VRSTL Technical Paper

Summary

Vrstl serves as a multi-chain and multi-verse dApp (decentralized app) enabling the distribution of 3D and other assets to multiple blockchains and many metaverse environments.

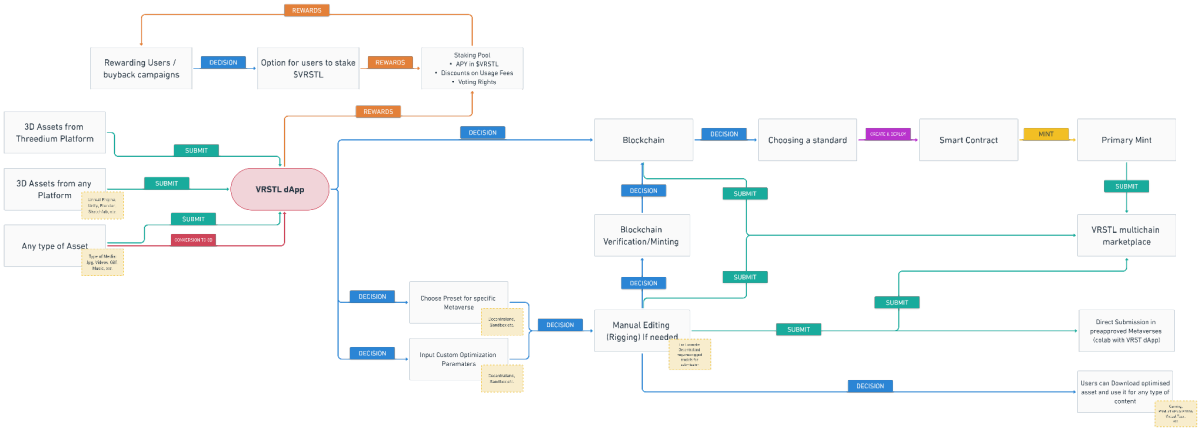
The core components of the Vrstl protocol are:

- Deployment of assets to the blockchain(s) of choice.
- Publish assets to multiple marketplaces (based on choice of blockchain).
- Optimizing assets to be used in any Web/Desktop Gaming engine.
- Publishing assets for primary mint from desired website
- Interoperability of 3d assets and deployment to many metaverse environments.
- Rewarding user's actions with a $Vrstl token.

Overall Vrstl serves as a simple platform for users to create smart contracts, define royalties, mint collections, optimize assets for any Web/Desktop gaming engine and single items on a variety of blockchains, and publish them on corresponding marketplaces. Vrstl goes beyond other platforms with automated asset optimization and submission for different metaverse environments.

With ERC-721[1] Ethereum standard for smart contracts, Vrstl protocol provides the base for creating collections of NFTs, minting tokens, managing their ownership, and much more.

Architecture



The self-serve **Vrstl** dApp, protocol, ecosystem and token are being built to power and empower the creation of the 3D metaverse.

Vision is to enable users to enable any individual or organization to decentralize all their assets (2D as well as 3D) without coding. Allow them to be interoperable and placed on blockchain, any gaming engine, metaverse environments and other.

The self-serve Unlimited3D engine by Threedium enables creators to build the highest quality and most photorealistic 3D objects available, from cars, watches, wearable, and game assets all the way to high-end luxury fashion. The quality of the underlying engine is evidenced by the fact that many of the world's biggest brands use the enterprise version of the engine to create their 3D assets.

With a true web3 philosophy[1], we want to empower and reward the creators of the 3D metaverse through the $Vrstl token that will capture the value of the ecosystem as it grows and reward its stakeholders for their contributions.

Stakeholders will not only benefit from using the product, but also from the rewards available to them through using the engine (discounts), grants (incentives for new stakeholders and also for up-and-coming 3D artists), staking, and active participation in the ecosystems development and governance (path to becoming a DAO).

Further down the line, we are also looking towards making the protocol open-source, enabling creators to build additional features and functionality, and giving full IP rights to the owners of the 3D items they create and/or own.

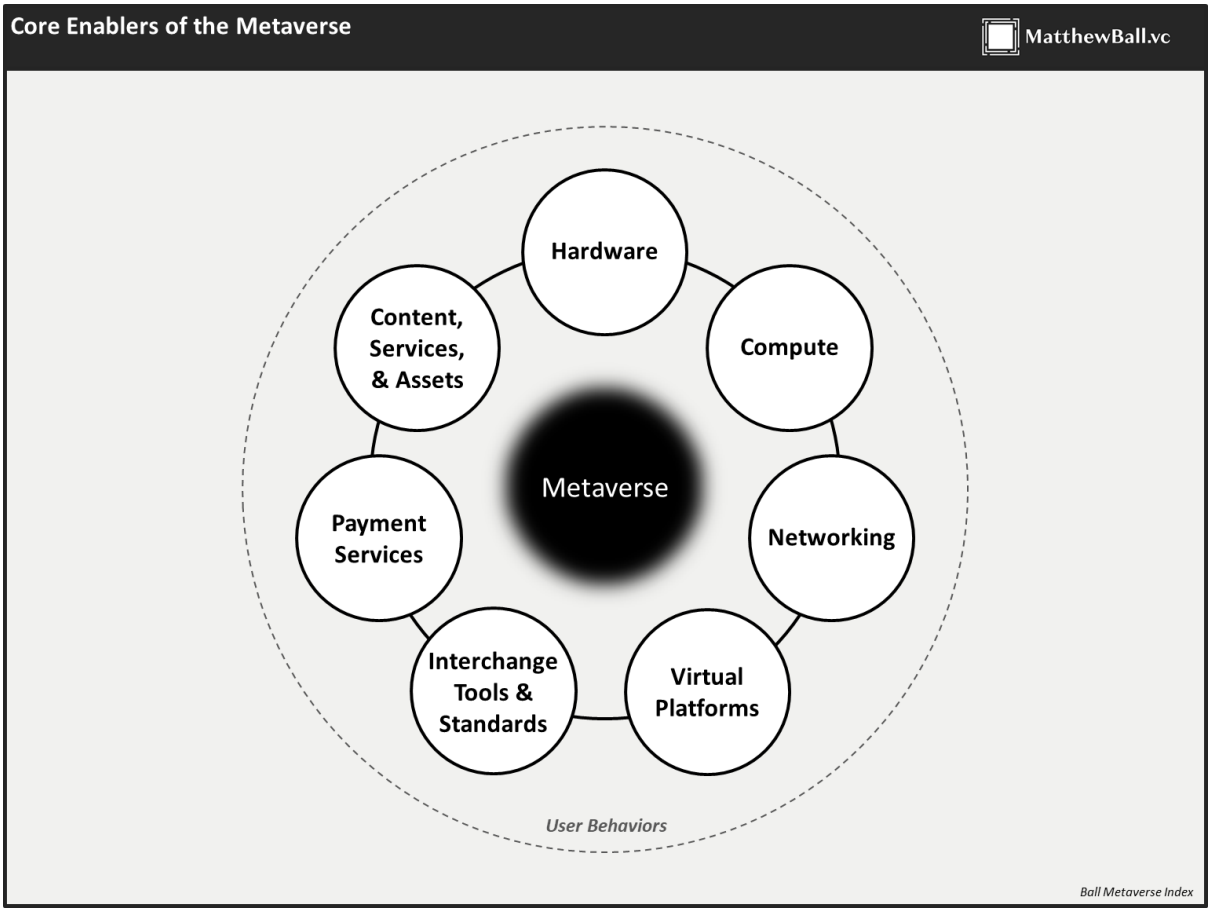
As a platform, Vrstl will establish partnerships with founding stakeholders that provide the critical infrastructure of the 3D metaverse including blockchains (layers 1 and 2), marketplaces, NFT providers, metaverses, game developers/3D artists and communities.

