EtherLite

Whitepaper

Index

1. Introduction

The blockchain technology and the concept of cryptocurrencies emerged from bitcoin, which was first introduced in 2009. It still remains the most prominent blockchain project that stores the most economic value. However, it was obvious that it's only the beginning and there is a plenty of things to introduce. As the blockchain technology and its demand grew, problems also grew like slow and costly transactions. There is increasing evidence that Nakamoto consensus (also known as Proof of Work) models are not ecologically viable in the long term. Bitcoin currently uses “at least 2.55 gigawatts of electricity”, with the potential to consume “7.67 gigawatts in the future”, comparable to the total usage of countries like “Austria (8.2 gigawatts).”

2. The rise of Ethereum

Ethereum extended the ideas of blockchain, moved from the UTXO to account architecture and added Turing-Complete virtual machine that allows with a domain-specific language of Solidity (and Serpent) and the whole environment grown around it.

2.1 success

Ethereum is the largest and most well-established, open-ended decentralized software platform. It enables the deployment of smart contracts and decentralized applications (dapps) to be built and run without any downtime, fraud, control or interference from a third party. The ease of developing smart-contracts is the main reason why ethereum has success.

2.2 Advantages

2.2.1 Decentralization

Ethereum is the second most decentralized cryptocurrency in the world, after Bitcoin. Although there are certain people and organizations, like Vitalik Buterin and ConsenSys, that have a lot of influence over the project, there is no centralized authority with ultimate control.

2.2.2 Modularity

Ethereum have modular architecture. This allows customization of blockchain the way every digital asset demands. The modularity makes ethereum exceptionally flexible. That’s why multiple Dapps (Decentralized Apps) are built and being built in ethereum ecosystem. There’s wide-spread community across the world. This is the reason of increasing gas prices.

2.2.3 Governance

On-chain governance is a system for managing and implementing changes to cryptocurrency blockchains. In this type of governance, rules for instituting changes are encoded into the blockchain protocol. Developers propose changes through code updates and each node votes on whether to accept or reject the proposed change.
Dapps built on Ethereum ecosystem have their own governance mechanism and governance coin. 'Governance Tokens' enable users to vote on the future of decentralized protocols and they also present fresh ways for DeFi founders to entice assets onto their platforms. (One of such example is UNI token of Uniswap platform which have helped platform grow manifold and have given worldwide recognition since launch and airdrop)

2.2.4 Interoperability

When you build an app on Ethereum you can instantly connect it to hundreds of other protocols that already exist. In the Ethereum community, this is known as money legos.

3. Key Terms

The most important problem is the consensus algorithm, which can be thought as a method of defining the valid history.
To understand the problems, we need to grasp some technical terms of Blockchain.

3.1 Blockchain

Blockchain is a public digital ledger of past transactions in order. The blockchain is called so because it is a chain of blocks. A blockchain is a hash-linked data structure. Every blockchain technology is composed of 3 parts: peer-to-peer networking, the consensus algorithm (software rules to agree on the state of shared data) and the blockchain.

3.2 Consensus algorithm

Blockchain can be seen as a ledger of blocks subdivided in atomic actions - transactions. The way new block are constructed, which transaction to include there and which not to is called consensus algorithm. There are several different consensus algorithms yielding different properties of the network.
Let's have a look on them.

3.2.1 Proof of work

As discussed, earlier POW is the oldest algorithm of consensus introduced by bitcoin. The new block is constructed by solving a mathematical puzzle which asserts that some amount of computational work has been done. The one who solves the puzzle first is the creator of new block. This makes the owner of the most of computational power the one who decides which transactions are considered as valid or not. This algorithm of consensus is the most simple and well-studied, however it has a lot of drawbacks, for example its slowness and power consumption.

As time passed by and blockchain became more complex, the new points of view have been emerged.

3.2.2 Proof of authority

To describe the next consensus algorithm, we need to draw distinction between public and private blockchains. The private are Proof of authority consensus algorithm means there is some set of actors, who is able to construct the new blocks, and only them.

3.2.3 Proof of stake

Proof of Stake (PoS) concept states that a person can mine or validate block transactions according to how many coins he or she holds. This means that the more Bitcoin or altcoin owned by a miner, the more mining power he or she has. Proof of Stake (POS) is seen as less risky in terms of the potential for miners to attack the network, as it structures compensation in a way that makes an attack less advantageous for the miner.

The proof of stake (PoS) seeks to address this issue by attributing mining power to the proportion of coins held by a miner. This way, instead of utilizing energy to answer PoW puzzles, a PoS miner is limited to mining a percentage of transactions that is reflective of his or her ownership stake.

Ethereum 2.0 is using Proof of Stake as a consensus protocol. Although it is claiming to reduce gas prices, that is long term process and may take several years

3.2.4 PBFT

Byzantine Fault Tolerance (BFT) is the feature of a distributed network to reach consensus (agreement on the same value) even when some of the nodes in the network fail to respond or respond with incorrect information. The objective of a BFT mechanism is to safeguard against the system failures by employing collective decision making (both – correct and faulty nodes) which aims to reduce to influence of the faulty nodes. BFT is derived from Byzantine Generals' Problem.

Byzantine fault tolerance can be achieved if the correctly working nodes in the network reach an agreement on their values. There can be a default vote value given to missing messages i.e., we can assume that the message from a particular node is 'faulty' if the message is not received within a certain time limit. Furthermore, we can also assign a default response if the majority of nodes respond with a correct value.

When a Hyperledger transaction is made, the transaction details are sent to the nodes in the network. There are might some nodes that will approve the transactions and some nodes that won't. The majority (or a minimum specific number) of nodes have to approve the transaction for the transaction to be completed.

3.3 Nodes

Nodes are distributed computers in the network that all have a copy of the entire blockchain. As new users enter the blockchain network, copies of the blockchain and the access to it is distributed. The data is replicable, synchronized and shared across all the nodes in the across multiple networks. The data is not controlled by a singular node or network.

3.4 Smart Contract

A smart contract is a digital agreement stored on the blockchain that is unalterable, once signed. It defines certain logic operations that have to be fulfilled in order to perform tasks such as deposit money or data.

