

FRAXEUM

A Web3.0 Blockchain

For The Tokenisation Of Real World Assets

Whitepaper

Version 4.0

Llewellyn Morkel
Co-Founder
March 2023

Fraxeum is a pioneer in the field of tokenizing real world assets leading efforts to create global protocol standards for asset tokenisation, allowing assets stored on different blockchains to be transferable between blockchains.

Contents

Abstract	2
How do we achieve this?	4
Platform Overview	5
The Fraxeum Ecosystem	6
Fraxeum blockchain	6
Blockchain API	7
Node types	7
Validator nodes	7
Client nodes	8
Hybrid nodes	8
Observes nodes	9
Fraxeum Business Model	9
Revenue streams	10
Chain Governance	11
Governance Roles	12
Six core governance decisions with quorum requirement	12
Governance Incentives	14
Fraxeum Improvement Programme	14
Conclusion	14

Note:

This document builds on the Fraxeum Whitepaper v2.0 and should be considered as a strategic evolution of the Fraxeum blockchain. We implemented core learnings and refocused our strategy to solve specific challenges faced in the Web3.0 innovation landscape.

Abstract

Fraxeum started as a solution to democratise financial services by tokenising real world assets, enabling fractional ownership and facilitating safe, legal securitisation of digital assets.

Our journey started with a vision to create infrastructure that would enable anyone, anywhere in the world, to invest in property - irrespective of your financial means, a simple desire to make wealth creation via property investment available to absolutely everyone.

Property is a very expensive asset class which makes it the exclusive privilege of the wealthy. To democratise property ownership we had to figure out a sustainable, legal way to fractionalise ownership. Blockchain technology lets us tokenize real world assets which can then be fractionalised by dividing the token into any number of parts.

These parts are all managed and controlled digitally which removes the administrative overhead of managing micro investments accounts. Having arrested the major cost driver we were able to remove the need for a minimum investment threshold which meant investors can invest whatever they can afford, with no limits on the number of shares or a minimum investment amount.

We launched our proof of concept, fractional investment app, called Azuza, in 2020 which focused on micro investment in impact driven startups. Other clients quickly followed. In 2021 we engaged our first corporate client - a Major Pan African Banking Group who will make it possible for ordinary Africans to own equity in some of the most successful companies in their country.

Fraxeum is positioned as a B-2-B financial asset tokenisation solution provider. We've packaged our fractional investment product to be whitelabeled and sold to licensed brokers dealers and financial institutions around the world.

Positioning for Web 3.0

Web3 technologies are changing the way that people interact with each other, how they engage and entertain themselves, how they shop, and how they bank.

We identified three key challenges that Web3 innovators face when choosing a blockchain for their innovation, namely:

- High and/or unpredictable transaction fees;
- Redundant smart contract code;
- Energy inefficiency.

Fraxeum offers a compelling solution to these challenges by offering a **zero fee** blockchain, that offers seamless interaction with third party smart contract platforms, with cost *efficient*, *eco-friendly* block mining.

- The “*Zero fee*” objective means that no on-chain transaction fee aka “gas” is charged for sending, receiving and holding digital assets.
- The “*Cost efficient*” objective means that the cost of electricity and the size of the graphics card should have very little impact on the potential earnings of the miner;
- The “*Eco-friendly*” objective means that software algorithms should behave in an energy efficient manner and that nodes should be deployed in “green powered” datacenters where possible.

How do we achieve this?

1. Zero transaction fees

We removed the need for nodes to compete in solving an expensive algorithmic problem to mine the next block and replaced it with a consensus mechanism that closely resembles “Proof-of-Authority”. We call it “Proof of Identity (PoID)”.

PoID allows us to link specific chain privileges to a node’s identity. New blocks are mined in a sequential order (round robin fashion) by highly staked validator nodes. Miners need a smaller technology footprint and operate on a fraction of the usual energy requirement, drastically reducing the cost of mining.

Transaction fees are wholly substituted with a share of platform revenues.

