Settlus Whitepaper

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settlus.org

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DECLAIMER

This whitepaper is for informational purposes only and does not constitute an offer to make any financial decision regarding Settlus or any related company. This whitepaper may contain forward-looking statements, which involve risks and uncertainties. The Settlus blockchain is currently in its developmental stages, and the functionalities described may change over time. We are not obligated to update these statements to reflect future events.

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1. Introduction

We are currently living in the creator’s era, an unprecedented period where individual creativity is thriving like never before. Now, not only simple creations like photos and videos but also larger-scale creatives that were once deemed efficient only within corporate structures, such as 3D interactive content and games, can be crafted by a single person in a small room, yielding similar outcomes. These creations, once made, can be instantly distributed and shared worldwide with just a few clicks. With the advancement of technologies like AI, content creation and distribution are being more sophisticated and personalized. The number of small-scale creators is rapidly increasing.

Now, these small-scale creators are focusing on how to leverage and monetize their creations in online space. Despite a vast number of creations produced daily, it has been challenging for these creators to personally assess the value of their work in the online world. Such lack of transparency on how one's creations are utilized online has been a significant hurdle. In the past, content production and distribution were monopolized by large corporations or groups, and they constructed systems to manage content consumption by investing substantial capital and resources. There has been unfair competition between large corporations and small-scale creators. Individuals and small-scale creators found it difficult to establish such systems and mostly had to entrust their rights to corporate systems. Due to such market characteristics, profiting from creation and content, so-called IP business, was essentially exclusive to corporations. Before long, the total size of the creator economy will surpass that of large corporations, but individual creators will still find it challenging to engage in IP business. If they could compete on equal footing with major platforms, many more creators would emerge, filling the world with greater joy and diversity. A new era requires a new system.

Settlus is a blockchain designed for the creators of this new era and their services. Blockchain serves as a suitable tool to safeguard the rights of small-scale creators and their creations, offering an equitable system irrespective of creators' scale, nationality, age, and other factors. Decentralized blockchain provides transparency to creators, ensures unique rights independent of specific platforms via NFTs, and facilitates easy exchange of digital creation rights. Settlus believes in the potential of blockchain. Services based on Settlus only need to record when a creation or NFT was utilized. Settlus automatically tracks and reveals who can claim rights concerning recorded content consumption history. No matter which blockchain network the creation exists, Settlus securely records who deserves settlement. Moreover, creators operating on Settlus-based services swiftly receive settlements for their creation's consumption based on these records. Accumulated consumption records and settlement details can serve as a fair measure for both producers and consumers to evaluate the value of copyright and ownership of the content. Creators and consumers can now independently and transparently assess the value of creation rights without relying on opaque and complex systems. The business of selling and leasing these rights, previously an exclusive domain of corporations, no longer remains their sole possession with Settlus.

Ultimately, Settlus aspires to become a new standard in the creator ecosystem, helping anyone with creativity extend their various rights for IP across platforms and borders, no matter the scale.

2. Settlus Overview

To achieve a vision of enabling every creative individual to establish their own intellectual property business, Settlus is made to transparently and efficiently process transactions to facilitate payment to creators and rightsholders. It records purchase and usage data of digital creations on the blockchain, allowing for a practical and scalable system to distribute revenue to copyright holders.

The system is designed to be utilized independently by multiple platform services, and blockchain nodes earn fees by verifying transaction records and settlement processes for all platforms. Using Settlus, platforms can record off-chain transaction data and allocate profits to creators by accumulating reserves in their treasuries. Creators can payout their earnings at any time based on settlement records (purchase history). A detailed example of the settlement process is illustrated using OVERDARE's use case, which can be found in the Appendix. Since the system operates on a public blockchain protocol written in Cosmos-SDK, creators can access their earnings even if the platform disappears.