As an example: Conditions of releasing money to a third party delivery team- Suppose a sender wants to send goods to the receiver using a third party, but wants to pay money for delivery only after the delivery is successful. Then, a smart contract could be as follows: The sender pays the shipment money on the day of loading of goods. The smart contract will hold payment to the delivery team until the recipient confirms to the sender, the receipt of goods. Only then will the smart contract release the payment and automatically transfer the money to the delivery team.

4. What Caused problem

The most important problem is the consensus algorithm, which can be thought as a method of defining the valid history. Blockchain was introduced to the world with proof of work. There are two primary disadvantages to Proof of Work systems. The first is that they waste energy, which is bad for the environment. As computers perform extra computational work, additional electricity is used. This can add up to an extremely large amount of excess electricity consumption. Therefore, it is not much scalable. Ethereum 1.0 is facing the same issue. It is user friendly and open, hence lot many dapps are being built on it and that's why gas prices are touching skies as discussed earlier also.

4.1 Price

At the time of writing the typical transaction fee for a token transfer requires 40 000 - 200 000 gas units, with gas price of 150 Gwei and Ether price of $1500 yields price of the transfer as high as about $10, let alone more complex transactions, fees for which are would cost even hundreds of dollars. This effectively makes Ethereum network unusable.
There were several attempts to create alternatives, the Binance smart chain (bnsc) is one of such`

4.2 Scalability

The primary problem with Ethereum is scalability. Transactions are still very slow, as Ethereum's public blockchain can only process roughly 15-20 transactions per second (TPS) compared to the 45,000 processed by Visa. Enterprises require a very high throughput of transactions, and Ethereum cannot yet offer that on its public mainnet.

5. Introduction to Etherlite

EtherLite is a blockchain platform built for efficiency; it provides a fast, secure and cheaper environment for building decentralized applications. It is fully compatible with Ethereum's tooling and Web3 technology stack and it runs on a PoS consensus algorithm.
While Ethereum 2.0 (Serenity) will bring Proof of Stake Sybil control and many other innovations to the Ethereum ecosystem, the completion date is currently unknown. The Etherlite POS protocol provides an immediately available scalability solution for Ethereum 1.0, creating the opportunity for delegated staking, high transaction speeds, and low transaction costs. On a Etherlite enabled sidechain, candidates stake tokens (greater than a specified minimum

candidate stake) to declare their intention to become validators on the network. Delegators can also stake tokens on these candidates, providing a "vote" for a particular candidate by contributing to their pool.

Etherlite is currently supported by OpenEthereum and POS Contracts. Etherlite runs on a fully compatible EVM-based chain, allowing for mainnet interoperability while providing greater efficiency, lower fees, configurability, and other benefits relative to current EVM consensus implementations. Etherlite will connect with ethereum mainnet and also compatible with other EVM based blockchains. This will enable interoperatbility between all the EVM based blockchains. Etherlite is using POSDAO as consensus protocol.

5.1 Features of EtherLite

- **Web3 compatibility –**
  EtherLite is fully compatible with Ethereum's web3js interface API. It means that the website or service interacts with the Ethereum network. Web 2.0 relies on users to create the value which the owner or host can reap the benefits from. In most cases, users have little to no control over their data. Also, users never know if the content they enjoy will stick around. When content is no longer needed or threatens profits, the host of the website or service has the right to remove it from their platform leaving you high and dry. Not to mention, most service providers own user's data under their terms of service. Like social media and OTT platforms are doing today. Web3 seeks to empower users and to recapture the value that they create. Web3 applications, sometimes referred to as DApps, are built on decentralized peer-to-peer networks like Ethereum and IPFS. Instead of being run by some company, these networks are built, operated, and maintained by their users. They're self-organizing and lack a central point of failure.
- **High throughput –**
  Etherlite Provides fast block times ~3s, as it runs on POS. As explained earlier POW requires lots of resources and energy, Proof of authority is for private blockchains. Hence, EtherLite is using Proof Of Stake which is a highly scalable consensus algorithm
- **Fast transaction finality using a PoS consensus engine**
- **Smart Contract and Tooling, Less costs –**

Etherlite have Ability to use existing Ethereum smart contract and tooling. Developers can port their existing Ethereum-based dApps in a matter of minutes, substantially upgrading the performance and lowering the costs.

- **Compatibility –**
  Compatible with existing tools like Clients, Metamask, Remix, and Truffle etc. which are used in Ethereum Blockchain.
- **EVM Compatible –**
  EVM stands for Ethereum Virtual Machine. Virtual machines will essentially create a level of abstraction between the executing code and the executing machine. This layer will improve the portability of software, and will also ensure that applications are separated from each other, and separated from their host.

5.2 Advantages of Etherlite

- **Fast** - At EtherLite, transactions become instantly irreversible, there is no need to wait tens of minutes for confirmations. EtherLite runs on a POS consensus and is extremely scalable, it provides fast block times ~3s and 10,000+ TPS.
- **Compatible -** EtherLite is fully compatible with the EVM meaning that any existing Ethereum smart contract and tooling can be used at EtherLite. Developers can port their existing Ethereum-based dApps in a matter of minutes, substantially upgrading the performance and lowering the costs. Any developer familiar with Ethereum can use EtherLite without (almost any) additional skills required.
- **Modular -** EtherLite's modular internal architecture is flexible, easily customizable and less error prone. Further development, additional feature implementation and bug fixing becomes much easier making the framework developer friendly.
- **Security -** EtherLite runs on a trustless Proof-of-stake network where validators are themselves stakers.
- **Scalable -** EtherLite is having capability to process thousands of transactions per seconds and scale to thousands of nodes.
- **Interoperability -** Using Etherlte you can transfer or trade assets or coins from one chain to another.
- **Bridge -** Native support for cross-chain communication among the two blockchains. The communication protocol should be bi-directional,

decentralized, and trustless. It will concentrate on moving digital assets between EtherLite to another EVM supported blockchain

5.3 OpenEthereum

OpenEthereum is the fastest, lightest, and most secure Ethereum client. It uses the Rust programming language. It is licensed under the GPLv3 and can be used for all the Ethereum needs. OpenEthereum provides the core infrastructure essential for speedy and reliable services.