On-chain spam and network overload is prevented through access control policies, off-chain storage, live project gatekeeping, and by allowing side chains to operate in tandem with the Fraxeum blockchain.

2. Zero on-chain code smart app contracts

We saved the bloat that comes with abandoned smart contract code by removing the need to store it on-chain. Fraxium's Smart Apps makes it possible to deploy apps off-chain. Smart app source code integrity is preserved by storing a hash of the serialised contract source code on-chain which is checked every time that the contract is executed. Updates to the source code requires an updated hash which is persisted on-chain superseding the previous version.

In addition to offering Smart Apps we plan to offer full interaction with existing and future smart contract platforms provided by decentralised blockchains such as Ethereum, and others like Hyperledger, Stellar, Solana.

Finally, the Fraxium chain allows for the storage of Javascript source code on-chain for applications that require on-chain source code.

3. Zero waste

By sequentially ordering block processing we reduce the number of computer processors all running at maximum capacity to solve the same block - to a single processor. The saving on overall energy usage and the resulting impact on the environment compared to mainstream blockchains is remarkable.

In achieving each objective, certain challenges and risks, like on-chain spam prevention and miner incentives, had to be considered and mitigated.

Platform Overview

Fraxeum is a system of interoperable open-source objects used to implement digital assets, smart contracts, and immutable data streams in globally accessible Web3 systems.

At the core of the ecosystem is a permissioned blockchain called **Fraxeum**. The blockchain is made up of a network of computers called nodes.

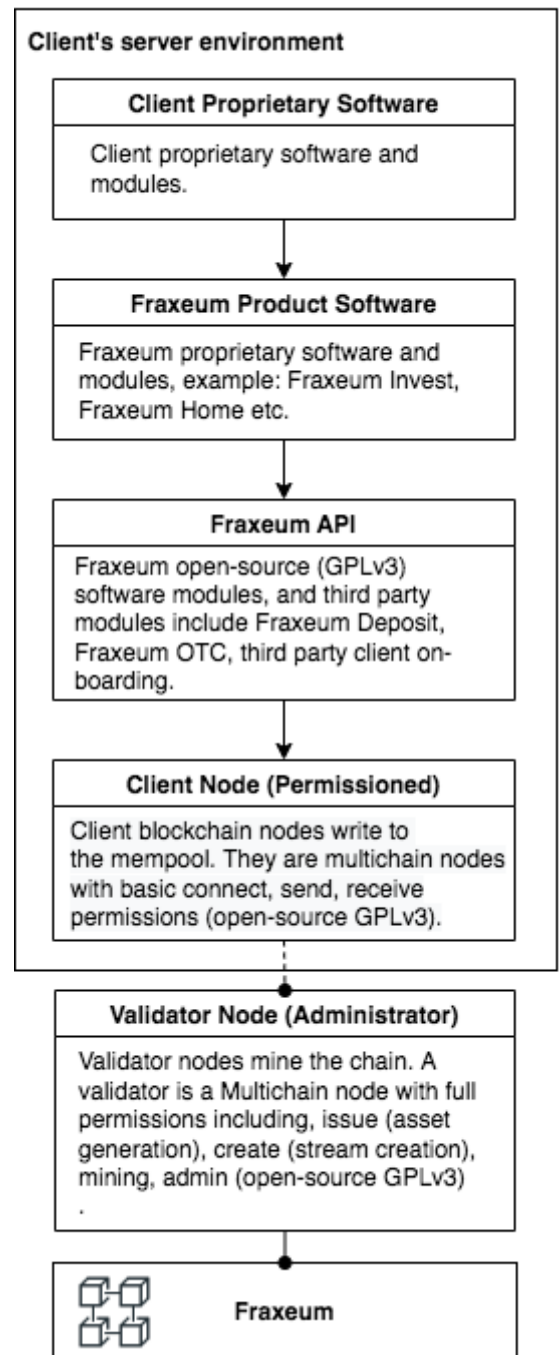
We define four node types: Validators, Hybrids, Clients, and Observers. **Validator nodes** are responsible for chain governance and mining and as such are highly staked to ensure integrity and a vested interest in the chain's credibility and longevity. **Client nodes** are permissioned by Administrators to “connect”, “send” and “receive” data on the blockchain. **Hybrid nodes** are Client nodes with additional “create” rights allowing them to create digital assets. Observer nodes have “connect” rights only and are used by blockchain explorers.