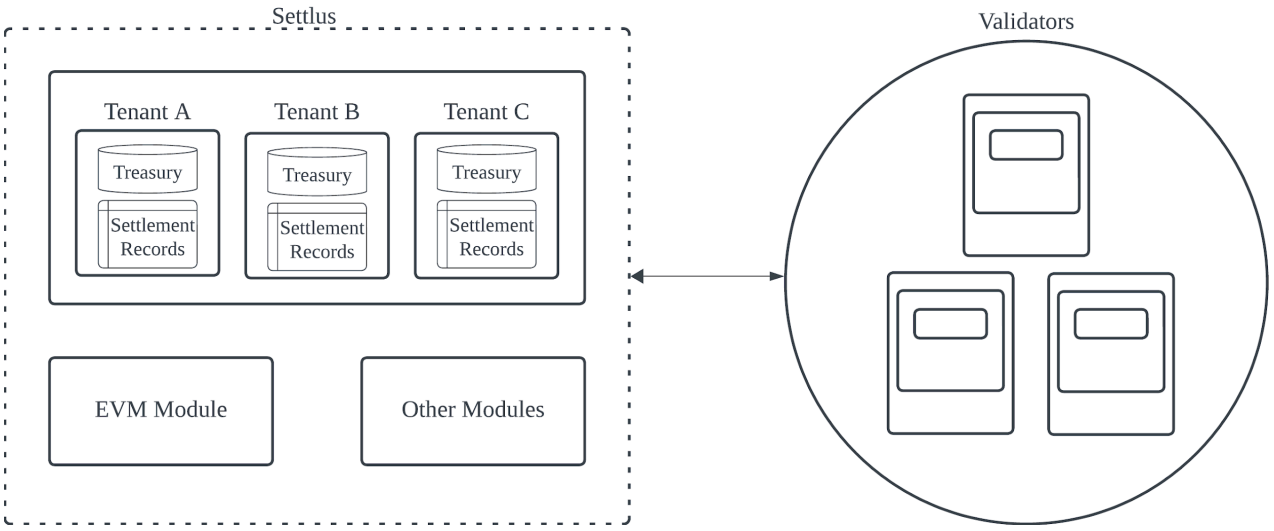
Moreover, Settlus has a structure that enables real-time verification of ownership for NFTs existing on multiple chains, ensuring NFT interoperability without the need for locking or using bridges. Using this feature, when accumulating transaction records, instead of specifying a wallet address for settlement, it is also possible to designate specific NFTs existing on various chains. In this case, the chains verify the owner of the specified NFT in real-time and record the transaction history towards the respective owner's wallet address.

Currently Settlus uses the PoSA consensus mechanism for a sustainable system, and plans to decentralize the system gradually. Validator reward system is also made properly to meet the plan. Let’s see the details.

3. Core Features

3.1. Multi-tenant settlement system

Settlus has a multi-tenant settlement system that allows various types of services to have an independent revenue settlement system. Any service interested in utilizing Settlus' settlement system can make a transaction, and they will be granted a separate tenant.



The Settlement System of Settlus is distinct from traditional "smart contracts" as it is implemented as a "module" on the blockchain. This decision was made for the following reasons:

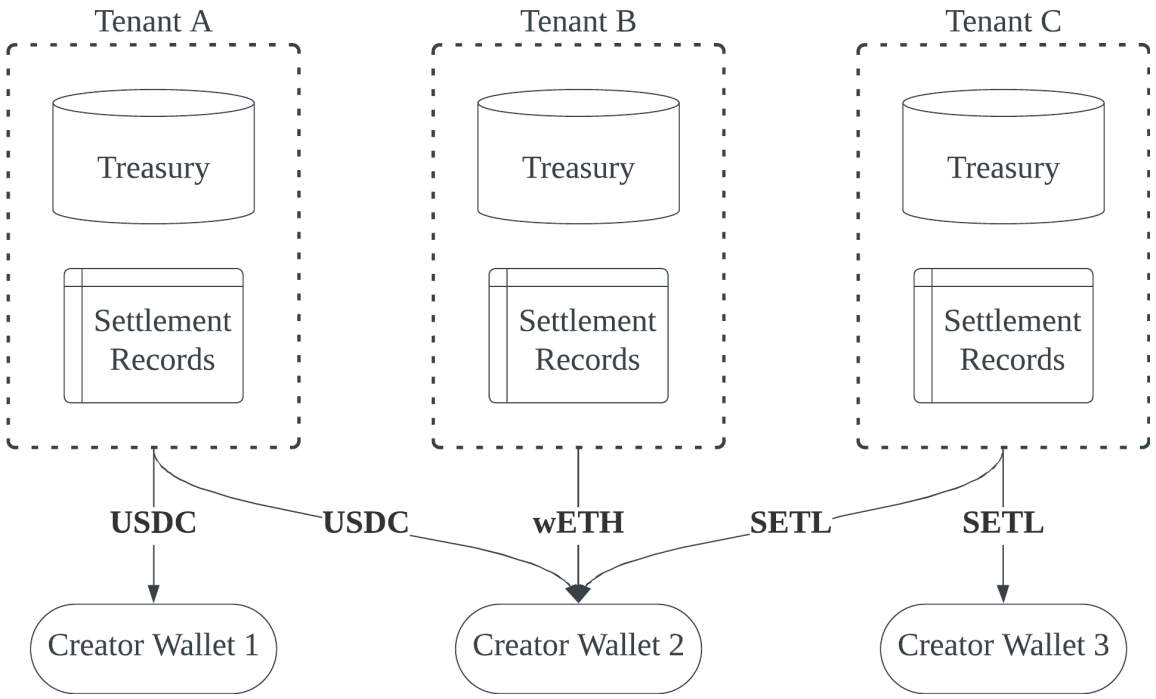
- Smart contracts cannot verify ownership of NFTs on other chains.
- Implementing it as a blockchain module allows for performance optimization.
- Gas fees can be paid with stablecoins instead of the base coin of the chain (SETL).