- Clean, modular codebase for easy customization
- Advanced CLI-based client
- Minimal memory and storage footprint
- Synchronize in hours, not days with Warp Sync
- Modular for light integration into your service or product

6. What is ETL?

If you consider Etherlite as a country then ETL is it's native currency. Everything happens in Etherlite, ETL is used for that. It is EtherLite network's native coin. It is used to sustain the network, run the governance mechanism and to pay the network fees. By holding ETL, participants are able to access EtherLite's core functionalities.
Use of ETL –

1. Securing the network

EtherLite runs on a Proof-of-Stake mechanism which requires ETL to sustain the network. Validator nodes are required to stake a minimum of 100,000 ETL and in return validators will receive rewards and fees for their service. If validator does a malicious activity, then his staked ETL are basically confiscated

2. Governance

'Governance Tokens' enable users to vote on the future of decentralized protocols, sure, but they also present fresh ways to entice assets onto protocol. ETL is used to run on-chain governance mechanisms for EtherLite. It will enable users to vote on the future of EtherLite. Governance will truly make EtherLite a decentralized protocol.

3. Payments

The ETL token is ideal for sending and receiving payments thanks to the EtherLite network's high-throughput, fast finality, and low fees. On EtherLite, money transfers take place within seconds and it cost much less.

4. Network fees

ETL is used to pay for general network fees such as transaction fees to access and support network operations.

5. Reward Distribution

Along with network fees, rewards in the EtherLite ecosystem are distributed using ETLs. Rewards like block rewards are explained later in the whitepaper

7. Introduction to POSDAO

POSDAO is Proof Of Stake Decentralized Autonomous Organization.
POSDAO is designed to provide a decentralized, fair, and energy efficient consensus for public chains. The algorithm works as a set of smart contracts written in Solidity. It is implemented with a general purpose BFT consensus protocol. Validators are incentivized to behave in the best interests of a network through a configurable reward structure. The algorithm provides a Sybil control mechanism for managing a set of validators, distributing rewards, and reporting and penalizing malicious validators.

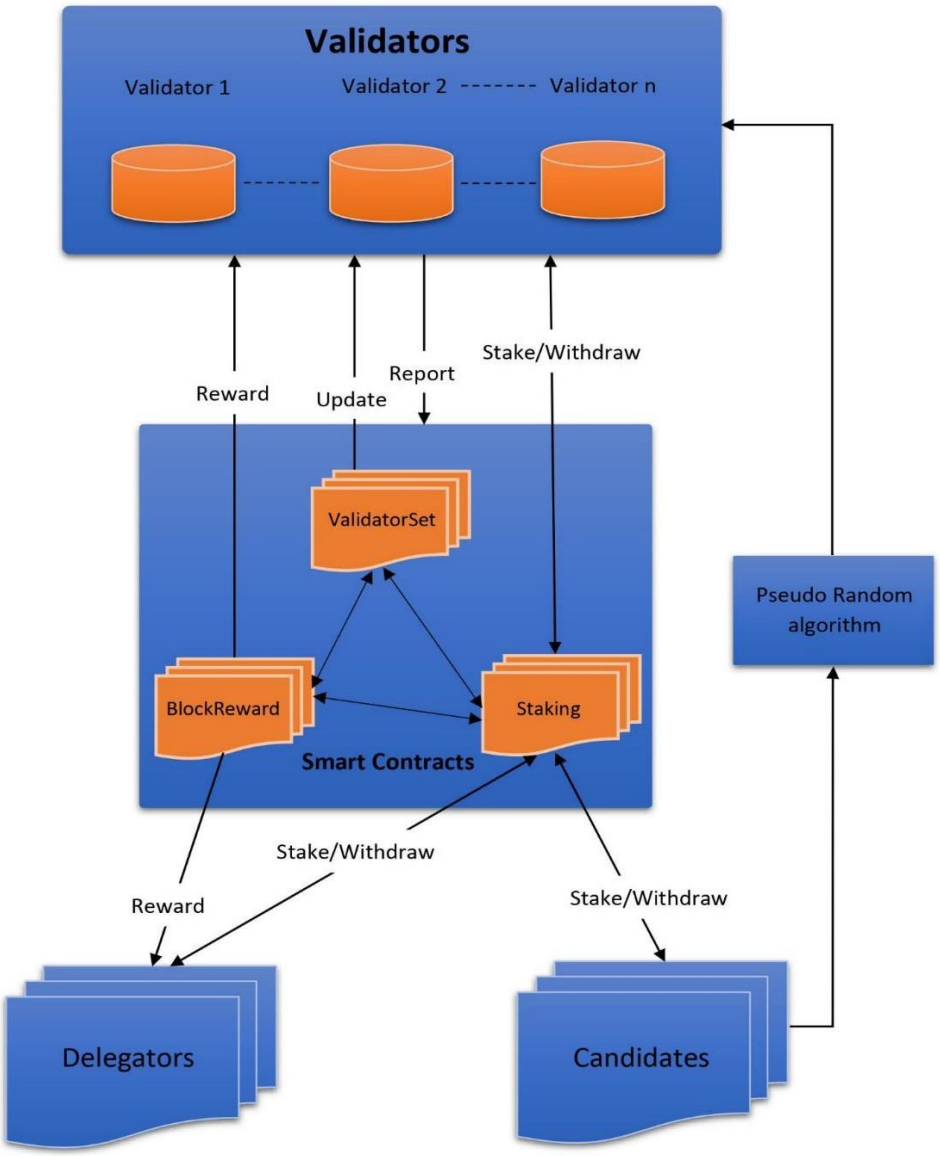
All the parameters and reward structures of Etherlite are explained later in the whitepaper.

How it works?

Participants in POS protocols stake EtherLite Coins (ETLs), to protect the network and achieve agreement regarding blockchain transactions. ETL is the native coin of Etherlite. ETL is used as DPOS staking coins, coin holders can participate as validators or delegators in the consensus process on the EtherLite network. They can earn rewards (either block rewards or transactional rewards) based on their participation. This provides an opportunity for coin holders to convert any number of current holdings into staking coins, which in turn earn reward-based dividends.