Definitions & Problem Statement

What is the Metaverse?

The Metaverse is an interconnected virtual reality environment[2], which consists of many virtual worlds, games and marketplaces. These worlds enable commerce, education, socialization, and the primary functions of modern life in digital forms through augmented reality, virtual reality or a browser.

While the term encompasses a wide range of human experiences, one consistent theme is the persistent feeling of reality, meaning that actions are real, having a real-world impact (e.g. commerce) and feel "real" as perceptible events. The 3D rendering of digital assets is core to the feeling of making assets feel real through their depth and detail. The use of 3D also enables these assets to be interacted with by digital avatars as clothing, vehicles, buildings and other assets form the core experiences of the metaverse. From this viewpoint, it is easy to imagine that the full realization of the Metaverse will need powerful tooling to build and distribute millions or billions of 3D models fully optimized to run smoothly and consistently across virtual worlds.



What are Interoperability, portability and reusability?

Interoperability, portability and reusability are the three major concepts of web3 and the metaverse.

Interoperability: refers to the ability of two or more virtual worlds, each having its own defined set of rules and representation syntaxes, to communicate with each other and exchange information such as data.

Portability: Refers to the ability to move or transfer information, data or applications from one system to another without any changes to the underlying asset.

Reusability: This is a concept that describes how an existing asset, tool or code can be used for something else which is different from its original purpose.

Interoperability and the Metaverse

Interoperability of 3D models between different Metaverses, virtual worlds & games is a long-term research topic that has received significant attention in recent years.

However, little work has been done to actually implement this feature in any of the existing Metaverse platforms such as Decentraland, The Sandbox, Digital Village and others. The Vrstl protocol will be tackling the approach for creating an implementation for interoperability between different metaverses. The Vrstl team has demonstrated this capability in a proof-of-concept manner, but the platform will productize this groundbreaking feature as a core part of the offering.

Standardization in the 3D Metaverse space

As the 3D metaverse grows at an exponential rate, there is an obvious need for standardization. To enable interoperability between different virtual worlds and their assets, it is important that the same type of object can be used in different software packages without much effort provided by the owner of the said asset.

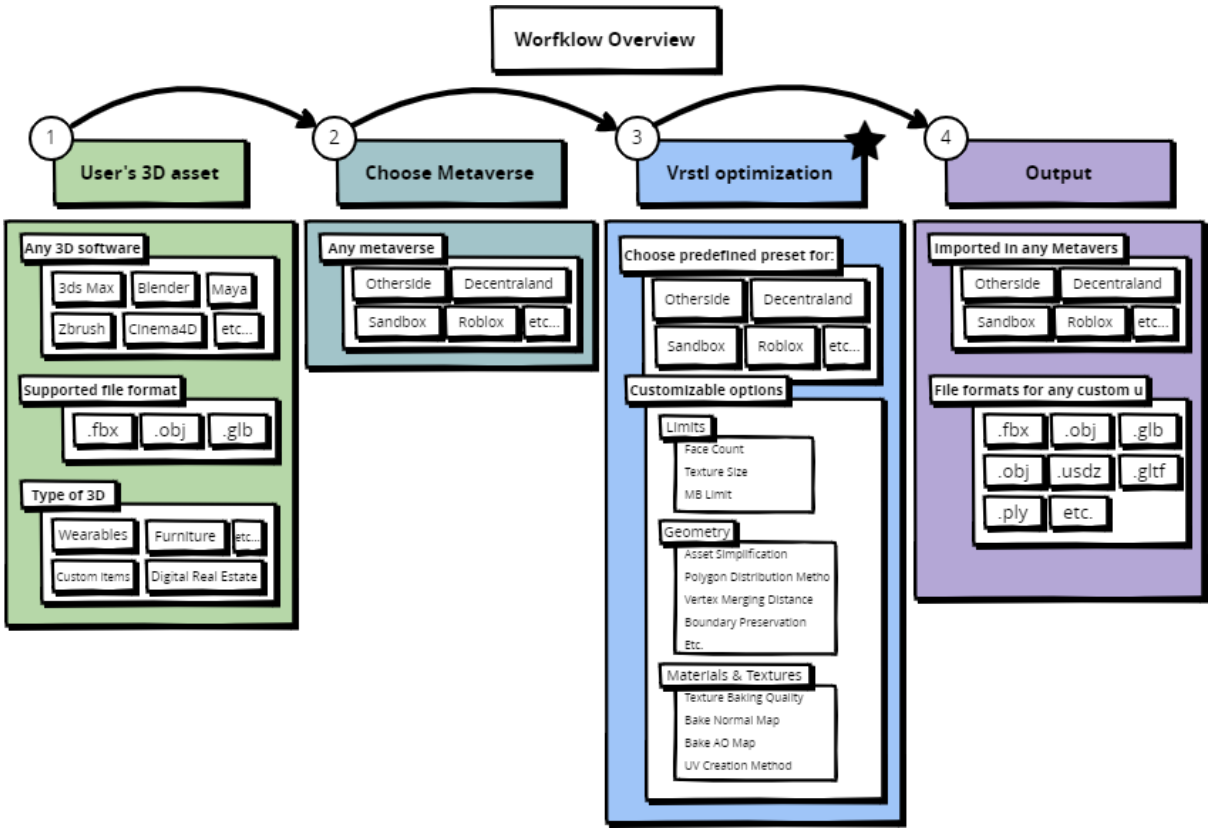
When the user creates or purchases a 3D asset and imports it into a Metaverse, they should be able to use the same asset without having to manually change anything — this means that the process of adjusting the existing 3D asset for different Metaverse is happening automatically in the engine's backend and it keeps its original aesthetic properties;

Vrstl Solutions & Feature highlights

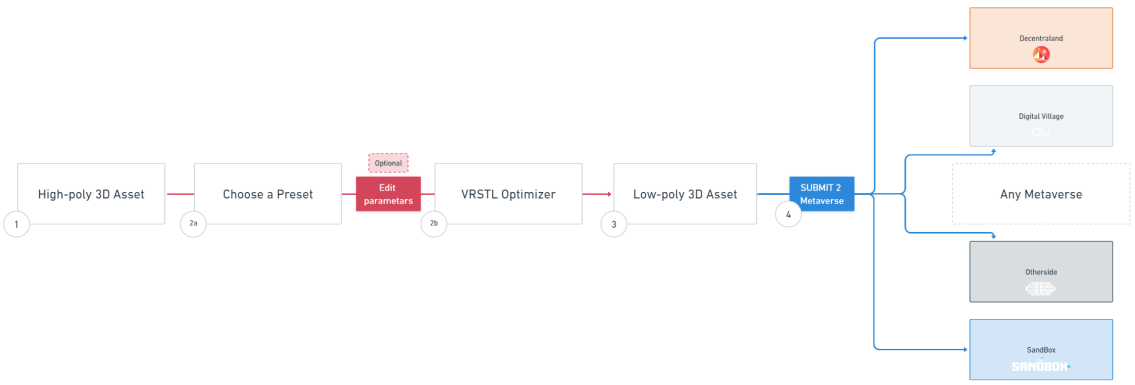
How is VRSTL solving the interoperability issue?

