with the input and at the scale of the size of the community. This way you ensure there is a rich and vibrant world for users to interact with that will engage them over a long period of time. The community has to care.

Our existing ecosystem of content is one of the most vibrant in Web3 with one of the highest levels of engagement of any major

collection. By taking the time to establish an interconnected world of characters, content and stories we have laid a strong foundation to build a world and games on top of.

## 2. Partnerships with Leading IP Rights Holders

We are partnering with some of the leading IP rights holders in the world across film, TV, social media and sports to bring their content to life on our platforms and technology. We are excited to share the details of these game changing relationships in the near future.

## 3. Ecosystem Development Fund

We will continue to incubate ventures and community driven content that create richer stories and solve real user problems. We will invest into the visionaries that were born ready to invent and build our future. In a similar way to how the Futureverse technology and content has come together, we will continue to architect new collaborations, frameworks and use-cases for the Open Metaverse.



# Summary

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The Futureverse is the culmination of 5 years of strategy, research and development to create the foundation for open and scalable Metaverse infrastructure with world-class content and a highly engaged community.

Bringing together the core elements necessary to create the foundation of any Metaverse application with user safety and user experience at its heart, Futureverse aims to lead the world in onboarding the next generation of Open Metaverse and Web3 users.

By taking the harder path, by taking time to work on the boring things below the content layer and by focusing on the user experience journey first, then developing custom protocols to deliver that experience, we set the stage for our world class content, utility and services to scale to mass market like no other Metaverse project.

By continuing to execute well on these elements we give ourselves the chance to drive a different outcome in our evolution as a digital society, one where users and communities take charge. The Open Metaverse.

**We welcome you to join us on this journey.**



# Definitions

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'Futureverse' means Futureverse Platform Limited, a New Zealand Limited Liability company, number 8382118 on the NZ Companies Register.

'Futureverse Platform' means the blockchain-based platform developed by Futureverse and its affiliated companies, including The Root Network.

'User' means any individual and/or entity using the Futureverse Platform.



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# Futureverse Whitepaper