7.1 POSDAO consensus model

POSDAO consensus implements a layered POS model connected by smart contracts on a public blockchain (see Figure 1 below). Sybil control and incentives exist in smart contracts working within the EVM and the execution state is stored on a public chain implementing the POSDAO consensus. The underlying BFT consensus exists on the network protocol level. This model requires modifications to the BFT consensus algorithm implementations in the Ethereum client to facilitate information exchange between smart contracts and the consensus layer. This includes communication relays regarding consensus faults and validator set management.



7.2 Reward Distribution

Reward distribution is the primary incentivization mechanism of the algorithm. In this section, we explain the reward distribution rules between validators and delegators within pools based on their contribution amounts. Although EtherLite network provides the option to implement a dual token environment, Etherlite works on single token environment. That token is ETL.

ETL is used for –

1. Staking for EtherLite

2. Block Rewards

3. Transaction Fees (paid to validators only)

The block reward is paid via a 18% annual inflationary measure applied to the native staking coin (ETL)

7.3 Reward Structure

7.3.1 Transaction Fees

The validator that validates the block collects the transaction fees associated with the block. Only validator will get the transaction fees. Transaction fee is basically the gas fee on each on-chain transaction. It indicates the consumption toward computational expenses on the EtherLite network. Transaction fee is charged on everything that is done blockchain. It may be implementing a smart contract or performing transaction on blockchain.

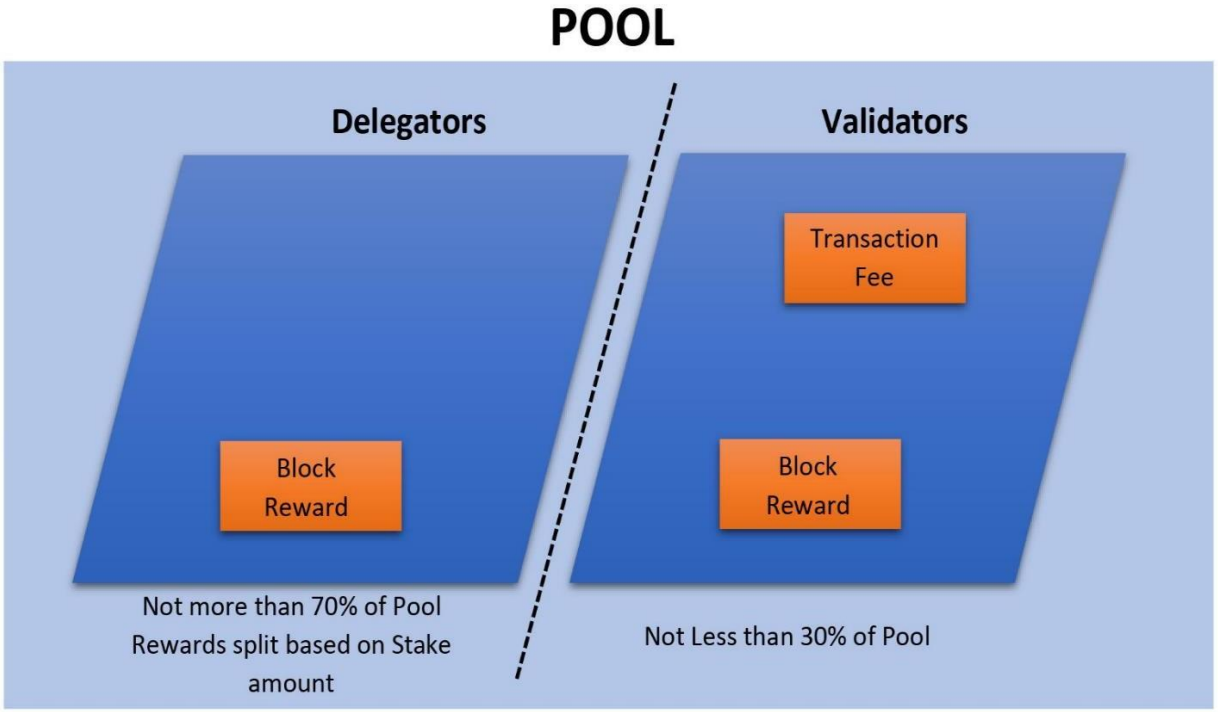
7.3.2 Bridge Fees

In case of inter-blockchain transaction, bridge is required to connect the blockchains. Entry and Exit fee is charged as transaction moves between EVM based blockchains. The fee is distributed to validators and delegators based on their staking ratios.

7.3.3 Fixed Block Rewards

EtherLite's reward distribution mechanism mints reward tokens for all active validators and their delegators. If a validator is removed due to misbehavior, its pool is not included in the reward distribution.

Refer the figure below to understand the reward structure –



7.4 Etherlite Reward Distribution Rules

In order to maintain fairness and incentivize elected validators, reward distribution is calculated according to the following rules:

1. Each pool within the validator set receives an equal share of the reward (if all validators always produce blocks and don't skip them) at the end of staking epoch. If a validator skips a block then accordingly reward reduces on pro rata basis.

2. Pool rewards are proportionally distributed between a validator and the staking delegators, as long as the total delegators' percentage of stake is below 70%.

3. The validator is guaranteed to receive at least 30% of the pool reward. Even if the total delegators' stake exceeds 70%, the delegators' rewards are adjusted accordingly and the validator receives 30%.

7.5 Validator Set Formation

Any address with the minimum required candidate stake (100,000 ETL) can become a validator. When an address calls the addPool contract function and meets the minimum required candidate stake, it becomes a candidate and forms a new pool.

7.5.1 Network participants

The number of EtherLite network participants and cannot exceed the values assigned to the *MAX_CANDIDATES* and *MAX_VALIDATORS* parameters. (Max Candidates are 151254 and Max Validators are 50418)

Any arbitrary address with at least *DELEGATOR_MIN_STAKE* native coins (50,000 ETL) can stake their tokens and become a delegator.

7.5.2 Staking epochs

The network's operation is divided into staking epochs (STAKING_EPOCH_PERIOD – 1 week with 3 sec of block time). A new staking epoch begins immediately following the termination of the previous epoch.