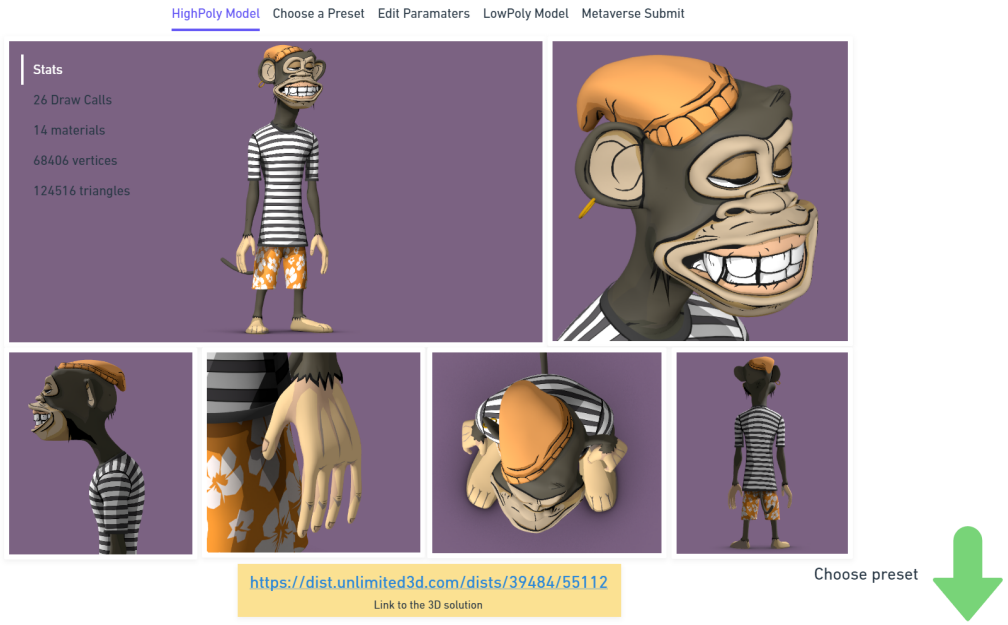
Interoperability is a common problem in the 3D community, and it is typically solved manually. The manual optimization of models can be very time-consuming, and may cause several problems:

- Costly in terms of time, human resources and hourly wages
- It's difficult to get consistent results across multiple human editors;
- The process of performing optimization manually is error-prone, which leads to inconsistent results and even rejections when submitting to Metaverses (especially when working with larger 3D files).



Proof of concept





HighPoly Model | Choose a Preset | Edit Paramaters | LowPoly Model | Metaverse Upload

Choose Metaverse Preset

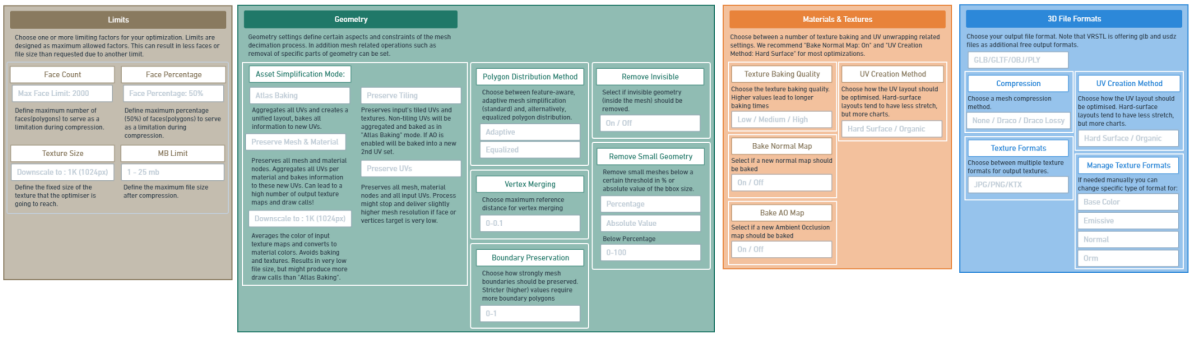
Decentraland | SandBox | Digital Village | Otherside

Other

Use preset ↓ OR Manualy Edit Paramaters ↓

Optional

HighPoly Model | Choose a Preset | Edit Paramaters | LowPoly Model | Metaverse Upload



Legend

TOPIC

FEATURE NAME

Explanation

Optimisation results ↓

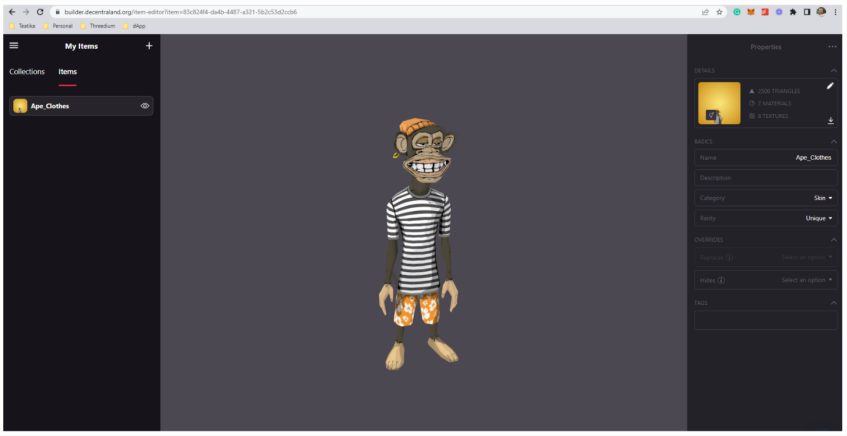
HighPoly Model | Choose a Preset | Edit Paramaters | LowPoly Model | Metaverse Upload

Stats Original	
Meshes	26
Vertices	68,406
Faces	124,516
Materials	14
Total Number of Texture Maps	20
GLB size	9.79mb

Stats Original	
Meshes	2
Vertices	68,406
Faces	2500
Materials	2
Total Number of Texture Maps	10
GLB size	899.25kb

Submit to metaverse ↓

HighPoly Model Choose a Preset Edit Paramaters LowPoly Model Metaverse Upload



Automatized Polygon Decimation

Vrstl unique mesh decimation features allow for the most efficient and quality preserving polygon reduction.