The **Fraxeum API** allows clients to speed up development and testing time by implementing pre-developed, field-tested open-source modules. These software modules are contributed by the Fraxeum Dev Team, community, and third party developers¹.

The Fraxeum Dev Team releases **Product Software** which implements modules for specific applications, such as Fractional Investment, Over-the-counter Trading, etc.

Clients have the option to licence Product Software directly from Fraxeum to include Fraxeum Dev Team support or they can simply download and use the source code free of charge.

Fraxeum Architecture



¹ All open-source software is offered free of charge under GPLv3 licence.

The Fraxeum Ecosystem

Our ecosystem consists of the Fraxeum blockchain, Fraxeum core, Fraxeum community, Xeum Coin, and Partner networks.

Fraxeum blockchain

Fraxeum is an instance of Multichain which inherits Bitcoin's network protocol, transaction format, block format and output scripts, as well as Bitcoin Core's runtime parameters and JSON-RPC API².

Blockchain features:

- Consensus based blockchain governance
- Programming language agnostic smart contracts
- Private chain to Fraxeum chain full interoperability
- Rich featured digital assets and NFTs
- Supports custom logic embedded on-chain for validating transactions and data
- Rich content and data streams
- Built-in Wallet API with multi-signature support
- Offline node and cold wallet support

Blockchain API

Fraxeum Multichain blockchain supports all commands in the Bitcoin Core API (as of version 0.10), except those which relate to external mining hardware and Bitcoin Core's "accounts" mechanism. In Bitcoin Core's "accounts", each address can belong to a specific account, which is credited when bitcoin is sent to that address. However the separation of accounts is not preserved when bitcoin is sent out, because the internal accounting mechanism has no relationship to the bitcoin protocol itself. Because of all the confusion this has caused, Bitcoin Core's accounts mechanism is to be deprecated in future³.

² Source [Multichain.com](https://multichain.com)

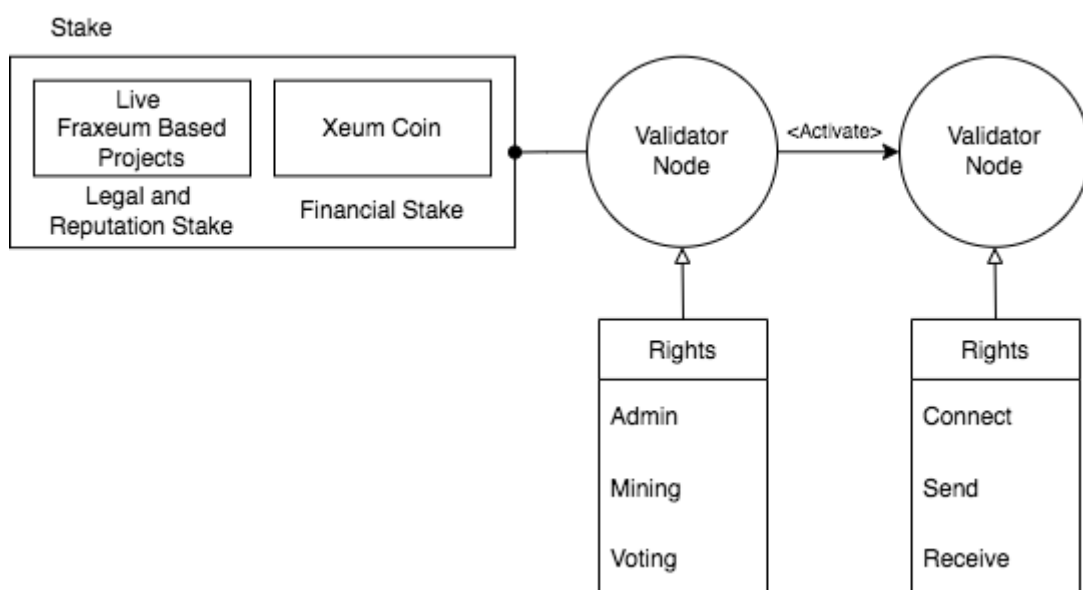
³ Source [Multichain.com](https://multichain.com)