There is a different validator set in each Staking Epoch to avoid attacks. At the beginning of each staking epoch, the algorithm selects a new validator set from the current list of candidates and creates a snapshot of the current state of the validators' pools. If there are fewer than MAX_VALIDATORS+1 candidates, every candidate becomes a validator. The snapshot is used to calculate the reward amount for validators and delegators when they claim the reward.

7.5.3 Becoming a candidate

An arbitrary address X in the network has to launch its node and put at least the minimum stake in the form of ETL (CANDIDATE_MIN_STAKE is 100,000 ETL) on its own address.

Staking address X then has to specify address Y as the mining address using the *addPool* function. A new active pool is created for address X, and this account becomes a candidate account.

- Address X is the staking address used to collect rewards and place stakes into their own pool.
- Address Y (the mining address) is used by the validator's node to sign blocks and participate

in the randomness beacon (see figure 3), and report on malicious validators. This address is defined in the engine_signer config option of validator's OpenEthereum node.

7.5.4 Candidate pools

At the beginning of each staking epoch, the EtherLite algorithm selects active candidate pools to participate as validators in the next validator set. Inactive pools are ignored.

If a candidate withdraws all of their tokens/coins from their pool, the pool becomes inactive and does not take part in the next validator selection process. The candidate can either fully withdraw their coins and remove themselves as a pool, or partially remove their coins (provided that they leave CANDIDATE_MIN_STAKE) and participate in later staking epochs.

7.5.5 Staking and withdrawal to/from a pool

An EtherLite network participants can stake or withdraw their coins to or from pools during the majority of a staking epoch. The exception is a defined period at the end of each epoch

(STAKE_WITHDRAW_DISALLOW_PERIOD is 12 hours for 3-second blocks). This measure prevents stake manipulation based on the random seed value generated at the very end of the epoch

- The total stake amount of a candidate or validator on their own pool cannot be less than CANDIDATE_MIN_STAKE (100,000 ETL)
- The total stake amount of a delegator on any pool cannot be less than DELEGATOR_MIN_STAKE (50,000 ETL)

The minimum candidate stake is relatively large, encouraging institutional investors to become candidates and validators. This large stake creates additional incentives for candidates to protect their nodes and prevent DoS attacks. However, DoS attacks on individual validator nodes are still possible. Part of the validator's job is to defend against such attacks by using ISPs that provide DoS protection.

Additional token staking or withdrawal to/from a pool during the current staking epoch (and thereby changing the size of the pool) does not impact the current pool reward. The reward is determined based on the pool's state at the moment the staking epoch begins. However, these changes will impact validator selection probability for the following staking epoch.

A participant cannot withdraw their coins from an active validator's pool unless the amount was staked during the current staking epoch (this amount hasn't been allotted as a stake yet, so it can be withdrawn). Coins can be withdrawn from a candidate's pool at any time (because the candidate is not a validator).

If a participant (delegator or validator) wants to leave an active validator's pool or reduce their staked amount, they can schedule a withdrawal from the pool. The selected amount can be claimed after the current staking epoch is complete.

If a validator wants to terminate their validator status on the next staking epoch, they can schedule a withdrawal of their staked amount or call the contract's *removeMyPool* function (in this case the pool becomes inactive and won't be selected by the algorithm at the beginning of the next staking epoch).