Let's now take a closer look at how the Settlement System works within each Tenant. The Settlement System consists of two main components: Treasury, Settlement Records

3.1.1. Treasury

The treasury is a crucial element that stores the reserve funds required for settlements. Anyone can make a deposit to the treasury, but arbitrary withdrawals are not allowed. The funds in the treasury can only be used when conducting Payouts based on the Settlement Records. The reason for enabling such functionality is that each treasury within the Settlement System is not a regular user account existing on the blockchain but rather a system account operated by pre-written code logic.

The treasury system will support a diverse array of coin types to accommodate the diverse preferences and needs of creators and tenants. The type of coin used for settlement can be chosen by each tenant. Various coins such as USDC, wETH, and SETL can be designated and used as the base settlement currency. Below is an example of different Tenants settling with different currencies.



3.1.2. Settlement Records

Settlement Records are essential for distributing rights-related profits to NFT rights holders who sell items. Services with any kind of NFT can create settlement records. For example, as provided in Appendix, a web3 based UGC platform OVERDARE's record contains the purchase history of NFT-based items. And if the service is a video streaming service, it will include the payment history for NFTs corresponding to videos. These records can only be kept by specific accounts designated for each Tenant.

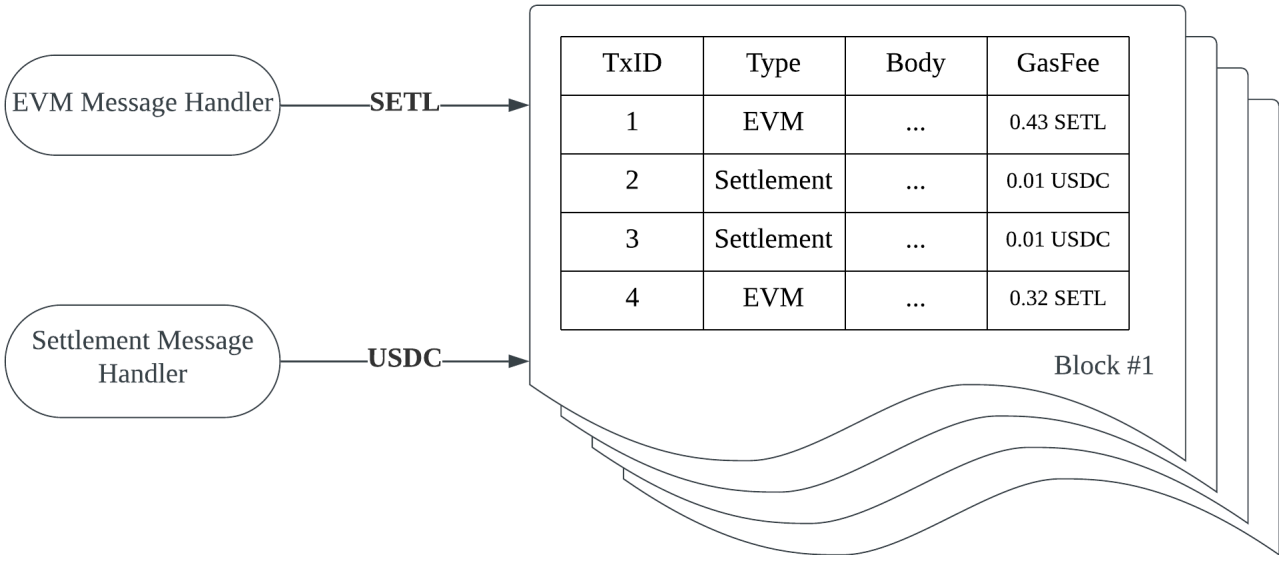
For every settlement record, the sender simply needs to provide basic information about the NFT, such as its contract information and the network on which the NFT is located. And Settlus AUTOMATICALLY determines the NFT's owner during the settlement process. The details of how this determination of NFT's owner is made will be explained again during the explanation of multi-chain interoperability.

The actual payout of profits does not occur immediately when a Settlement Record is created. Instead, there is a designated time period (payout period) after which the settlement takes place. This delay is necessary to flexibly address refunds or fraud. Once

the payout period has elapsed and sufficient funds are available in the Treasury, the Settlement Record is deleted, and the payment is made to the user's wallet. Note that although the transaction record is deleted, the nature of blockchain technology allows for transparent proof that all transaction histories existed, through past blocks.