Node types

We've reconfigured the Fraxium validator model to support four node types, namely Validator Nodes, Client Nodes, Hybrid Nodes, and Observer Nodes.

Validator nodes

Fraxium is administered by staked, independent Validators. As network administrators, miners and validators, Validator Node custodians must be invested in the longevity and wellbeing of the Fraxium blockchain.



- Validator Nodes hold full admin and governance voting rights on the platform. Validators also have sole mining rights - they append new blocks, issue assets, and create data streams;
- They add new Client Nodes giving them access to connect to the network and issue permissions;
- They own and control the Xeum Coin in the Foundation wallet;
- They distribute the Xeum Coin in the Foundation wallet to Clients via the Fraxium trading bridge.

Validator nodes are rewarded by the success of the platform. All profits generated by the platform are transferred to the Fraxium Foundation wallet from where rewards are paid to Validator custodians. Anyone can run a Validator Node as long as the person runs a product project on the platform (i.e. stake reputation and the wellbeing of their own project) and/or stake a predetermined amount of Xeum coin in perpetuity.

Client nodes

Clients access the Fraxium blockchain by running a node called a Client node. Client nodes have free, unhindered access to the Fraxium TestNet but MainNet access is subject to peer-review and approval. Approved projects are granted permission to connect, send, receive.

Hybrid nodes

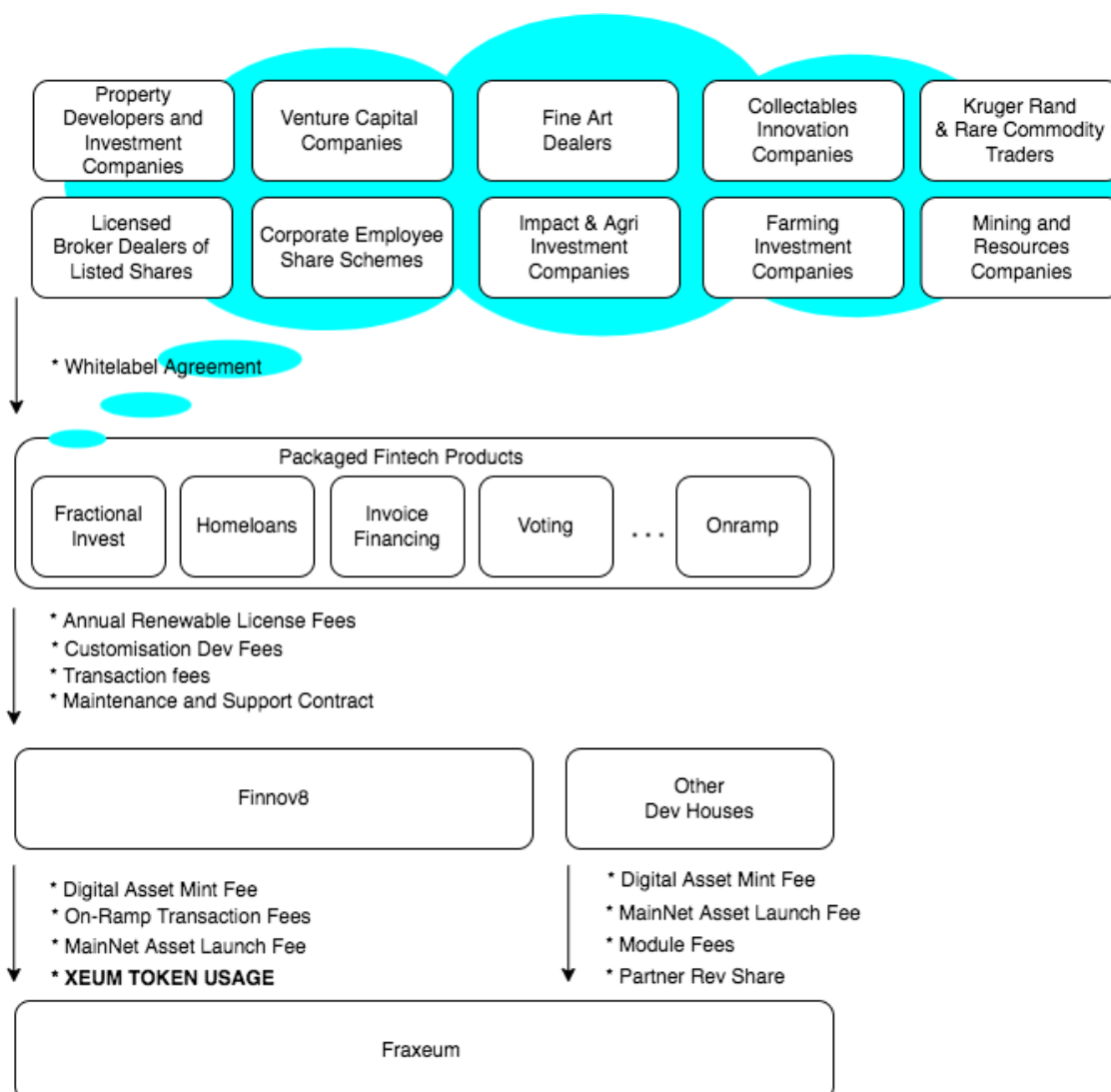
A case for a hybrid node exists that allows side chains to process their own transactions. Side chains will have permissioned access to Fraxium chain assets and will be able to perform certain tasks on the Fraxium chain. Support for Hybrid nodes forms part of the Fraxium 3.0 roadmap.