Vrstl will enable users to automatically create and distribute 3D assets to multiple virtual worlds simultaneously.Completely configurable settings allow for creating templates that match the requirements of the different metaverses.

Future iterations of the platform may enable virtual worlds to submit their requirements in an automated fashion. Automation will enable distribution to new worlds without human intervention. This feature will become increasingly important as the number of virtual worlds grow and evolve for niche groups, special events and pop-ups.

Automatized Material Baking

Vrstl preserves physical based rendering materials of all sorts. The optimization process will adapt to the complexity of the input and produce the most performant output while conserving visual complexity.

- Preserves various PBR material inputs such as Physical Mat and Stingray PBS
- glTF 2.0 and PBR Next support
- Bakes normal maps from input
- Optional occlusion map baking
- Tiled textures preservation + baking in 2nd UV Atlas
- Preservation of texture transform

Automatic Compression

With Vrstl state-of-the-art compression/optimization features even the most complex 3D data gets fairly digestible on any device without altering the visual fidelity at all.

This compression will preserve complex details while improving speed and lowering storage/streaming data costs.

- Most up-to-date compression techniques
- Draco & dracoLossy mesh compression
- Ktx2 texture compression

Custom Presets

Ability to create custom presets allows us to create presets that match the requirements of the Metaverses. This will also allow users to create custom presets for their specific needs or some specific new Metaverses.

- Presets that automatically meet strict requirements for various delivery platforms
- Optional custom presets
- Enables batch work for large-scale or industrial users

Conclusion

Vrstl protocol will allow users to optimize and distribute 3D assets to the majority of Metaverse worlds and gaming environments

Digital Asset Management

NFT Collection management

The Collection in VRSTL means a set of items united by a common purpose. This includes collection name, description, token prefix, and superior ownership. Generally, a collection would originally serve one application (e.g. a specific metaverse or number of them) and possibly more as it evolves. The collection owner would create the collection and become its owner.

Ownership of collection means the full authority over all of its properties and NFTs, including the capacity to destroy the collection and associated tokens, or give up this authority by transferring the ownership to an address with an unknown private key.

For example, an address of a smart contract (incapable of further transferring or exercising the ownership rights) may be used, since the algorithm of creating smart contract addresses is well known and users don't control the process[4].

Once the authority is given up, the collection properties become locked, which may mean, for instance, that no more NFTs can be minted.

Operating NFTs

Once the collection is created, its owner can mint tokens that belong to this collection. The minting process is an atomic operation of creating an NFT item, setting this item's immutable metadata and its owner. After the item is created, it becomes an owned, truly unique token. The owner of the NFT can transfer it to another address, destroy it, set the mutable token metadata, or, like with collections ownership, give up their authority by transferring to an address with an unknown private key.

This set of actions form the basis for economic activity of the metaverse. Users will be able to utilize the VRSTL platform to create new digital assets and gift, sell, rent, lend, stake or otherwise distribute these assets for economic benefit. These assets and tokens may take the form of digital goods like virtual clothing and avatars, or may be used to prove ownership and provide access to virtual worlds, meetings or other token-gated events.

Collection Properties

Metadata Schemas

One important property of a collection is the Off-chain Schema. This schema describes the metadata that is associated with each token and can be accessed by the token ID. It can be an image or more complex structured data. For additional protection of token authenticity, the off-chain metadata hash[3] can be recorded in the immutable token metadata.

The main purpose of the off-chain and on-chain schemas is allowing the standardized definition of application specific token data. Even though the Vrstl protocol does not utilize this knowledge, 3rd party NFT wallets may do, so the whole NFT ecosystem will benefit from off-chain schema by having a common way to access and display token features.

Beyond the off-chain schema, it is possible to set the similar schemas for mutable and immutable NFT metadata that are stored on-chain. VRSTL's compression features and multiple blockchain support will enable greater data efficiency and portability, increasing the amount of data that can be stored on-chain and lowering the compute power required to interact with these assets (gas costs).

Access Lists

Depending on the application design and requirements, the collection may be accessible for a wide audience or for a restricted and private group of accounts. In the latter case, an access list mode may be enabled to restrict capabilities of owning and transferring tokens by only accounts included in an allow list.

Economic Models

Hindrances to Mass-Market Blockchain Adoption

As Pedro Armelin (UX Designer) says in his article [2], mass adoption of blockchain technology is largely dependent on UX. An average Internet user would not have any of the following:

- Knowledge of cryptography or blockchain
    - Crypto exchange trading experience or even an account
    - Understanding of gas fees

For many average users, owning an NFT does not mean anything more than just seeing an image associated with this NFT in the “My Account” section of a Web page, or being able to use it in the game or transfer it to another user.

Ethereum Gas Fees

Gas fees are the “biggest blocker for people starting to use dApps”, says Carsten Munk in his Medium article, “Is frictionless Ethereum (and dApps) usage possible” [5]. Every person needs to have a minimum of Ethereum to pay for 21k gas in their wallet before they are able to run any transaction.

One way to attack this problem is subsidizing the gas cost when the user address is known. Another solution is Gas relay for contract calls, as described in EIP-1077 [6] that requires the user signing a message as a proof of intention to execute the transaction.

Either solution requires additional infrastructure to be deployed on top of the Ethereum network, in most cases these solutions are centralized and trust-based.

VRSTL Commerce Features

Configurable Rate Limits

Configurable rate limits is one of the upcoming features of the Vrstl protocol that will increase the flexibility of sponsored modes. Advanced economic models are included in the roadmap that will allow the collection and contract owners to provide free transactions in exchange for locking funds.

Contract Ownership

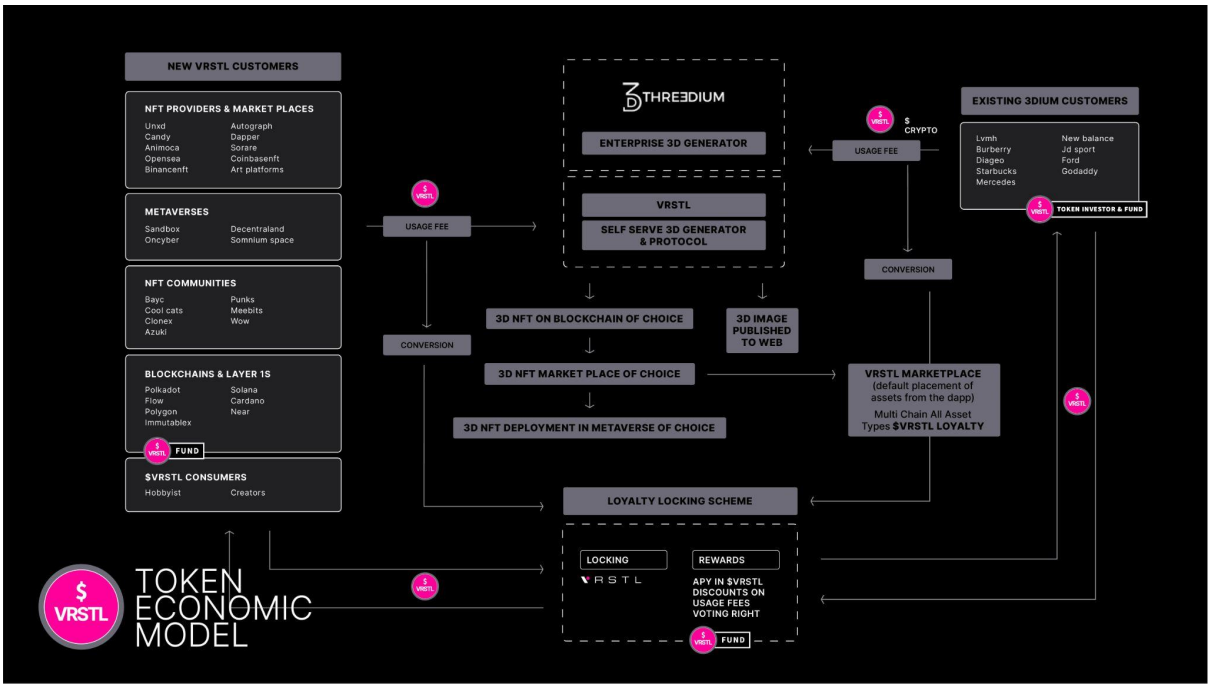
Like collections and NFTs, smart contracts in Vrstl are also owned. The ownership is atomically assigned at the moment of contract deployment, so the contract is owned by the address that deployed it. Subsequently, the owner can configure fee sponsoring for that contract.