3.1.3. Gas fee as stablecoins

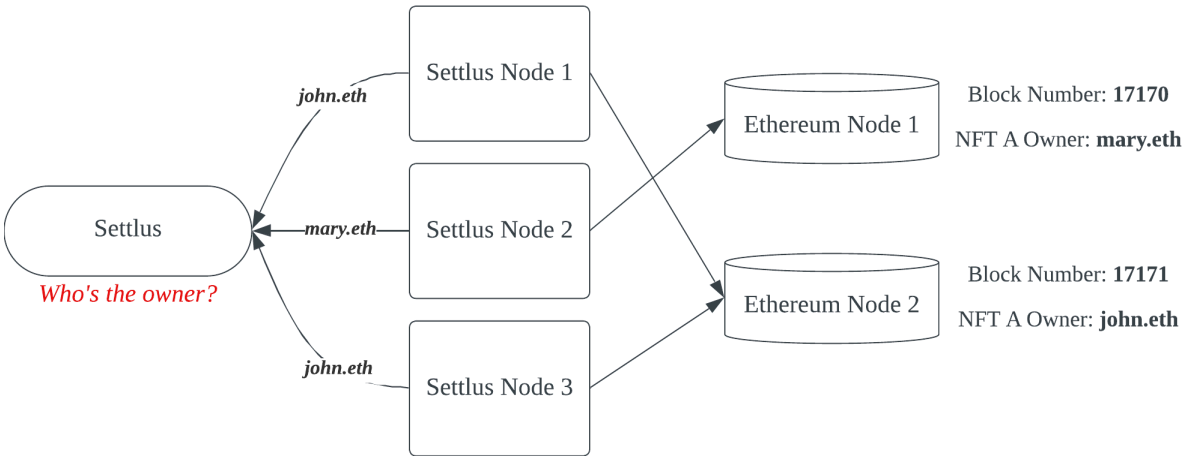
It is common for the price of a coin to fluctuate significantly due to external factors, regardless of the supply and demand related to its actual use. Such fluctuations are more frequent before the blockchain stabilizes. If such events occur, the cost required to record transactions could fluctuate significantly, which could be unfavorable for the creators and platform services using Settlus. Creators and services want their creations to exist in a stable system. Especially during the forming phase of the creator ecosystem, unstable situations can be more detrimental. Actual demands from creators and tenants are excluded from the market, leaving only speculative forces, ultimately leading to the failure of the creator ecosystem to establish itself. So, we make all transactions related to the Settlement Module (Record, Cancel, DepositToTreasury, etc.), the gas fees can be paid in a specified stablecoin, rather than in the native coin (SETL). This is to ensure that the cost for Tenants to record transactions remains consistent regardless of the value of SETL.