Observes nodes

Observers are granted “read only” access to the blockchain useful for exploring and monitoring chain data.

Fraxeum Business Model

Fraxeum’s open source software is made available, free of charge to business clients and entrepreneurs. They have the option of creating their own products, extending components such as Voting, Over The Counter Trading, and Support Messaging, using the Fraxeum API. Or they can simply whitelabel one of the fully developed Fintech Products. Fraxeum’s own dev house called “Virtu” can be called upon to build or customise solutions - but other dev houses around the world are also free to use all of our open source products.



Revenue streams

Fraxeum operates as a Blockchain-As-A-Service that earns revenue from platform usage, currency exchange, and licence fees.

Main revenue streams:

Revenue item	Revenue type	Description
API Access	Subscription	Monthly/Annual API access fees.
Share of asset issuance	Transaction	Fraxeum retains a percentage of total supply issued on fungible tokens.
NFT mining fee	Transaction	Fraxeum charges a fee per NFT that is minted and deployed on the network.
OTC trade fees	Transaction	Fraxeum charges a percentage on all OTC trade transactions.
Dividend distribution fee	Transaction	Fraxeum charges a percentage on all dividend, asset or monetary distributions on the platform.

Chain Governance

Fraxeum implements an on-chain governance model to achieve direction, control and coordination of stakeholders in the Fraxeum context.

Governance is performed through Validator Nodes voting on-chain concerning decisions that determine Protocol Governance, Economic Governance, Technical Governance, and Regulatory Governance.

The governance process is driven by two communities:

1. General governance committee (includes business requirement, general direction, protocol, and financial decisions)
2. Technical governance committee (implements general governance decisions and includes decisions related to software implementation and software roadmap).

Rules:

1. Each Validator Node with a minimum stake of 1 million Xeum has the right to appoint one Committee Member to the general governance committee.
2. Each committee member has one vote per decision.

