FRAXEUM

A Web3.0 Blockchain

No Transaction Fee. No Orphaned Code. No Waste.

Whitepaper

Version 3.5

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FRAXEUM

Contents

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 fractional investment. Our aim was to create infrastructure that would enable anyone, anywhere in the world, to invest in property - irrespective of your financial means.

It started with 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 we had to figure out a sustainable, legal way to fractionalise ownership. Blockchain technology allows us to tokenize shareholding 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 - Standard Bank Securities Uganda Limited (SBS) who will make it possible for every Uganda citizen to invest in the largest and most wealthy companies in their country. In 2022 we engaged the Standard Bank Group, Africa's largest bank by assets under management.

Fraxeum is positioned as a B-2-B financial software 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 immutable yet *upgradable smart apps*, with cost *efficient*, *eco-friendly* block mining.

- The *"Zero fee"* objective means that no on-chain transaction fee aka "gas" is charged for adding data to the blockchain.
- The *"Upgradable smart apps"* objective means that bug - and feature upgrades can be applied to smart app code without compromising the integrity of the contract;
- 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. Fraxeum'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 Fraxeum 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.
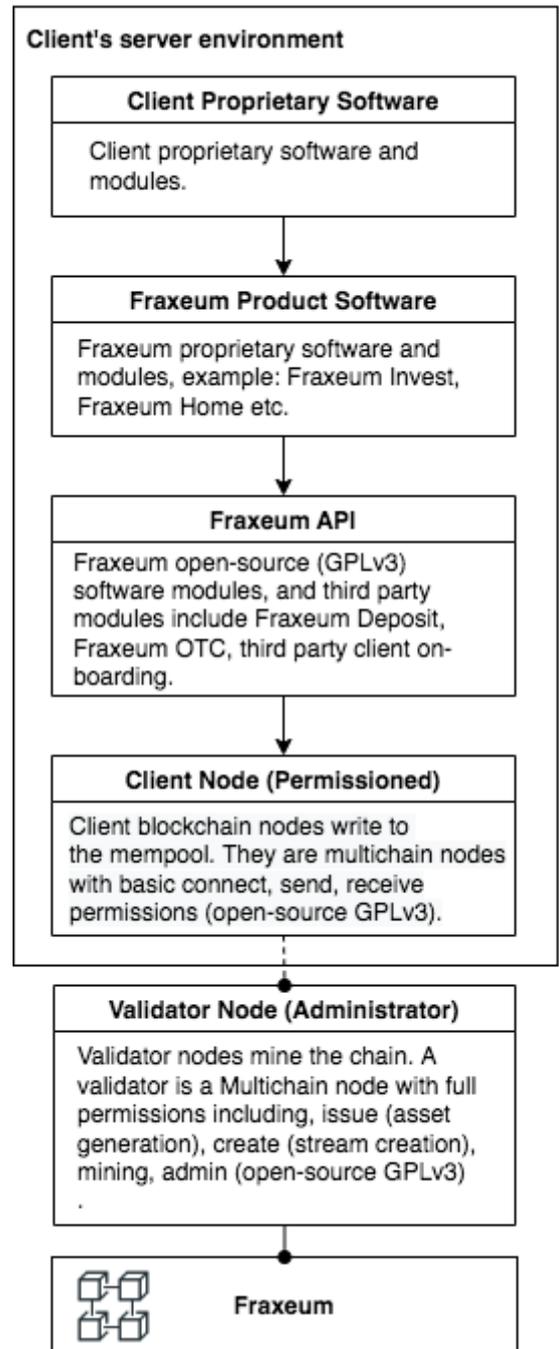
We define four node types: Validators, Hybrids, Clients, and Observers. **Validator nodes** are responsible for chain governance and mining and as such are highly staked to ensure integrity and a vested interest in the chain's credibility and longevity. **Client nodes** are permissioned by Administrators 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 developers[1].