Fees Payable with ERC-20, Ethereum, or Even Valuable NFTs

The VRSTL roadmap includes the capability to pay fees directly with the Application's own Fungible (a.k.a. ERC-20) token minted within the Vrstl dApp. Once the exchange rate between Vrstl and the application token can be established, the application will be allowed to switch to paying fees with its own token. Combined with Ethereum, Bitcoin, and other bridges, this feature opens the wide range of possibilities to inter-operate between networks, since theoretically any value (not even limited to Fungible tokens, but also Re-Fungible) transferred from over the other networks, can be used for transaction fee payment.

$VRSTL Token Economy

Token Economic Model



User groups

The $VRSTL token is designed to provide utility for all stakeholders in the VRSTL ecosystem. The two key groups of stakeholders include;

1) VRSTL B2B customers (both those new to VRSTL and existing to Threedium)
2) VRSTL consumers

The new VRSTL B2B customers made up of blockchains, layer 1's, NFT communities, Metaverses, NFT providers and Market Places have the most to gain from the ecosystem as a whole as they are the primary customers of the protocol itself.

Customers will be incentivised to hold the $VRSTL token for a number of reasons, including an option to use it to pay for the product itself and to benefit from the Loyalty Locking Scheme (LLS). A portion of the $VRSTL tokens will be used to help onboard these customers in the first place through a marketing allocation, and they will then be able to add to their funds through purchasing the token from VRSTL or the open market.

VRSTL consumers will benefit from the $VRSTL token as a part of the VRSTL NFT collection, airdrop promotions and a Loyalty Locking Scheme.

$VRSTL payment flow and fees

A usage fee of XUSD will be charged every time a customer uses the protocol.

The fee can be paid via credit card or tokens (VRSTL,USDC, ETH, MATIC). Even though the fee is actually payable in $VRSTL, customers can pay the entire fee in the currency of their choice for convenience. A part of the fee is used to cover issuing costs, and X% of the remainder is payable in VRSTL (in order to power the LLS). In the background, a conversion process acquires the necessary tokens needed to enable NFT issuance (ETH and virtual world currency, e.g. Mana) and VRSTL needed to pay the fee.

The $VRSTL tokens will be used to fund the LLS rewards and other promotions we will run from time to time.

Loyalty Locking Scheme

The LLS is designed to reward and incentivise the most loyal B2B customers of the protocol. It does this through allowing holders of the $VRSTL token to lock these tokens into the Scheme in order to unlock a series of benefits including APY payouts in $VRSTL, discounts on usage fees and voting rights in terms of the development of the product and protocol. All of these benefits can be accessed by VRSTL holders on the LLS dashboard.

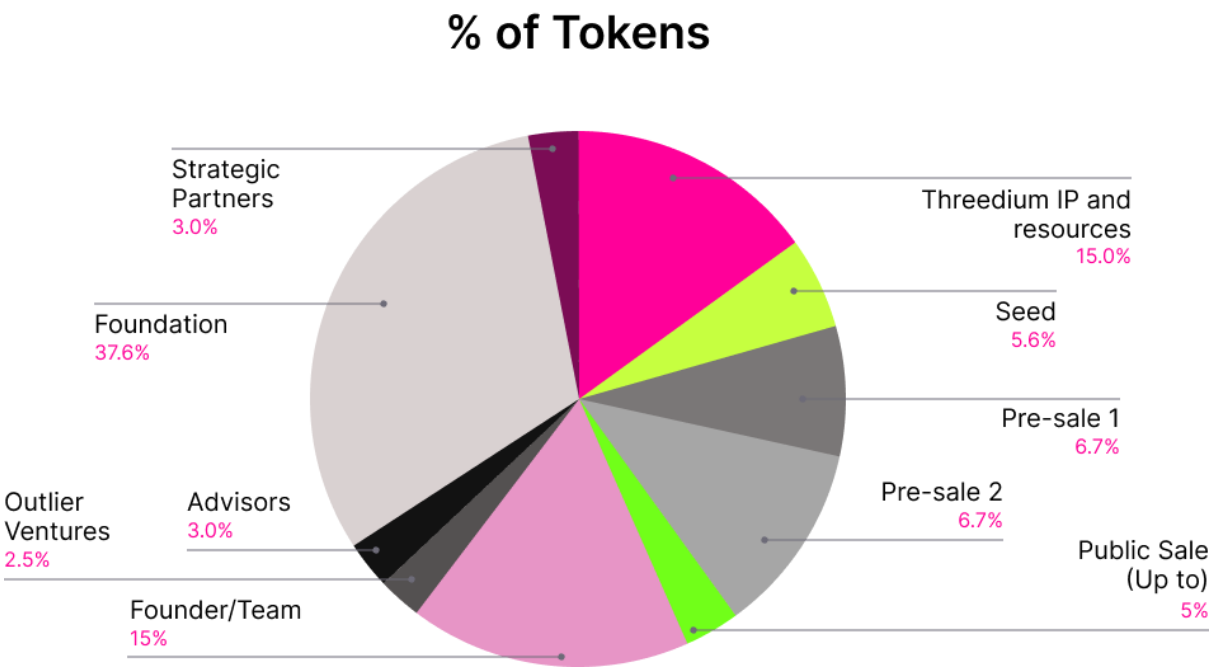
Usage fees will decrease from X% to Y% based on the amount of $VRSTL staked voting rights will be allocated in proportion to $VRSTL being staked.

A cool-down period is implemented before the withdrawal of tokens from the scheme, which will be 7 days from the first request.

User Rewards

In addition to the LLS, different time-bound incentives can be offered to different user groups in order to incentivise specific behaviors. X% of the genesis token supply is reserved for user reward campaigns.