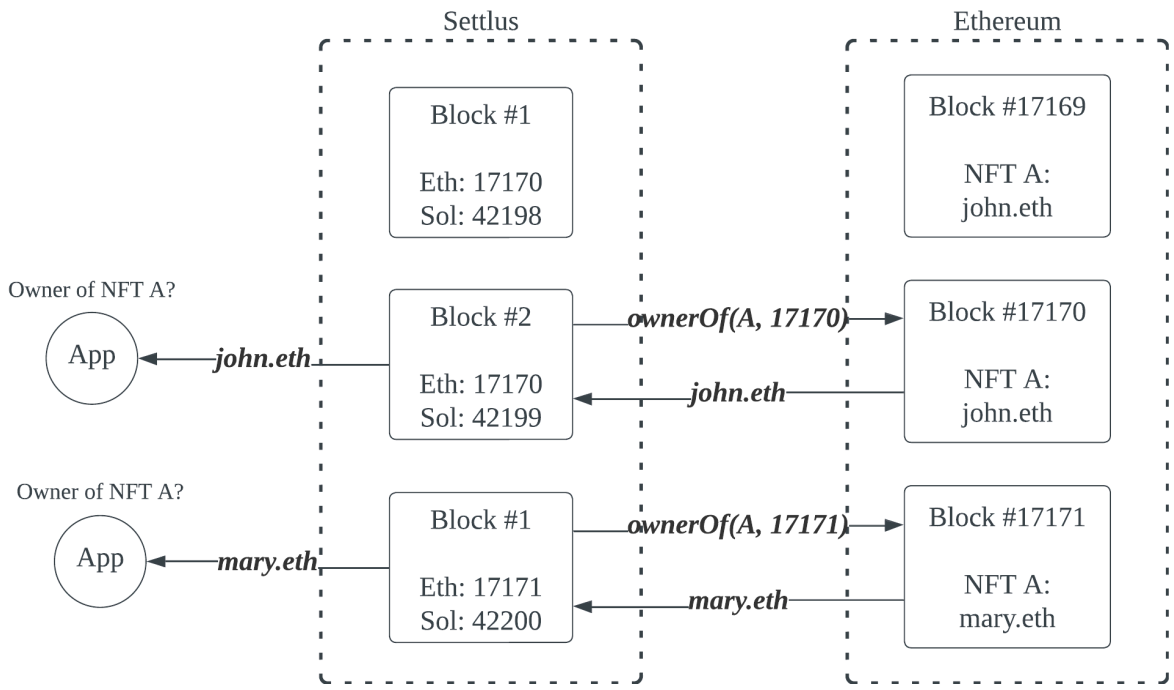
3.2. Multichain Interoperability

In conventional Web3 environments, to utilize NFTs from another chain, one needs to perform a lock-up process and use a bridge to transfer the NFTs. This is because within smart contracts, there is no way to directly access data from other chains. However, this approach has limitations, as it incurs fees during the lock-up process, and the ownership of the original NFT disappears, preventing simultaneous utilization in multiple projects. Moreover, bridges themselves are susceptible to security incidents due to their inherent complexity.

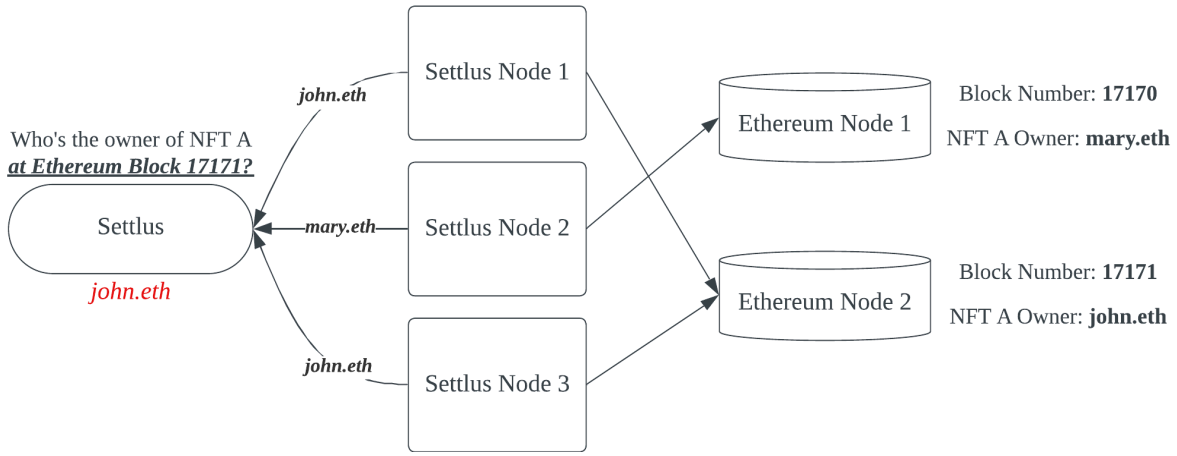
Settlus' Settlement Module, on the other hand, only requires read-only access to verify ownership. Therefore, it bypasses the need for lock-up or bridges and instead directly communicates with other chains within the blockchain to prove ownership. However, this method presents technical challenges. In blockchain networks, nodes must reach a consensus during the verification process to maintain consistency and validity. If each node directly queries ownership of NFTs on other chains without any conditions, there is a high probability of inconsistency among nodes. Additionally, there is no way to verify past block records of NFT ownership.



To address this issue, Settlus pre-maps specific blocks from other chains for each block on its own chain. Block mappings are decided through a voting process, where all validator nodes submit the latest block number and block hash from other chains at regular intervals.



When querying other chains, Settlus does not simply ask, "Who is the owner of NFT X?" Instead, it queries, "Who is the owner of NFT X in block N?" For example, when verifying the ownership of an NFT named A on Ethereum at Settlus Block 2, it includes Ethereum's corresponding block number 17170, ensuring that it verifies the ownership of A in that specific block. This way, consistency is maintained during block creation and future verification of past blocks.



Currently, due to limitations in CometBFT's implementation, Settlus determines the owner of an NFT through oracle voting along with the block number, instead of querying directly to an external blockchain. However, we believe that we will find a way (e.g., modifying the consensus algorithm) to achieve this purpose architecture.

3.3. Cosmos ecosystem with EVM support

Settlus is built on the Cosmos-SDK, enabling communication with other Cosmos-based chains through IBC (Inter-Blockchain Communication). Thanks to IBC, various tokens can be supplied to Settlus natively and utilized by tenants.

As Settlus utilizes Ethermint, it supports the Ethereum account system and EVM (Ethereum Virtual Machine) smart contracts. This means that users can sign transactions or transfer coins using existing popular wallets. Furthermore, anyone can easily write various smart contracts, including NFTs, using Solidity and utilize them within the Settlus ecosystem.