3. Before each vote one governance token will be issued to each eligible voter.
4. Committee members can be changed before the governance token has been used.
5. Voting rights cannot be transferred to a third party.
6. Votes are final and irrevocable.
7. Governance votes are open for 24 hours where after the vote closes and unused voting tokens are destroyed.

Community votes:

1. Community members will have the opportunity to vote on topics and decisions that are raised on the Discord group using the Discord voting system. This vote is not on-chain and is used to establish the importance and prioritise certain topics, questions or problems.
2. Community votes will run for 48-hours.

Governance Roles

Role	Description	Responsibility	Requirement
Validator Node	Miner nodes that have a staked interest in the Blockchain's longevity and health through good governance.	<ul style="list-style-type: none"> • Vote on governance matters. • Can appoint representative members to committees. • Approve and allocate budgets. 	Must run an active, fully staked validator node and one or more live mainnet projects.
Developers	Fraxeum developer community that contribute to Fraxeum maintenance, module development, and application development.	<ul style="list-style-type: none"> • Fraxeum Improvement Roadmap decisions and implementation. 	Must be an active part of the Fraxeum developers community and a regular participant in the Fraxeum Discord.
Community	Fraxeum Clients, partners, non-technical third party suppliers, and other interest	<ul style="list-style-type: none"> • Provide services as and when required. 	Must be an active part of the community and a regular participant in the

	bearers.		Fraxeum Discord.
--	----------	--	------------------

Six core governance decisions with quorum requirement

Decision	Description	Quorum %	Committee
Budget allocation, reward management, and Xeum distribution	Financial management decisions <ul style="list-style-type: none"> - Low value (< \$1m) - Medium value (<\$5m) - High value 	51% 60% 75%	General Governance Committee
Chain direction and roadmap	Decisions with regards to general business direction, ethos, values, and vision.	51%	General Governance Committee
Data Authority and Authenticity	Decisions pertaining to whom can contribute data to the mempool, who can create blocks, and how do we handle problems arising from unauthorised use. Includes decisions to reverse transactions.	70%	General Governance Committee
System Architecture	Decisions pertaining to implementation of roadmap features, bug fixes, security, system testing, and general blockchain improvement.	51% for general decisions	Technical Governance Committee
Membership Decisions	Client Mainnet activation Client Testnet activation Validator Node activation	1 VN 1 VN 51%	Validator Nodes
Regulatory Compliance	Decisions that pertain to one or more regulatory authority request/requirements.	70%	General Governance Committee