$VRSTL allocation



Token Business Model

VRSTL and the associated $VRSTL Token are designed to create a self-sustaining system with clear benefits for Creators, Consumers, Strategic Partners and all token holders.

A core tenet of the VRSTL system is a dedication towards continuous improvement of the underlying technology. A portion of fees will be used to help fund the maintenance and development of the platform.

The continued development of the platform, as described in the R&D Roadmap section, will grow the capabilities and distribution footprint of VRSTL. The increase in capabilities will include the ability to distribute to a larger number of Metaverse Worlds and Games. This distribution will increase the available surfaces where VRSTL-optimized assets are made available. A larger surface will mean more potential customers for creators, and thus an overall larger number of sales.

As sales grow, the $VRSTL pool will increase. This will mean larger rewards for participants in Loyalty-Locking and User Rewards.

The combination of a useful technology platform + token-based rewards should be self-reinforcing, helping to create a strong and diverse ecosystem that will benefit from multiple constituencies who utilize some or all of the platform to grow their business or increase their token holdings. We expect these economic activities to attract additional business and token holders, further increasing the value of VRSTL.

The VRSTL Business model and Fees consists of three parts:

- Part one: Smart Contracts

Fixed price per smart contract creation of .01 ETH and 7,5% of initial sales that are embedded in smart contracts as default to facilitate continued platform development

- Part two: Model Optimization

Fixed price of 0.05 for model optimization to facilitate platform maintenance

- Part three: Transaction

10% of the protocol fee on every VRSTL transaction must be paid in VRSTL native token $VRSTL. If users do not currently own $VRSTL, the protocol will convert the fee by purchasing $VRSTL on the open market (preserving a seamless user experience).

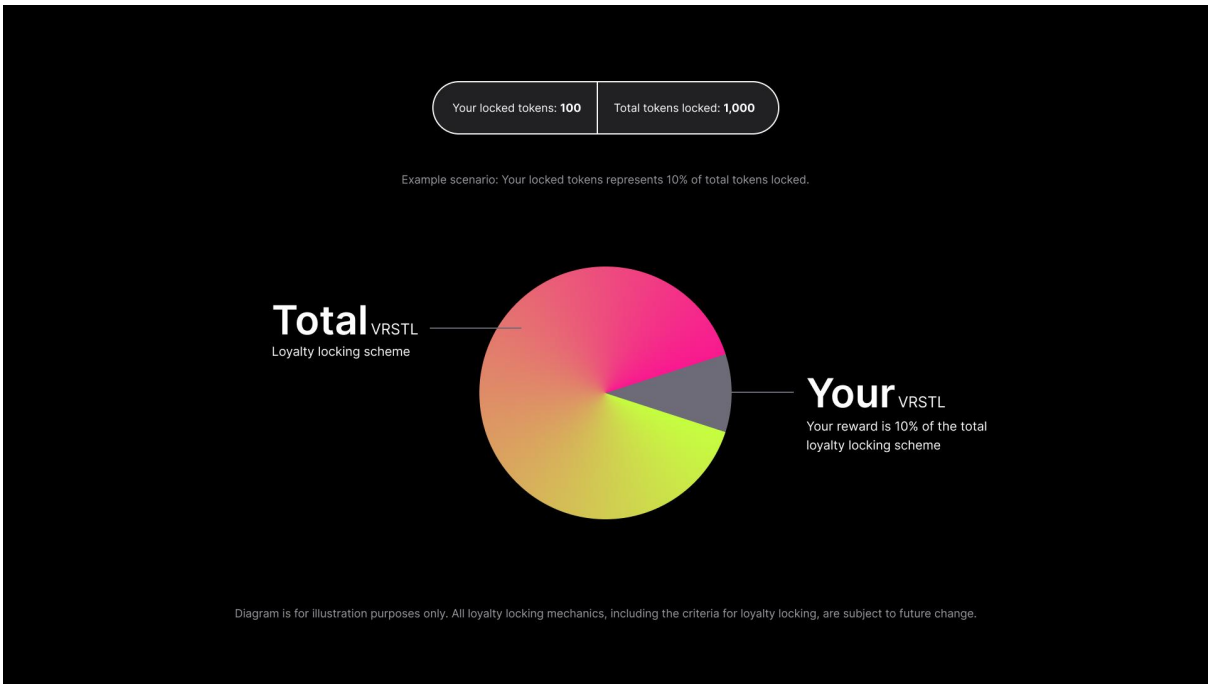
Model sustainability

Is based on users generating rewards for action (deploying smart contracts and optimizing assets) and keeping it within the system (loyalty-locking) for a certain amount of time.

Protocol fees are decreased based on staked amount (the more the user stake the more it decreases the fees on the protocol, fees can be decreased from 10% - 0%) and users are getting rewarded for having their tokens locked in every cycle.

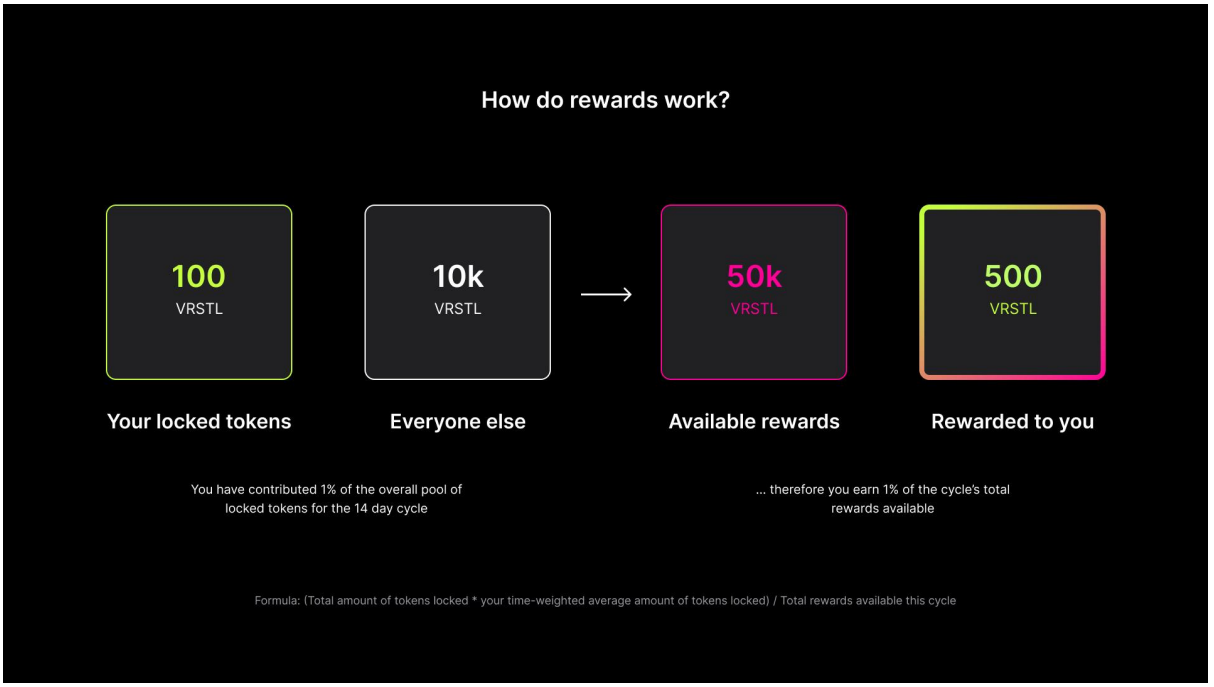
How does loyalty-locking work?