4. Consensus & Validator Reward

4.1. PoSA Consensus Algorithm

Settlus has adopted Tendermint, a PoS (Proof-of-Stake) based consensus mechanism. Initially, the plan is to opt for PoSA(Proof of Staked Authority), where only nodes that have reached mutual agreement or passed governance can participate as validator nodes. We believe that proving the genuine significance of Settlus' system in a stable environment comes first, to form a robust creator economy But We are also fully aware of that decentralization is key for a sustainable blockchain, we will try to convert our system to PoS and strive to achieve complete decentralization after 4 years.

All major policy changes to the Settlus are implemented through on-chain governance. Each validator is entitled to one vote during the PoSA stage.

4.2. Validator Reward

4.2.1. SETL as a Block Reward

To maintain an effective blockchain system, it is essential to prepare a well-designed reward system for validators. We introduce our native coin SETL to reward validators who validate and generate blocks. **This block reward is the only method of issuing SETL**. SETL is issued in a fixed amount with each block creation and is distributed among all validators participating in the consensus. The supply of SETL is unlimited. And there’s some notable rules in block reward.

a) Block reward identical regardless of staking amount

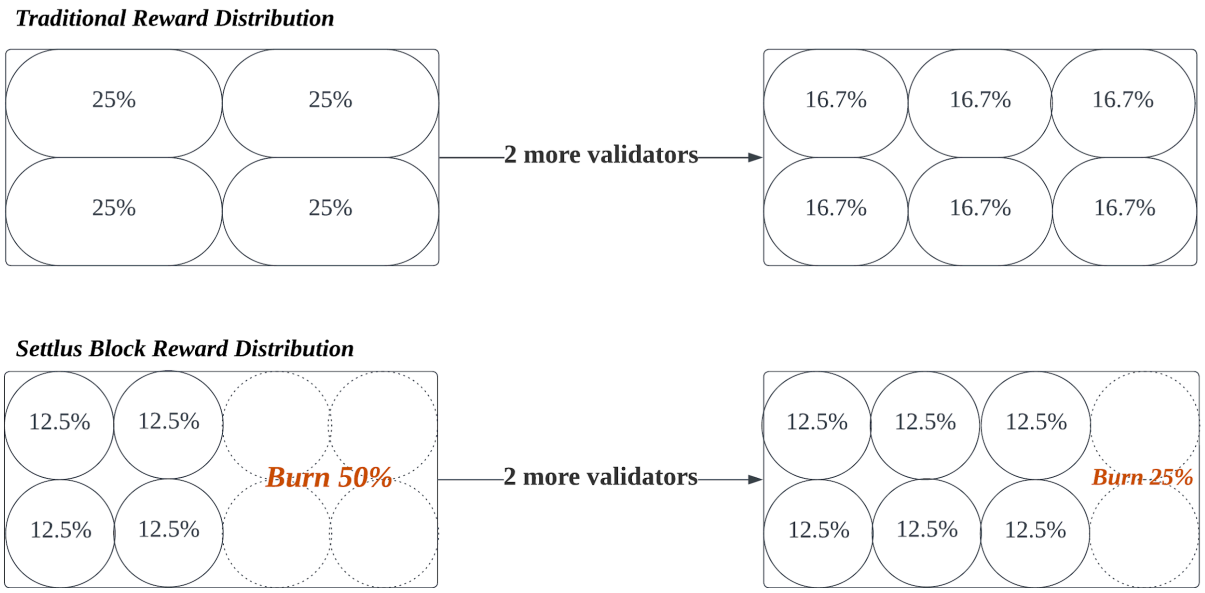
Settlus distinguishes itself from the conventional Proof of Stake Authority (PoSA) model, which typically varies the reward amount based on the staking amount. In Settlus, the reward quantity is fixed in the PoSA phase, and it has no relation with staked tokens. Settlus operates on the principle that more staking does not mean a greater contribution to the blockchain, particularly during the PoSA phase. In the block validation process, each validator performs identical tasks, irrespective of the number of tokens they staked. Therefore, it is more reasonable for all validators to receive identical rewards. Validator nodes only have to stake more than required minimum staking amount to be an active validator.

b) Block reward identical regardless of the number of nodes

During the PoSA period, since the number of nodes is limited, if a new node is added, the validation reward for existing nodes significantly decreases. Therefore, there's a high likelihood that the existing entities might oppose the process leading to decentralization, i.e., adding new nodes. To prevent this kind of behavior, Settlus distribution mechanism ensures the reward each node receives remains constant regardless of the number of nodes, until reaching the maximum number of nodes for the PoSA period.

