MOSSAI GLOBAL

The First Decentralized AAA Metaverse
Powered by The First Decentralized AAA Real Time Cloud Rendering Network

White Paper (draft)

A Project of Hyperdust Foundation

Visions

There are three groups in the ecosystem of MOSSAI : Miners, builders and communities(KOL). The MOSSAI protocol intends to encourage all these three spices to collaborate with each other and prosper together.

Community refers to two concepts: physical world living community or virtual online community. Virtual communities are often based on chat groups, online forums and lately PFP NFTs, dApps with ERC20 tokens. What if people could have metaverse communities? Could a community own an island in the metaverse which never sank? Could a community have self sovereignty and jurisdiction of their own cloud rendering VR space which are unstoppable? Individuals are great and communities are powerful. Self sovereign communities will prosper in the new independent virtual world and form a great and powerful metaverse which is parallel with the physical world.

The owner of MOSSAI island has jurisdiction of the space where the island is located. Technically, only the owner can update the rules of the island, e.g smart contracts, hypergraphs, etc. The owner of the island is also an islander.

Problem Statement

Immersive experience is the key factor of a metaverse platform. Not every potential end user has a performance computer to render AAA photographic metaverse. The headset XR device often has limited 3D rendering capability. So for years , there have been some commercial cloud platforms that are providing real time cloud rendering services for gaming and other emerging markets, such as metaverses. But all these businesses leverage traditional business models. They prefer to be a service provider that sells shovels to the miners of new business builders rather than being part of the ecosystem and accepting the tokens of the metaverse platform.

In traditional business, metaverse/games need to pay the service to the cloud company with fiat or digital fiat/stable coin. So the computation power beneath cloud rendering is alway the cost of metaverse/games. The metaverse/games can never benefit from the network effects brought by its prospers. The cloud companies continue to get revenues from metaverse/games. In such circumstances, new businesses such as metaverse/ cloud games in the early stage have very little chance to prosper or even survive. That could be the reason why the successful web2 platform always has their own cloud service company. Amazon has AWS, Microsoft has Axure, Google has Google Cloud etc.

Although a few projects claimed they could provide cloud rendering service in web3 business model, i.e. tokenization of 3D rendering power. The absence of cloud real time rendering is still in the field. Only still scene or video offline rendering available in Web3 industry.

Decentralization of metaverse/games requires a more sustainable business model for massive aggregate computation, such as real time 3D/XR rendering to prosper.

Our solution and How it works

The massive aggregate computation power should be tokenized for decentralized applications. MOSSAI GLOBAL is the first AAA decentralized meteverse solution powered by tokenizing the real time AAA 3D/XR cloud rendering for communities and individuals driven by TVL.