Loyalty-locking works on TBD-day cycles. During each cycle, protocol fees are collected and 8% of those fees are converted to VRSTL and made available for distribution to eligible VRSTL lockers as a form of reward.



How do user's earn rewards

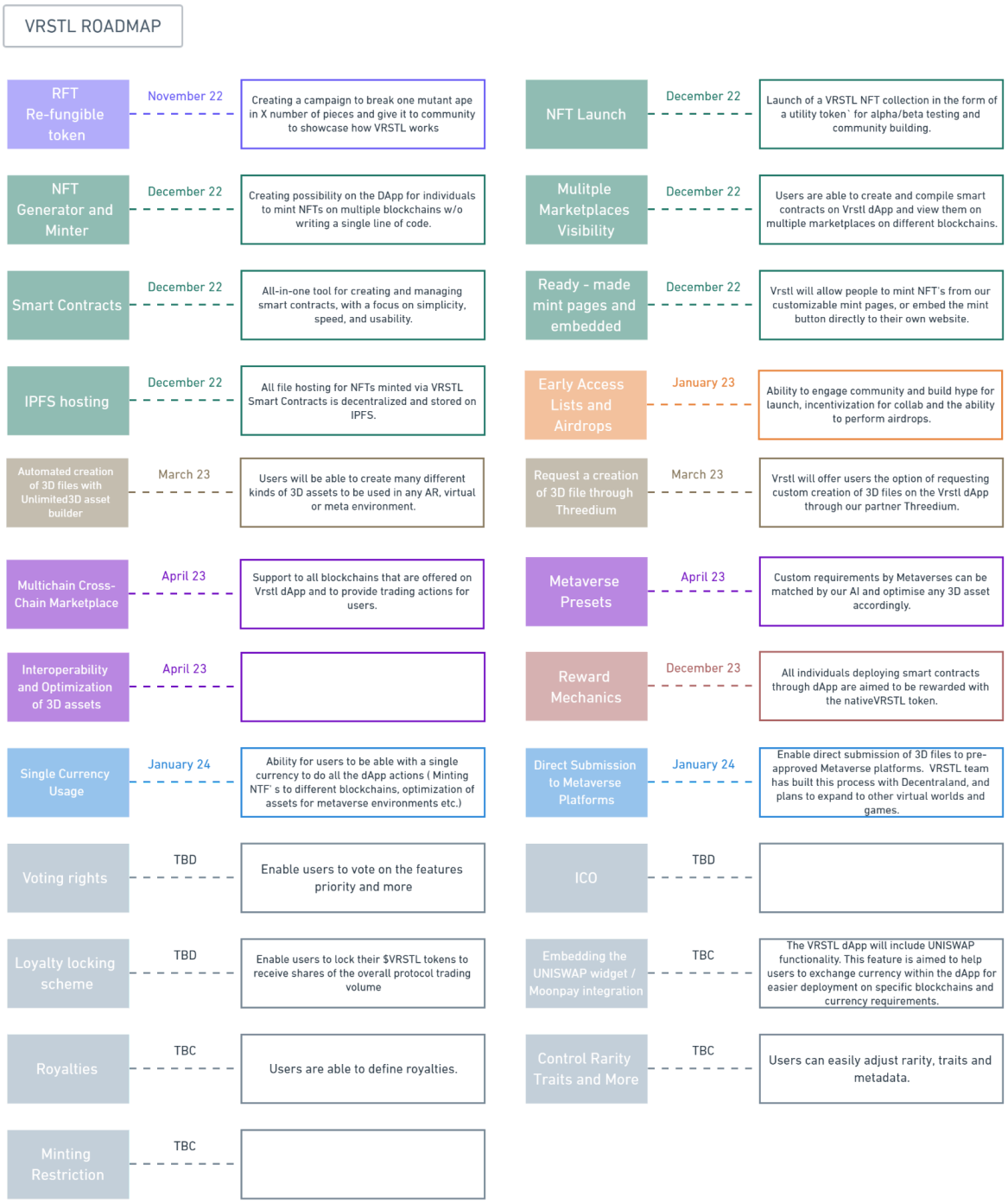
1. Lock tokens
2. Activity on the protocol every staking cycle (deploying smart contracts and optimizing assets)
3. At the end of every locking cycle, user reward will be attributed to his wallet



R&D Roadmap

The research and development of Vrstl protocol and dApp will be a continuous process. Early goals will include the release of measurable PoCs. Future implementations aim for more than 1000 blockchains, and interoperability of files in more than 95% of virtual worlds in the metaverse.

Roadmap Diagram



Launch NFT (ape in VRSTL)

Date: October

Creating a campaign in collaboration with DKNY and Asics to showcase how VRSTL protocol works in a fun way by minting Bored ape GLTF file through VRSTL dApp and creating a collection of xxxx NFTS using ERC 1155 standar.

Also making it interoperable for different metaverse environments using VRSTL

And Enabling anyone interested to claim NFT and use it.

What can users do with NFT

- Sell
- Buy
- Use it as pfp
- Other IP right in accordance with terms of use of MAYC
- Use a Mutant as skin in Decentraland and other metaverses (TBD)
- Use a 3D asset (GLTF) as they see fit

Overall goal is to promote VRSTL and give out something to community free of charge that they can use and understand product

Main goal is to explain what VRSTL does tech showcase and sign users on permit for Genesis drop

Genesis NFT collection

We intend to launch a VRSTL NFT collection in the form of a utility token with a supply of 1k prior to the product launch for alpha/beta testing and community building.

VRSTL NFT holder benefits:

Date: December

- Creator Benefits
    - VRSTL token allocation (eligible to claim only by holders)
    - No fee for creating and deploying smart contracts
    - No Royalty or platform maintenance fees est. ~1 - 2.5%

    - Allow list for the 3D asset optimizer and metaverse deployment
    - Allow list for unlimited 3D metaverse asset creator tool
- Collector & Community Benefits
    - Access to future token drops (revealed later)
    - Air drops from luxury brands as 3D wearables in collaboration with Threedium
    - Vote on new features
    - Private discord channel for NFT holders
    - Early access to new features
- And more

NFT Generator and Minter

Date: Jan / 22

Creating possibility on the DApp for individuals to mint NFTs on multiple blockchains as well as publishing them on correspondent marketplaces without writing a line of code.

Primary market NFT deployment (mint from users website).

Secondary market deployment (publish on correspondent marketplaces).

Multiple marketplaces visibility

Date: December / 22

Users are able to create and compile smart contracts on Vrstl dApp and view them on multiple marketplaces corresponding to the blockchain of choice.