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

Client's server environment

Client Proprietary Software
Client proprietary software and modules.

Fraxeum Product Software
Fraxeum proprietary software and modules, example: Fraxeum Invest, Fraxeum Home etc.

Fraxeum API
Fraxeum open-source (GPLv3) software modules, and third party modules include Fraxeum Deposit, Fraxeum OTC, third party client on-boarding.

Client Node (Permissioned)
Client blockchain nodes write to the mempool. They are multichain nodes with basic connect, send, receive permissions (open-source GPLv3).

Validator Node (Administrator)
Validator nodes mine the chain. A validator is a Multichain node with full permissions including, issue (asset generation), create (stream creation), mining, admin (open-source GPLv3).

Fraxeum

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[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 API[2].

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 future[3].

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[2] Source Multichain.com
[3] Source Multichain.com

Node types

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

Validator nodes

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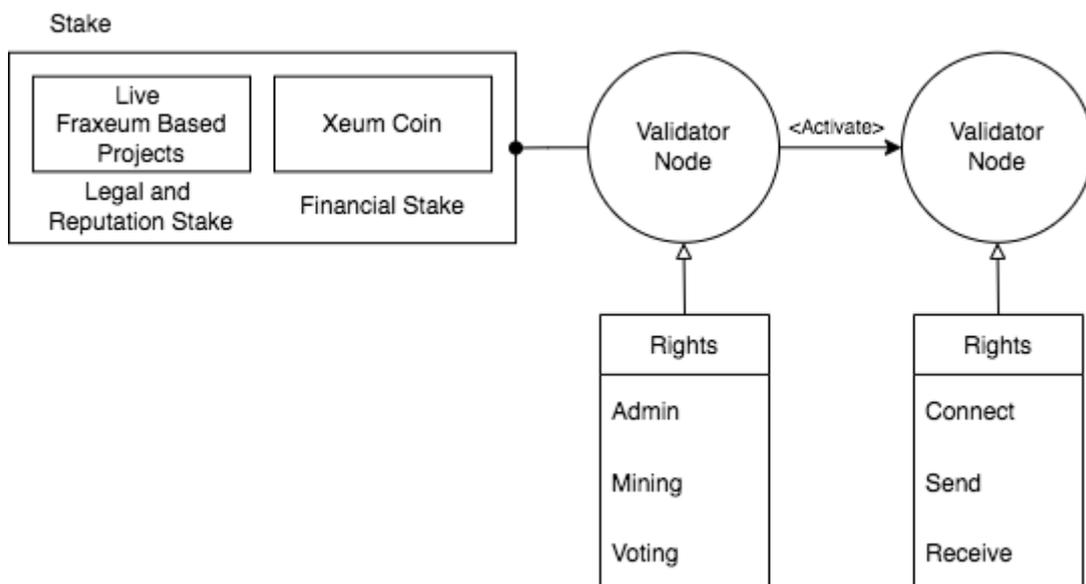
- Validator Nodes hold full admin and governance voting rights on the platform. Validators also have sole mining rights - they append new blocks, issue assets, and create data streams;
- They add new Client Nodes giving them access to connect to the network and issue permissions;
- They own and control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

Validator nodes are rewarded by the success of the platform. All profits generated by the platform are transferred to the Fraxeum 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 Fraxeum blockchain by running a node called a Client node. Client nodes have free, unhindered access to the Fraxeum 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 Fraxeum chain assets and will be able to perform certain tasks on the Fraxeum chain. Support for Hybrid nodes forms part of the Fraxeum 3.0 roadmap.