Also, part of the reward each node obtains is transferred to the Community Pool. As a result, each node, during the PoSA period, always receives a consistent reward regardless of the number of nodes. Below figure shows how the reward formula and mechanism work.

$$Net\ Validator\ Reward\ Per\ Block\ = \frac{BlockReward * (1 - CommunityContributionRate)}{MaxValidator}$$



4.2.2. Community Pool

The Community Pool is intended to support entities (Tenants) who are currently using or will use the Settlus settlement system. To receive a portion of the community allocation, each tenant must present what they have developed or intend to develop on Settlus and a specific plan on how their product will support creators in the future.

Based on this plan, Settlus determines the amount to be distributed to the tenant through governance voting. The maximum allocation a single tenant can receive is capped at 20% of the total Community allocation. This allocation can be paid out at once or can be distributed over multiple occasions.

4.2.3. Utility of SETL

To maintain a decentralized system, a native coin (SETL) that can be rewarded for block generation and validation is essential. To address this, we will limit the native coin's utility to the following three purposes:

- Transaction Fee
- Staking
- Governance Voting

As a result, the value of the coin (SETL) will be determined based on how much Settlus is needed by users.

5. Conclusion

Settlus is a blockchain for the upcoming creator’s era, revolutionizing content creation and enabling individuals to produce impactful work beyond traditional corporate confines. Until now, small-scale creators have faced significant challenges in protecting and monetizing their intellectual property transparently and fairly across the platforms and borders.

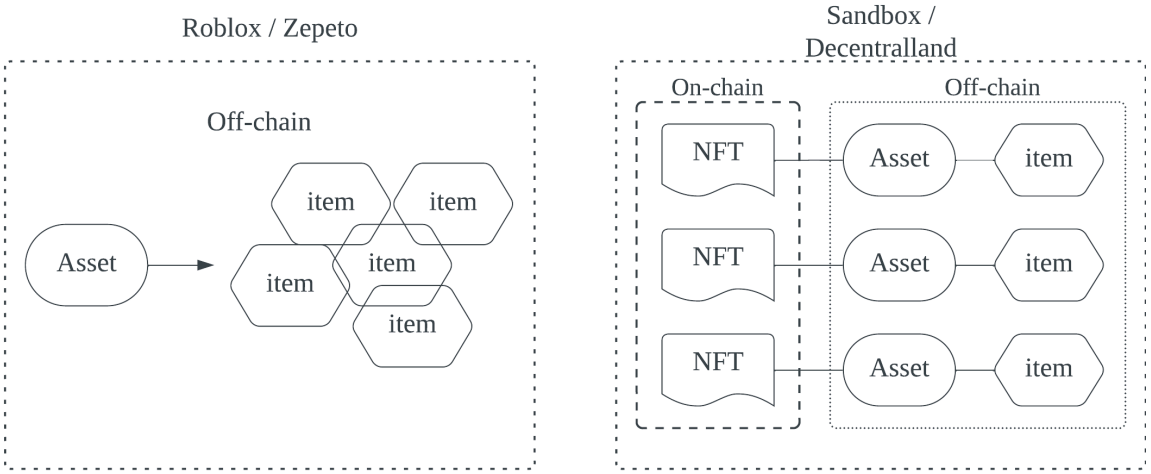
Settlus addresses these challenges by leveraging blockchain technology to provide a decentralized platform that eliminates not only inefficiency but also unfair competition in the current creator economy. Settlus offers transparency, efficiency, and interoperability in content management, with every feature carefully designed to achieve this goal. With Settlus, every creator can easily utilize their digital creations and run their own IP business, regardless of their size and location.

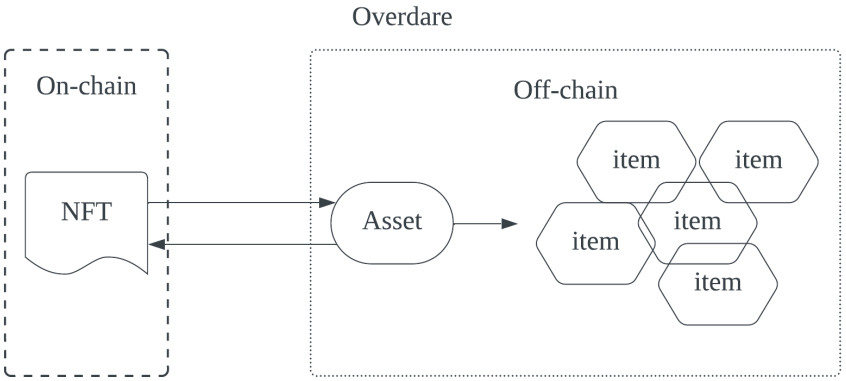
Appendix.