Governance tools

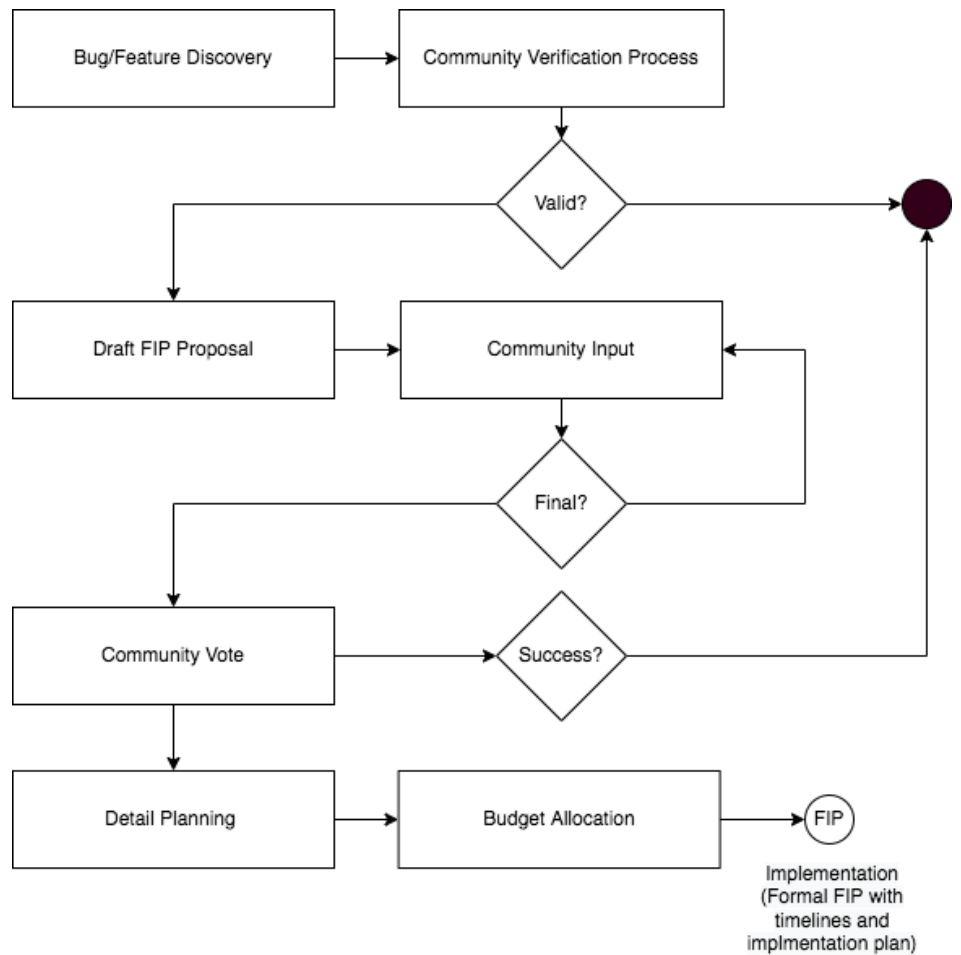
Tool	Description
Discord	Fraxeum runs three discord groups: <ol style="list-style-type: none"> 1. Fraxeum Validators (Restricted to Staked Validators and representatives) 2. Fraxeum Developers (Open, Admin managed) 3. Fraxeum Community (Open, Admin managed)
Telegram	Fraxeum runs a Telegram group that allows administrators to manage new client activation requests via Telegram app.
On-Chain Voting App	Fraxeum Open Source Voter App (Currently in development) allows administrators to create Decision Topics with vote options while defining eligible voter groups. A smart contract and quorum value can optionally be set. Votes are cast using the app by sending a token to a “choice” example: Approve, Reject, Abstain.
Project and project budget management tools	Fraxeum implements a series of project management tools that allows technical team leads to create and fund bounty and development requests.

Governance Incentives

Validators (as overall chain governors) are incentivized and rewarded with Fraxeum earnings (US Dollar and Xeum) which they can delegate, hold or spend at free will.

Fraxeum Improvement Programme

The Fraxeum Improvement Programme is an internal programme aimed at improving Fraxeum through the discovery and consideration of bugs, features, and regulatory requirements with bounties and Fraxeum Improvement Projects (“FIP”) to be issued by Governance Committees.



Conclusion

A Zero Fee chain is useful in **RegTech** - to create trustless voting applications that can be used for AGMs, body corporates, and share schemes. In **Fintech** - it enables “invest what you can afford” micro investment and the ability for a street vendor to onramp fiat in an onchain deposit. In **IoT (AgriTech)** it allows developers to persist environmental data on a tamper resistant ledger that can be scrutinised and confirmed by international buyers before closing the deal. In **EdTech** it enables the recording of grades, in **SportsTech** the recording of personal performance statistics, in **ArtTech**, provenance tracking, and in **MedTech** the commit itemised medical records for global use.

We are focussed on providing trust and transparency through the financial and reputational entrenchment of stakeholders. Our goal is to solve real world use cases by removing the need for transaction fees, providing a managed digital asset and smart contract service where the code is not stored on-chain, through offering an eco-friendly, energy efficient blockchain solution, and finally by automating the fiat to crypto on-ramp and withdrawal process.

We make the trade off between full decentralisation in favour of fine grained control over what nodes can do on our blockchain. By controlling access to the chain we prevent spam, and are able to achieve the goals set out in this mission statement.