Observes nodes

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

Xeum Cryptocurrency

At the core of our business model is a cryptocurrency called Xeum (abbreviated Xm). The purpose of Xeum is to abstract sovereign currencies. Xeum is used inside the platform allowing us to present pricing and charge service fees in one jurisdiction agnostic currency.
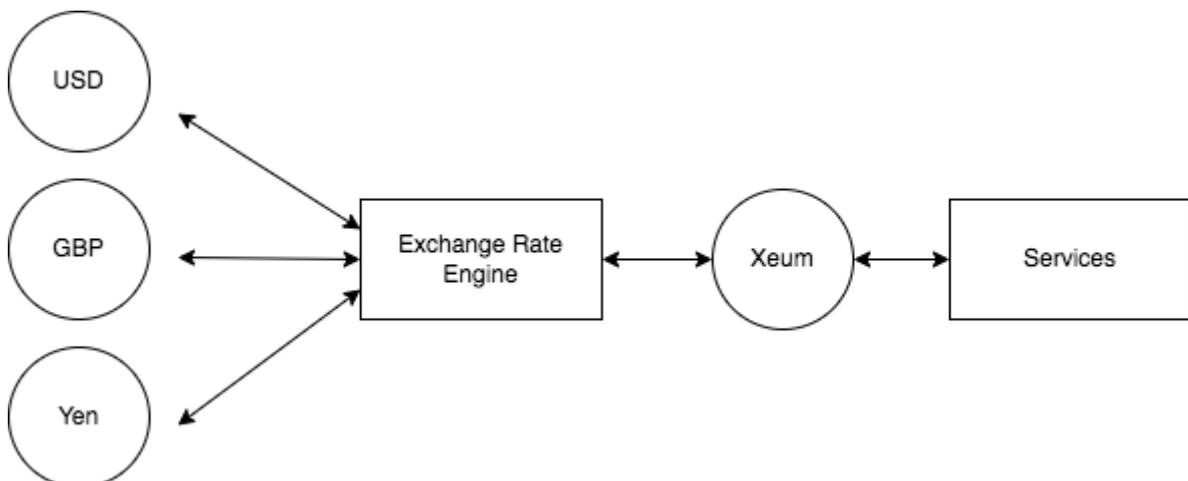
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Xeum Coin characteristics

Blockchain	Fraxeum
Consensus Mechanism	Next available online miner in round robin sequence
Launch Type	**Project based launch**
Total Xeum Supply	250 million
Base Units	8
Founder Reserve	Zero
Corporate Support	Zero
Funding Mechanism	Founder and Angel Capital Rewarded with Xeum
Foundation	Fraxeum Foundation - Responsible for implementing and directing overall chain governance.
Open Source	GPLv3 Github