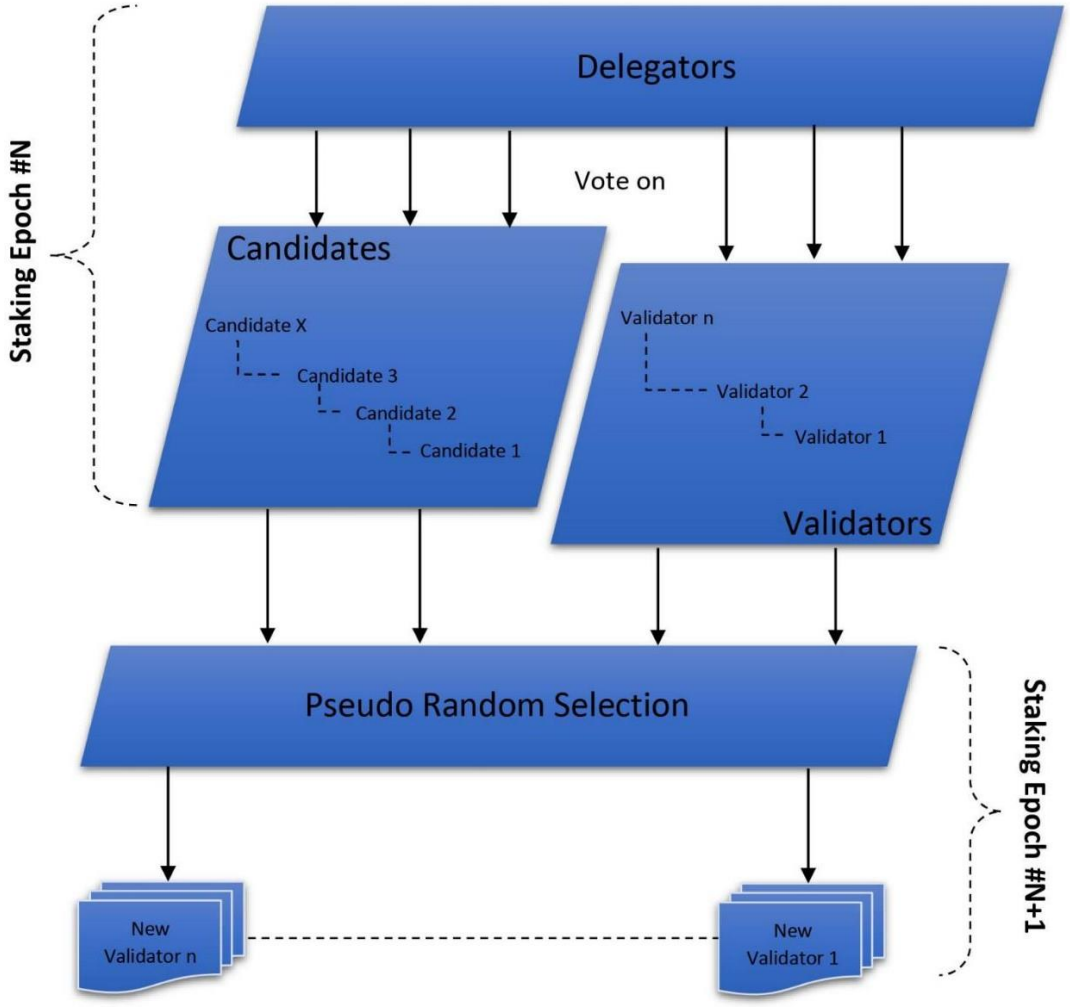
7.5.6 Moving stakes

An EtherLite network participant (delegator or candidate) can move their full or partial stake amount from one pool to another without withdrawing the amount from the contract. Such a move is subject to the same withdrawal rules described above.

7.5.7 Randomness when selecting a validator

It has to be made sure that there is different set of validators in each Epoch to ensure network safety. The protocol implements a random number generator similar to RANDAO, which is used to randomly select a set of validators from the

group of candidates at the start of each staking epoch. Candidates with a larger pool have a higher probability of selection to a validator set for each staking epoch (candidates with higher stakes are probabilistically selected as validators for more staking epochs). If number of candidates is lower than Minimum validators+1 then automatically all the validators are selected and there's no need of random number generator



8. EtherLite network initialization

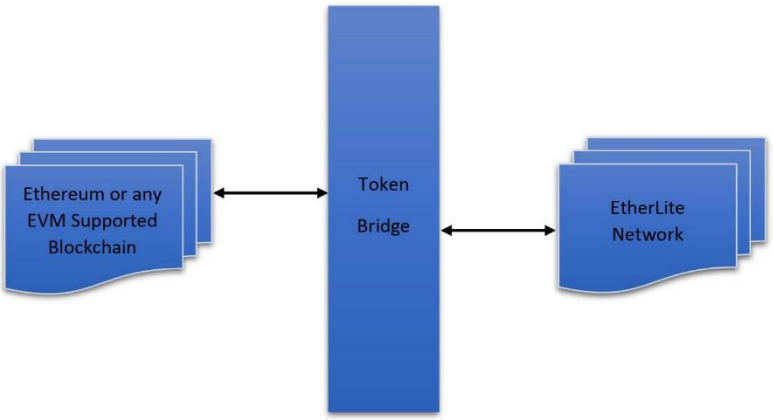
Smart contracts are initialized in the genesis block or in an arbitrary block on an already existing network. In the case of genesis initialization, the contracts' pre-configured parameters are included in the chain specification bytecode, and the set of initial validators is also defined in these parameters.
If the network is initiated from the genesis block, all of the addresses in the network (including initial validators) have zero balances. There are no pre-initialized stakes for initial validators, so their pools are also empty.

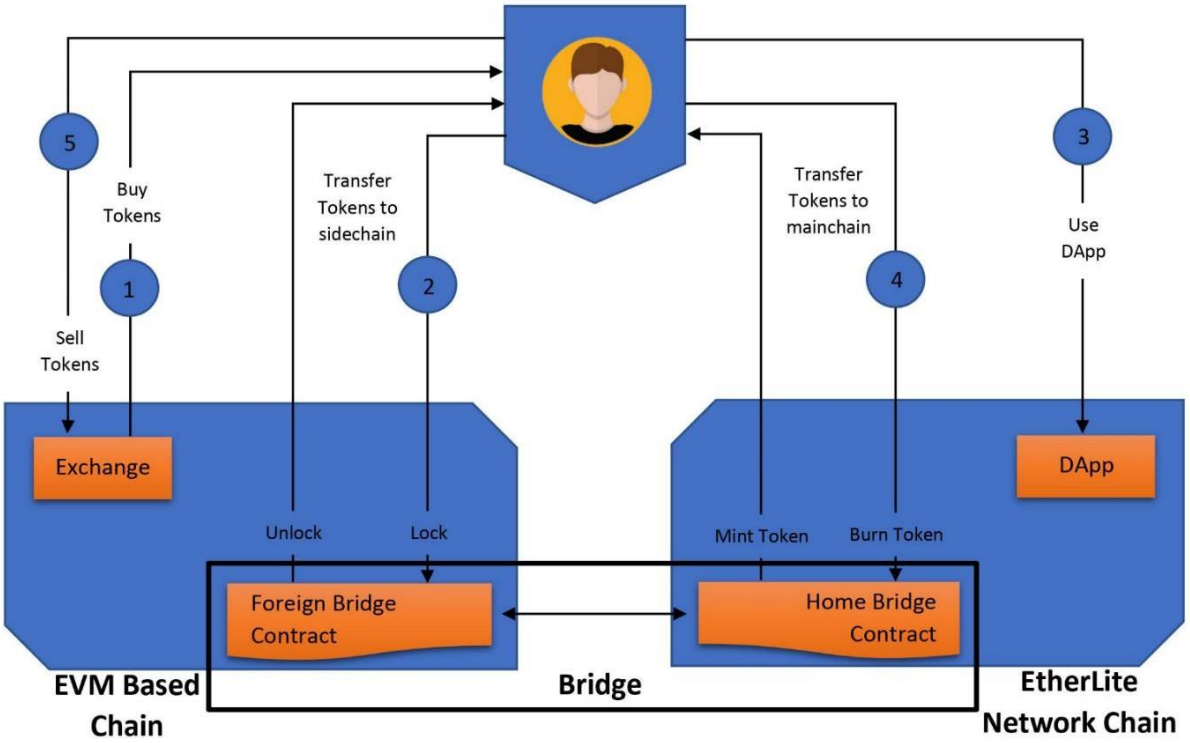
POSDAO may be configured to run as a standalone blockchain. It can also run using a bridge or bridges which connect to one or more other networks. This bridged scenario is used in the reference implementation and described below.

8.1 Bridged network scenario

The EtherLite TokenBridge is used to connect all the EVM based chains and Ethereum mainnet, allowing users to transfer assets between chains. In the reference implementation, two POA TokenBridge instances connect the POSDAO sidechain network to the Ethereum mainnet.