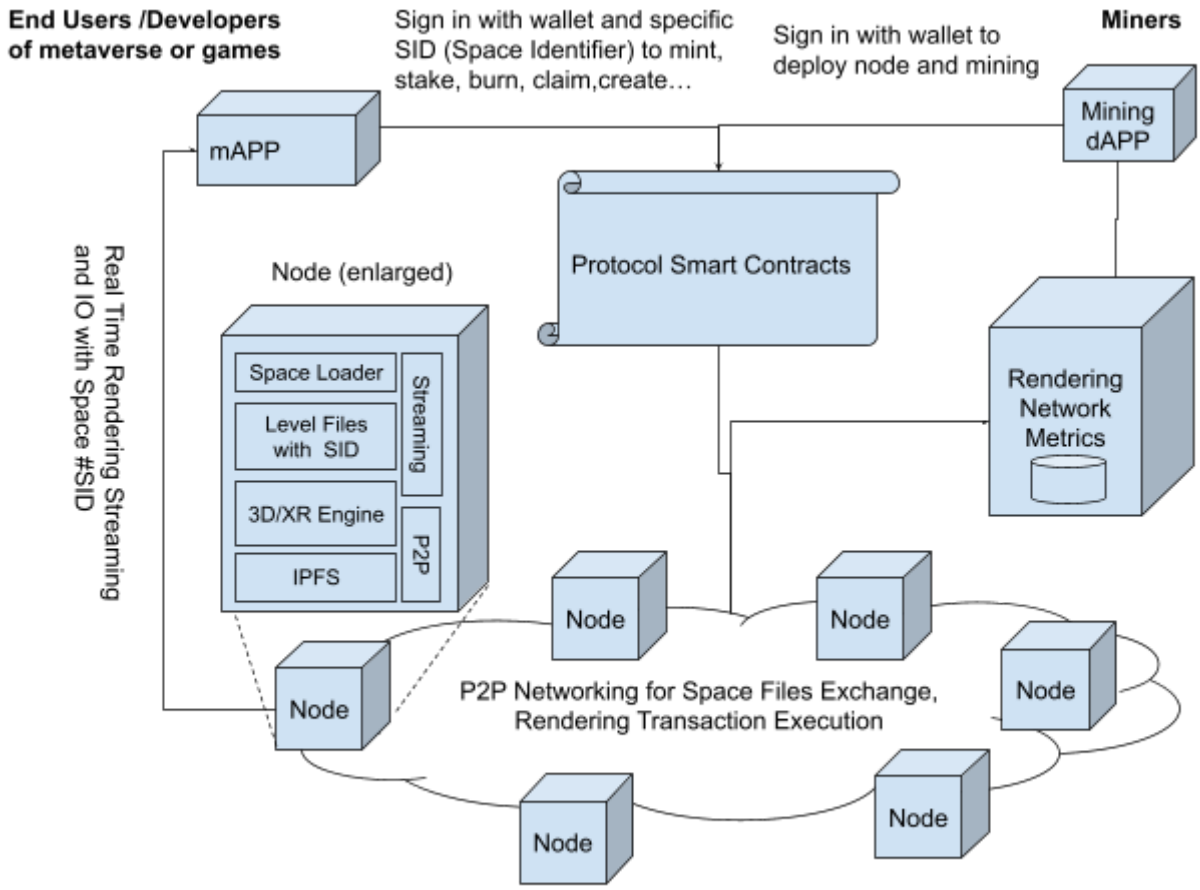

Figure 1. The System Architecture of MOSSAI GLOBAL

MOSSAI GLOBAL is on the top of a dynamic P2P cloud rendering network. Each node of the network is a GPU instance for rendering and other tasks. The end users need some MGN tokens to access the network. Both the end users and meteverse/games developers could access a AAA metaverse/game space from a browser that is running on PC without installation or an app on VR head mounted device. The space is addressed with SID (Space Identifier) that is the hash of the space level file, e.g.

SID = 0x11784ccc3268f41b2c9cdb54ff6f35b509ee075fbb101a5ac8d4dd16d54ded8b.

The space addressing mechanism is borrowed from FID (File Identifier) of IPFS. The format of space level files depends on what game engine is used , such as O3DE, Unreal Engine or Unity.

There are 1884 island spaces in MOSSAI GLOBAL and the third party metaverse/game developers could create even more independent spaces/games with our protocol on the top of the decentralized real time cloud rendering network.

Miners could download the node client and run it on a computer that meets the requirements to get token rewards. The key requirements are GPU and broadband internet connection (refer to the specs of hardware requirements of miner node). It should be pointed out that the mining of MOSSAI GLOBAL is real time rendering rather than hash guessing that is commonly used in PoW.

mAPP is an unstoppable virtual 3D/VR space with SID and could be rendered with a decentralized real time rendering network. The “m” refers to “materialized” and “meta-”. The space of mAPP has some material properties such as length, width and depth like the physical world. NFT could be minted with 3D properties as materialized NFT aka mNFT by modifying the standard of ERC 721 or 1155. Similar to the real world physical assets, mNFT always occupies space in the metaverse. The user interactions in mAPP especially with mNFT could be recognized as transactions, e.g. park a boat to a dock may refer to deliver it to the owner of the dock, dropping a gem on the ground may mean to give it away. That we could build an economy in such materialized virtual space as we did in the physical world. It is called the virtual real economy.

mAPP: Autonomous Treasure Islands

Autonomous treasure islands are a decentralized virtual real economy space. There are 1884 islands pursuing the aim to increase TVL by putting more assets in the space of the islands. In such space the citizens of islands could mint, stake, burn, claim,create…to increase island TVL higher and higher to share the fortune of the public treasury.