Fraxeum Broker Services

All fees are charged in Xeum and debited from each Client Project's Wallet. Clients are required to have a positive Xeum balance to pay for specific services that they implement on the Fraxeum blockchain. In an effort to simplify the fiat to Xeum onramp process, especially for corporate clients, Fraxeum is in the process of developing the Fraxeum's Broker Service.
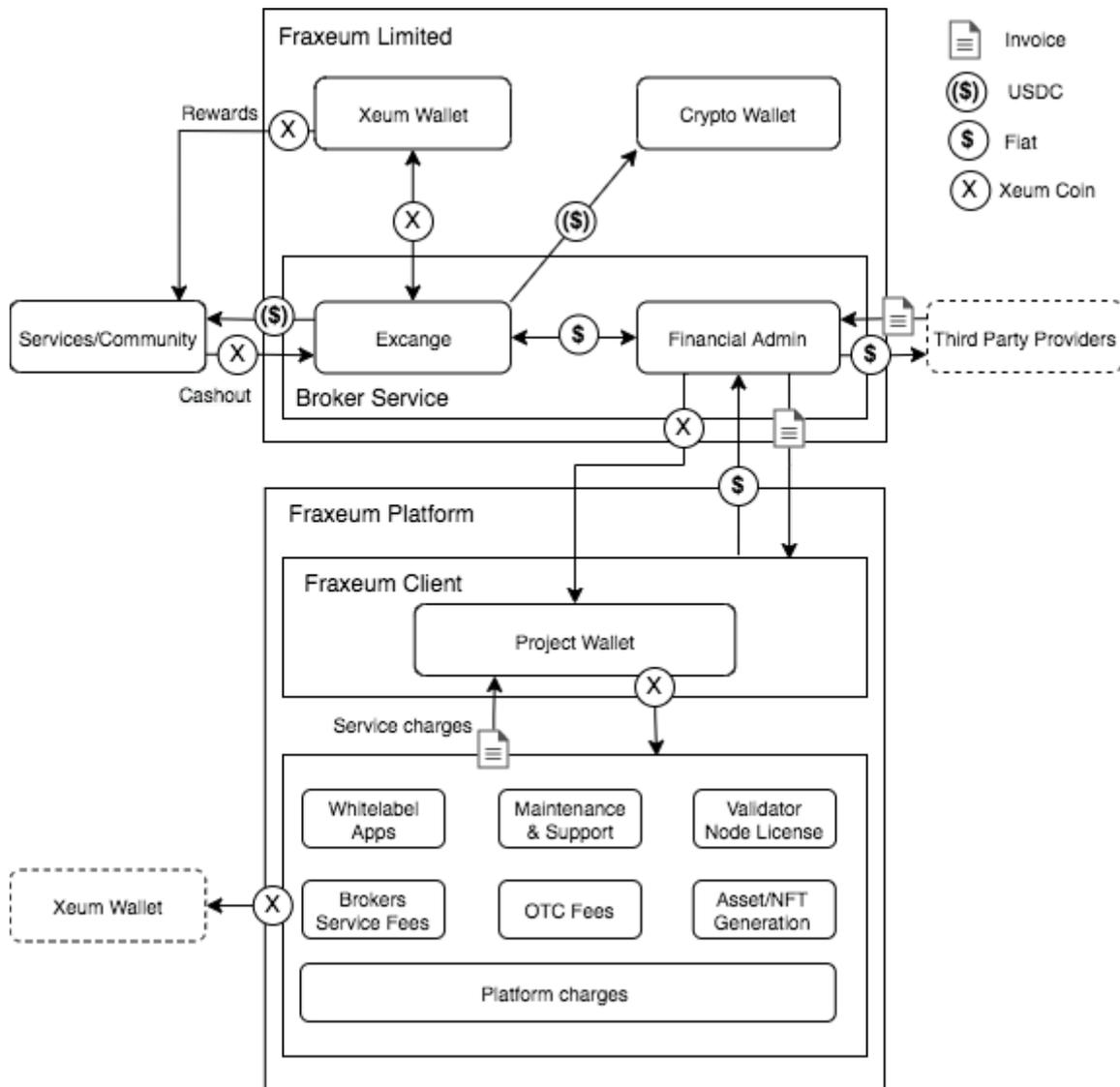
The Broker Services is a Smart Contract that is envisioned to provide Xeum to Local Currency conversion, quotations, invoicing, and delivery once proof of payment is received. Payment can be made via credit card, EFT or cryptocurrency.

Xeum distribution mechanism

Validator nodes own and control the supply of Xeum in the network. Xeum is distributed to exchanges and the broker service by Governance vote.

Revenue Model

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

Revenue streams

The following is a non-exhaustive list of potential revenue stream with indicative pricing to be considered for illustrative purposes only.

Product/Service	Billing Type	Reference Cost (US Dollar)	Currency
Send/Receive Digital Asset	Default	FREE	N/A
Send/Receive Currency Token	Default	FREE	N/A
Send/Receive NFT	Default	FREE	N/A
Admin Node Stake	Once off	$50 000	Xeum
Digital Asset/NFT Creation	Once Off (Each)	$150	Xeum
Annual Asset Fees	Annual Recurring (Each)	$99	Xeum
Mainnet Validation and Launch	Once off	$1 500	Xeum
Client Mainnet Project Wallet Topup	Recurring	Any amount	Xeum
On-Ramp Fiat to Xeum	Per Event	0.25% to 0.5%	Xeum
Off-Ramp Xeum to Fiat	Per Event	0.5%	Xeum
On-Ramp Card	Per Event	0.1%	Xeum
On-Ramp Cryptocurrency	Per Event	0.1%	Xeum
Partner Revenue Share	Recurring	Per agreement	Fiat

* Estimate, actual price will vary per quote depending on jurisdiction, client, risk, SLA.