Smart contracts

Date: December / 22

Users are able to create and compile smart contracts on Vrstl dApp and be owners of those contracts. All-in-one tool for creating and managing smart contracts, with a focus on simplicity, speed, and usability.

Royalties

Date: TBC

Users are able to define royalties.

Control rarity traits and more

Date: TBC

Users can easily adjust rarity, traits and metadata.

Ready - made mint pages and embedded

Date: December / 22

Vrstl will allow people to mint NFT's from our customizable mint pages, or embed the mint button directly to their own website.

IPFS hosting

Date: December / 22

All file hosting for NFTs minted via VRSTL Smart Contracts is decentralized and stored on IPFS.

Early access lists and Airdrops

Date: January / 23

Ability to engage community and build hype for launch, incentivization for collabs and the ability to perform airdrops.

Minting restrictions

Date: TBC

Reward mechanics

Date: December / 23

All individuals deploying smart contracts through dApp are aimed to be rewarded with the nativeVRSTL token.

Multichain Cross-chain marketplace

Date: April / 23

Vrstl marketplace is a default publisher for any minting action. It aims to support all blockchains that are offered on Vrstl dApp and to provide trading actions for users.

The support for open and de-facto standards will enable automatic indexing and listing on other marketplaces.

Interoperability and optimization of 3D assets

Date: April / 23

Vrstl marketplace is a default publisher for any minting action. It aims to support all blockchains that are offered on Vrstl dApp and to provide trading action for users.

Request a creation of 3D file through Threedium

Date: March / 23

Vrstl will offer users the option of requesting custom creation of 3D files on the Vrstl dApp through our partner Threedium. Threedium will prepare these tailored assets in Unlimited3D asset builder. This way the Vrstl dApp covers many scenarios including:

- Existing 3D asset / Collection of 3D assets and wants to mint and publish as NFTs .
- User has 2D assets or initial concepts, but needs assistance from Threedium to prepare files
- User has 2D assets or initial concepts, wants to build it themself. This can be achieved with Unlimited3D's 3D asset builder.

Automated creation of 3D files with Unlimited3D asset builder

Date: March / 23

By utilizing the Unlimited3D asset builder, users will be able to create many different kinds of 3D assets to be used in any AR, virtual or meta environment.

The Unlimited3D platform is built in such a way to help users create 3D assets with ease and great visual results.

The Unlimited3D platform will also have a simple connection between Vrstl to export the finished assets directly to the Vrstl dApp.

Metaverse Presets

Date: April / 23

Every virtual world and game in the Metaverse has unique and specific technical/aesthetic requirements that users submitting 3D assets need to fulfill.

Since these requirements are mostly technical or based on predetermined business rules, our AI can match these requirements and optimize any 3D asset accordingly.

Single Currency usage

Date: Jan / 24

This feature aims to provide the ability for users to be able with a single currency to do all the dApp actions (Minting NTF' s to different blockchains, optimization of assets for metaverse environments, submission of assets to metaverse environments and more).

Main user benefit is not to exchange different tokens to complete an operation but rather stay focused on the task .When users do not currently own the necessary token for transaction, protocol will convert the fee by purchasing the required token on the open market (preserving a seamless user experience).

For users it is important that every transaction can be done with only one token $VRSTL to do any required action.

Direct submission to Metaverse Platforms

Date: TBC

Vrstl plans to enable direct submission of 3D files to pre-approved Metaverse platforms. The VRSTL team has built this process with Decentraland, and plans to expand to other virtual worlds and games.

This model has powerful network effects beneficial to VRSTL creators, token holders and platform partners. A wide network of content creators and virtual worlds ensures a steady stream of content for virtual worlds, and a large distribution footprint for creators.

VRSTL token holders (both content creators and community members) will benefit from this growing ecosystem as the VRSTL treasury increases through the economic activity associated with the creation, minting and distribution of the 3D assets.

Embedding the UNISWAP widget / Moonpay integration

Date: TBC

The VRSTL dApp will include UNISWAP functionality. This feature is aimed to help users to exchange currency within the dApp for easier deployment on specific blockchains and currency requirements.

ICO

Date: TBD

Loyalty locking scheme

Date: TBD

Enable users to lock their $VRSTL tokens to receive shares of the overall protocol trading volume

Voting rights

Date: TBD

Enable users to vote on the features priority and more

Appendix

Notes on Standards and Interoperability

Despite high transaction fees, at the present moment Ethereum still dominates the NFT space: According to Etherscan.io [8], on average 1.100 transactions happen every minute, the number of minted tokens being counted in millions and the number of holders being in the hundreds of thousands of unique owner addresses. The most popular NFT standards in the Ethereum space are currently ERC-721[1], and ERC-1155 [10]. Nonetheless, the other blockchains also are hosting NFT projects. EOS released the recommended standard for NFT smart contract [9], which is similar to ERC-721[1].

The Interchain NFT and Metadata Standardization [7] conducted extensive research of NFT tokens and their Metadata standards. Vtrstl aims to comply with this interchain standard and deliver the network protocol that is applicable to and able to describe a wide range of NFT formats known in order to prewire the NFT interoperability for most NFT standards.

ERC-721

ERC-721[1] is the most popular NFT standard that serves as a base for many standards inheriting its properties. It provides capability to mint, burn, and transfer tokens. The methods such as allow and transfer from enable withdrawing tokens on the owner's behalf. It is also possible to include random data in the transfer transactions and perform safe transfers that verify that the receiving party (a smart contract) is capable of receiving the NFT token and can handle it by executing on ERC721 Received call-back method.

All these features are or will be covered by the basic functionality Vrstl protocol, which is in the core of the ecosystem.

ERC-721[1] standard describes the ERC 721 Metadata standard, which includes collection name, token symbol, and token URI. Collection name, description and symbol (token prefix) are the properties of any Vrstl collection, and token URI can be set as a part of the Off-chain schema.

Token supply as well as BalaceOf parameters also translate one to one to Vrstl collection parameters: number of created tokens and balance.

ERC-1155

ERC-1155 standard [10] mainly adds batch operations on top of ERC-721[1]. This functionality is not directly changing the data formats for NFT, but is a convenient way to automate and optimize operations on multiple NFTs. Also, even though the batch minting is not explicitly included in ERC-1155 [10], Vrstl implements this feature as well, and will implement batch transfer operations.

OpenSea Metadata Standard

Opensea is one of the first and most popular NFT trading platforms in Ethereum space that developed the NFT Metadata standard [11] aimed to help describe and visualize all NFT properties that deal with NFT trading and exchange. OpenSea indexers collect on-chain and off-chain data, so that the API can provide the aggregated data about a single NFT token to its clients in one RESTful request.

While aggregation is helpful for the purposes of the API, we think it is still important to separate schemas to on-chain and off-chain, since it does not limit schema flexibility, but provides additional structure at low cost. Besides this separation, the Vrstl metadata schemas are fully compatible with OpenSea standard, since they do not restrict schema format and, in fact, one of the recommended formats for the metadata schema is JSON, which is the same as OpenSea API provides.

References

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