Island Deploy/ Undeploy

The community leader/KOL could mint and deploy an island(space) of MOSSAI for free by providing LP (ETH) on Uniswap and having the LP NFT locked at the island (staking house). The island owner will get MGN token airdrop according to the amount ETH in the LP (5000 MGN airdrop per ETH).

Once the leader/KOL deployed the island and the related smart contracts she/he could issue new membership NFT (e.g. 10000 copies) or other 3D NFT and list it in the store of the island (100 MGN for one copy). Community members could get the membership or other NFT at the price set by the island owner in MGN , said 100 MGN . And, the members could get the MGN (at minted price in MGN) back by burning the 3D NFT (need burning fees).

The LP NFT locked at the island could be withdrawn by paying the fee needed to un-deploy the island. The fee is 50 $USDT$ per 5000 MGN airdropped in island deployment activity. The un-deployed island will be removed from the TVL reward pool, which means the island can not share public treasure revenue.

Island TVL

The qualified islands share **the public treasure** of MGN according to the proportion of the TVL(Total value locked) of all islands. TVL is the aggregate amount of the asset available at the island measured in $USDT$. It includes two parts:

1) The TVL of LP NFT staking on the island. There is a staking house showing all LP NFT on the island. Not counting the LPs that are out of range.
2) The TVL of 3D MNFT presented on the island (by "use" operation, e.g. long press key "F"). Real estates, boats, cars, gems or other artifacts. Counting at the price in the last deal in MGN and converting into $USDT$ at the current price in the official pool at Uniswap.

Token Supply and Mining

Nodes provide services (real-time rendering, virtual housing, online service, verification, etc.) for all islanders. The islanders pay tokens to the protocol to use these services (cloud rendering network GAS), and protocol pays tokens according to current mining difficulty to the nodes as rewards for their services. This reward payment is the *minting* action. The rewards includs:

1) **Base reward (inflation):**
   The base reward B equals to E divided by $Difficulty$ and will be sent every 10 mins during the rendering and streaming.

$$B = \frac{E}{Difficulty},$$

   E is an equivalent MGN of the latest avg. 10 mins cloud rendering costs get from the public market (AWS and Google Cloud) in $USDT$. Right now (Aug. 2023) the latest avg. 10 mins cloud rendering costs about 0.2 $USDT$ and will be updated in a fixed period. So, E is set to 0.1 and the base reward

$$B = \frac{0.1\ MGN}{Difficulty}$$

   where

$$Difficulty = \frac{number\ of\ available\ GPUs}{number\ of\ GPU\ in\ rendering}$$

   The base rewards will be released linearly in 12 months, and 10% will be reserved as guarantee fee. The penalty of bad rendering or network connection quality will be fined from the guarantee fee.

2) **Miner Fee**:
   Miner fee is the cloud rendering tasks execution fee paid by the end user. The current suggested miner fee is 0.02 MGN per 10 mins. Miner itself could adjust the miner fee. The protocol will put the node into a different category according to the price range of the miner fee. When the end user chooses a category with a specific price range, the protocol will randomly allocate the best matched node to perform rendering and streaming tasks from available ones. The nodes are sorted by the amount of MGN staked to be scheduled.

Transaction Fee and Token Burning

The end user pays MGN for the cloud rendering service (including miner fee and transaction fee). Transaction fee is charged every 10 mins during rendering and streaming, quoted as T ,

$$T = 0.8 * E$$

T is sent to the public treasury . This is also machanism of **deflation** and also to prevent conspiracy of miners and end users for base rewards.

The Public Treasury

The 40% MGN of the public treasury will be shared with all island owners in monthly period, 20% amount MGN will be reserved for LP, grants, ecosystem rewards etc (more details later) , 20% is to be burned and 20% will be reserved to the core team.