** Indicates the total amount of Xeum that an Admin Node should stake.

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.
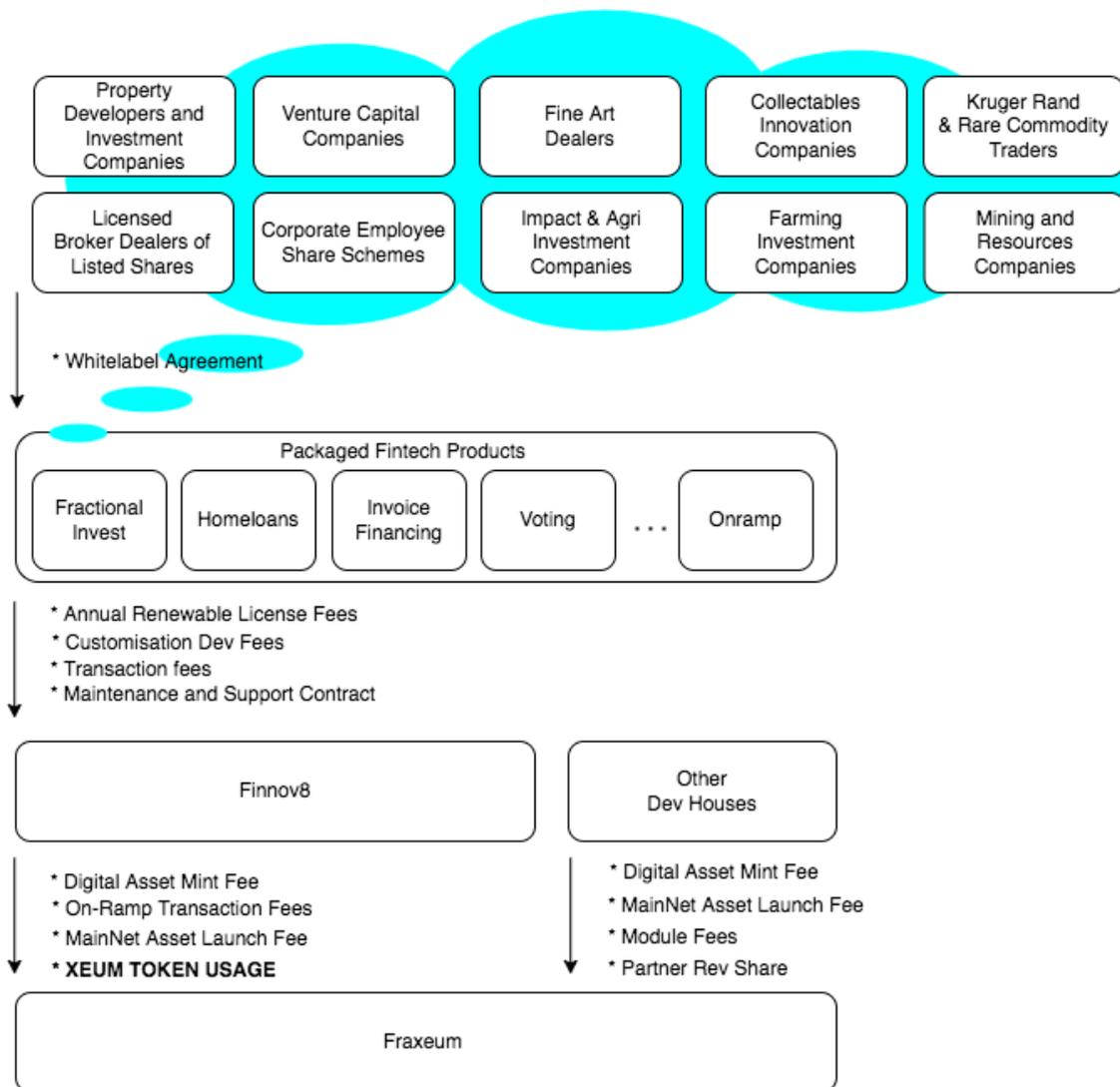
Governance