Both bridges have their own validator sets which are not bound with the consensus validator set in the POSDAO network. Bridge validators are responsible for secure token transfer between chains, and they do not receive any reward for this service.





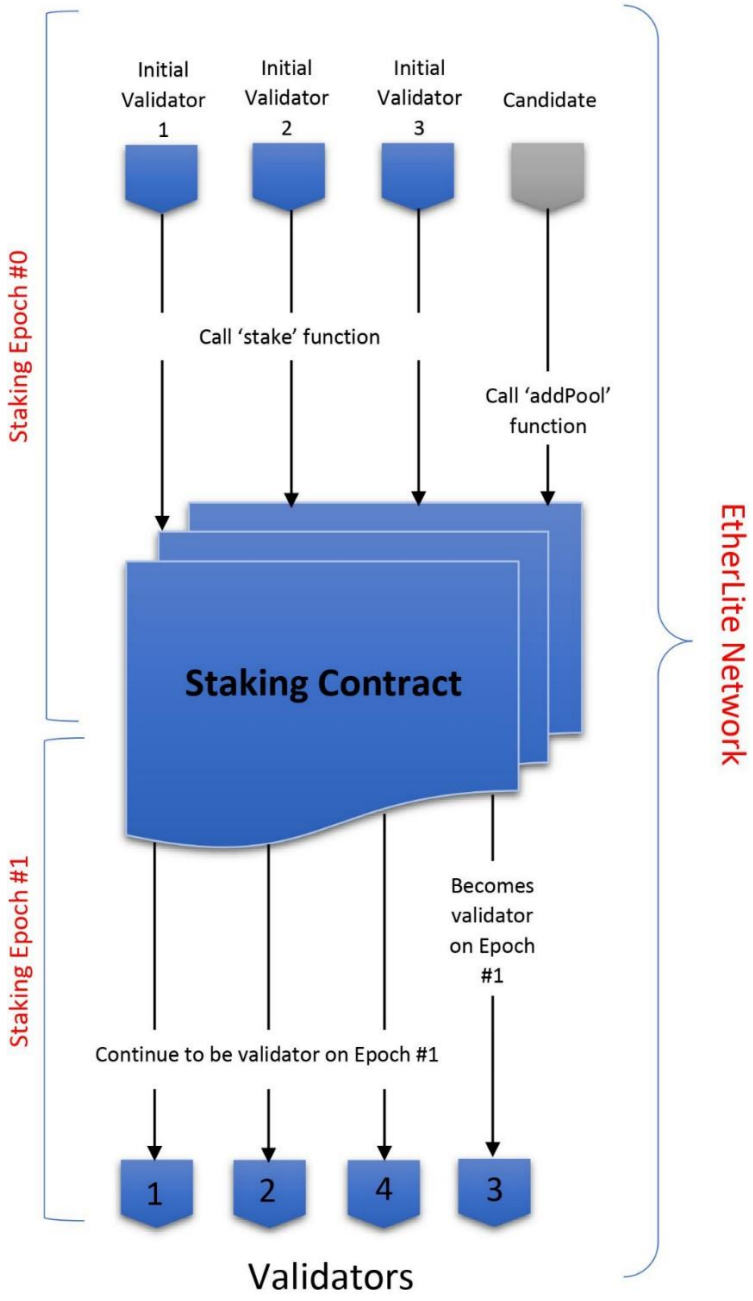
8.2 Initial validators

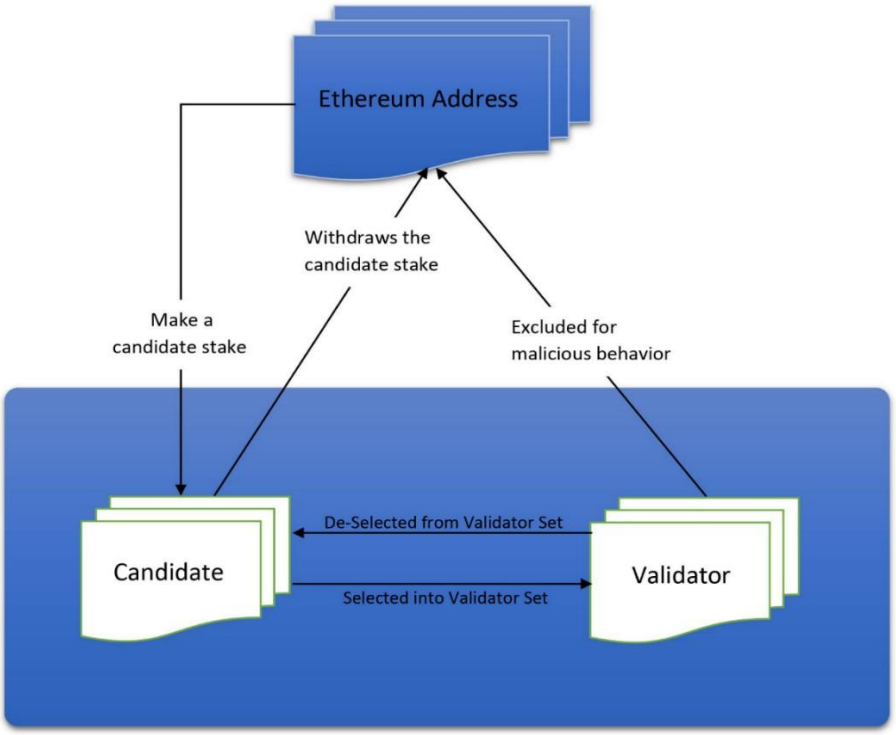
Because the validators do not have ETL when the network starts from genesis, they can make service transactions to the Etherlite contracts using zero gas. The validators can make unlimited service transactions but only within the scope of the consensus contracts. The *TxPermission* smart contract protects against possible spam sent from a validator. Figure below shows an example network initialization.

If an initial staking epoch ends and there are no candidates (none of the initial validators made a stake into their pool), the initial validator set is retained for the following staking epoch. However, if at least one candidate appears (the address which added a stake to its pool), any initial validators with empty pools are removed from the set, and the candidate becomes a validator on the new staking epoch. Thus, if an initial validator wants to keep their seat (and still has no staked tokens) after the initial staking epoch, they must place a stake into their own pool.