a. OVERDARE’s Use Case

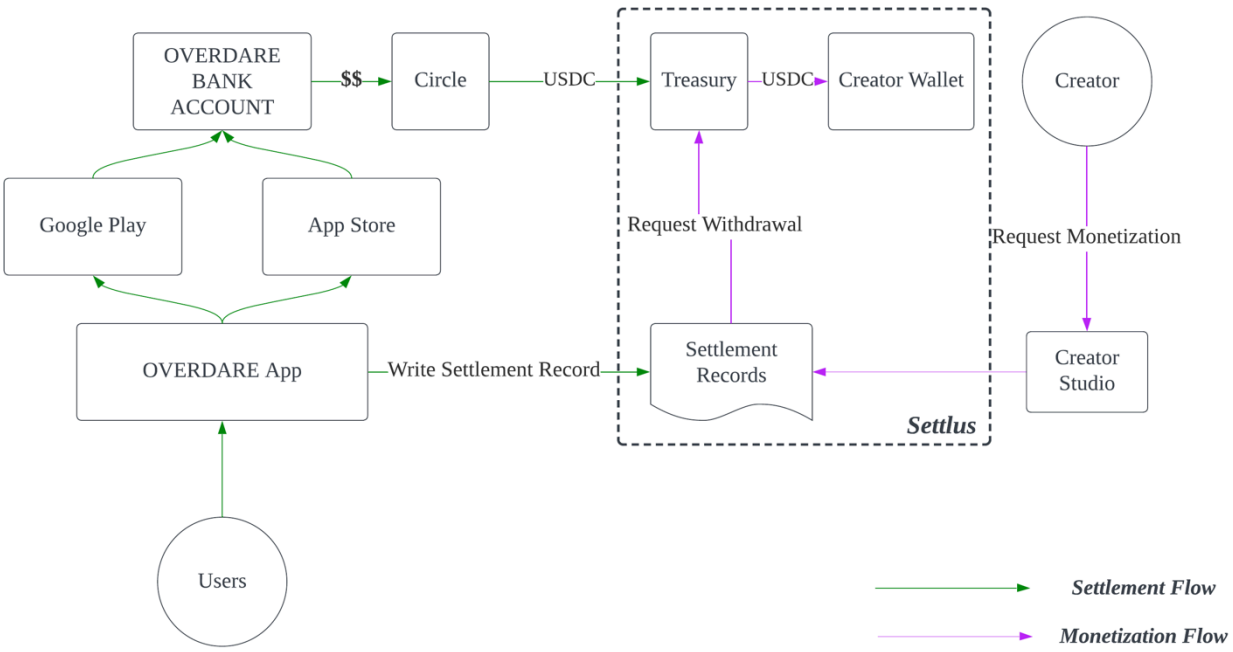
OVERDARE, the UGC Platform project, began to explore the utility of Settlus, and it eventually came up with the idea of an NFT Licensing system.
Existing Web3 projects turn all user items into NFTs. However, from the perspective of enjoyment, the fact that my item is an NFT doesn't add any significant value to users. Additionally, having previously serviced global projects like PUBG, we understand that identical items can be sold in the range of thousands to millions. If there are a million items with the same appearance, adding a serial number does not give them any unique or special value.

Therefore, OVERDARE decided that items purchased by users should not exist as NFTs on the blockchain but rather reside in a database, able to be created infinitely. It's entirely identical to traditional games or well-known UGC platform projects. On the other hand, the copyright or commercial rights of an asset, which becomes the original for one million duplicate items, exists only once, and it is appropriate to express this as an NFT.





In OVERDARE, NFTs represent the commercial rights of the original items(assets), and they are automatically generated and owned by the creator whenever a new creation is submitted. Having an NFT means holding the commercial rights to the item, allowing creators to have the authority to sell the item via OVERDARE-as-seller within the Metaverse. Creators can sell replicas of their creations in OVERDARE and receive revenue from those sales. If a creator decides to sell their NFT to someone else, they are transferring the commercial rights associated with the NFT and related items. As a result, the new NFT rightsholder gains the authority to sell the item via their own efforts, and any revenue generated from future item sales from that point on goes to the new NFT rightsholder, who can then claim their share of the revenue. For these NFTs with commercial rights to have significant value in transactions, it is essential that all "sales history" data is recorded on the blockchain. Additionally, the settlement process must also be conducted through the blockchain to ensure transparency and reliability.



Above is a simplified schematic of how OVERDARE settles revenues in USDC using Settlus. When a user purchases an item in the app, OVERDARE records the purchase history on the blockchain. The necessary amount for settlement is converted into a stablecoin (USDC) and transferred to the treasury. When the user requests settlement later, based on the transaction records, the settlement is completed, and the stablecoin is transferred to the user's wallet.