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.	- 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.	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 bearers.	Provide services as and when required.	Must be an active part of the community and a regular participant in the Fraxeum Discord.

Six core governance decisions with quorum requirement

Decision	Description	Quorum %	Committee
Budget allocation, reward management, and Xeum distribution	Financial management decisions - 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: 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

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.

Implementation
(Formal FIP with timelines and implmentation plan)
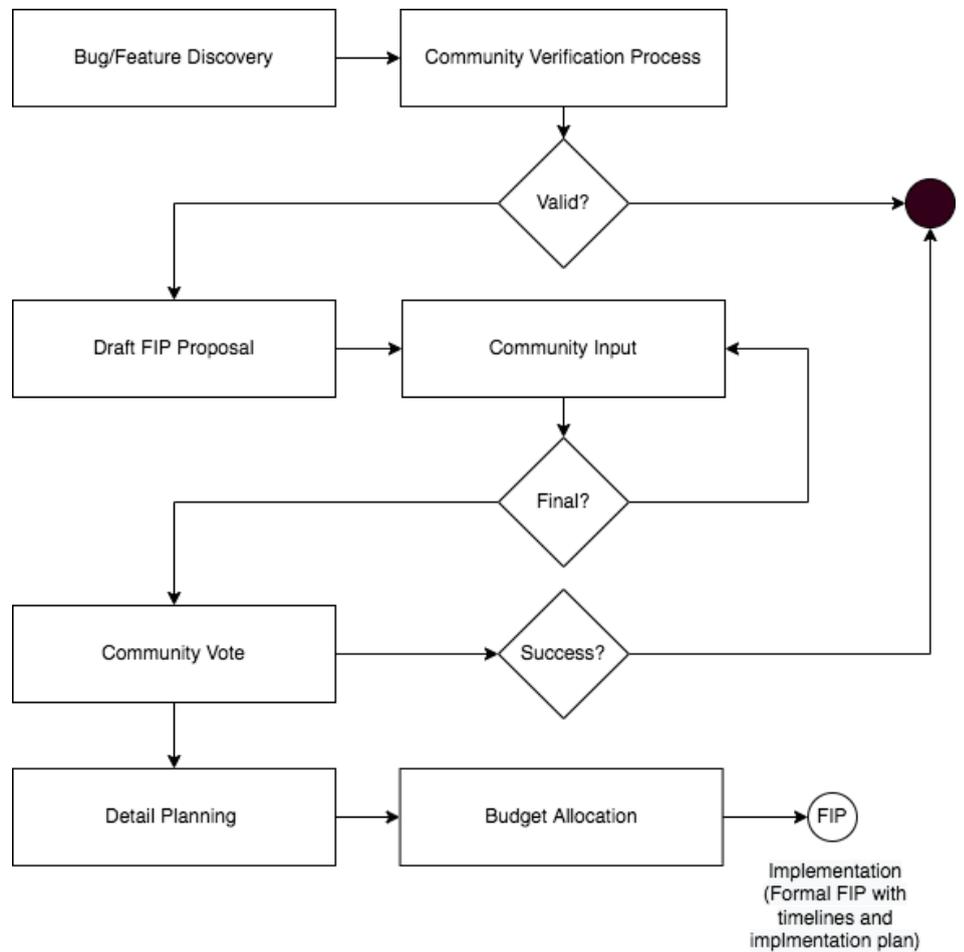
Conclusion

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.