After the bridge is connected, individuals can bridge their EtherLite tokens and become candidates in the EtherLite network. Figure below illustrates the various possible interactions from a candidate's address.

If the number of candidates is greater than MAX_VALIDATORS at the beginning of new staking epoch, the validators are chosen randomly (using the randomness beacon) from the set of candidates: the larger the candidate's pool, the higher probability the candidate has of becoming a validator.





In addition to the initial validators, an owner who is the foundation team of EtherLite network deploys the genesis contracts and has the ability to upgrade the consensus contracts when required (for example if bugs are found or the code needs to be modified). The owner is a MultiSig smart contract which has a trusted setup. Future implementations may include a voting mechanism to allow validators the ability to vote on upgrades. This would alleviate the need for the owner contract.

9. Reward Structure

9.1 Minimum candidate stake – (100,000 ETL)

Such high minimum candidate stake discourages the potential centralization of candidate seats, where individuals may attempt to register many candidate nodes and thus control a large percentage of validator sets. A high minimum candidate stake also deters a malicious set of validators from attempting a coordinated validator set attack.

9.2 Equal share of the block reward

Each validator pool within a validator set receives an equal share of the block reward*. While a higher stake impacts the odds of a candidate pool becoming a validator pool, each validator pool receives the same reward. This creates parity among the validators participating in each staking epoch.

*Note: Hard working validators are rewarded more than others. shares will only be equal if every validator produces blocks continuously. If a validator skips blocks, their pool will receive proportionally less reward than other (continuously working) validators. For example, if there are two validators in the validator set and one of them produced 20 blocks, but another only 10 blocks, the first validator's pool will receive 20/(20+10)=66% of the total reward, and the second pool will receive the remaining 34%.

9.3 Proportional reward distribution of 70/30%

The 70/30 distribution ratio is a common revenue sharing heuristic. When set at the initial value, delegators receive block rewards within their validator pool(s) up to 70% of the total pool value, incentivizing delegators to quickly fund candidate pools they believe should be validators.

Once the 70% mark is reached, additional stake returns a proportionally smaller amount. At this point, delegators may choose to fund additional candidate pools, increasing the number and diversity of potential candidates, or stake additional tokens into the current pool, increasing the probability of a candidate pool becoming a validator pool in the next staking epoch.

When the ratio is set to 70/30, a validator never receives less than 30% of the pool reward. Validators are responsible for running a node and a reward baseline prevents a situation where delegators can claim an overwhelming percentage of the reward. Once a pool reaches the 70/30 threshold, a validator may choose to increase their stake to attract additional delegator funds or to increase their position on the leaderboard. Since reputation is a valuable commodity, successful validator sets (those with a high stake, high transactional throughput, and consistent node uptime) will continue to attract stake from delegators.

10. Prospective use of EtherLite –

1. Peer-to-Peer Payments –

Fast and efficient payments are possible using EtherLite. With EtherLite, sending money can become very fast, cheap and easy. Peer-to-peer (P2P) payments on the blockchain can replace the current expensive, slow, bank-driven processes that dominate online payment systems today.

2. DeFi (Decentralized Finance) –

As discussed in the introduction part, gas prices in Ethereum are touching skies. Etherlite have Ability to use existing Ethereum smart contract and tooling. Developers can port their existing Ethereum-based dApps in a matter of minutes, substantially upgrading the performance and lowering the costs. High gas fees on Ethereum make many applications more difficult to use. This includes DeFi applications - notably DEXs like Uniswap and others. Often, fees can eclipse actual trading amounts, and can limit a trader's ability to capitalize on opportunities. Trading on EtherLite allows users to make many swaps, or create many positions, without fee prices limited the number of trades. Faster blocks also enable more rapid trading options.

There are costs associated with moving assets to EtherLite (and bridging them back to Ethereum). But once they have been moved, trades can be executed as often as a trader desire.

3. Community Currencies –

Community inclusion currencies (CICs) are local money used to pay for goods and services. CICs are not meant to replace national currency; they are complementary currencies designed to support local commerce. CICs provide a medium for daily spending and trade while allowing individuals to save national currency (which can be volatile or scarce) for interactions with larger businesses and government institutions outside of the immediate community.

CICs support and empower communities to create jobs, develop social programs, and support trade by creating a decentralized, local banking infrastructure. In addition to local communities, initiatives led by Grassroots Economics and the Red Cross are bringing CCs to refugee camps and other disaster-prone communities.

Blockchain technology supports CICs by providing a transparent web-based platform for local currency exchange. Local currencies can be traded with one another based on bonding curves - all users need is a mobile phone and a custom wallet application. The speed, stability (known, low transaction fees can be subsidized), and reliability of the EtherLite Chain provide the infrastructure needed for local digital currencies to thrive.

CICs can also be used for targeted aid when markets or supply chains deteriorate in the midst of a crisis. Specific health or food related business may be targeted using blockchain transaction data in order to provide rapid aid to those who need it most.

4. Prediction Market –

Due to lower cost and fast finality, daily transactions conducted on EtherLite chain keep gas fees low, and data is synced with the Ethereum mainnet on a regular basis.

5. Blockchain Games –

Crypto currency isn't the only the use case of blockchain technology. Experts say gaming will be the first real use case for blockchain, revamping the industry and making games more immersive than ever. How gaming navigates the remaining hurdles will become a case study for other industries considering mass blockchain adoption.

6. NFT Mint and Transfer –

NFT art Market 'SuperRare' raised $9 million funding in March 2021. This is going to be the future. 'Everything Digital'.

Non-fungible tokens (NFTs) are unique, non-interchangeable assets minted on-chain. NFTs are creating interesting use cases in the realms of digital art, collectibles, ticketing, gaming, digital ownership and much more. The digital art industry alone stands to reach $315M in 2020.

Each NFT has its own unique attributes which are trackable and immutable. NFT artists can sell their pieces directly to collectors, and the authenticity and number of pieces minted can be verified by anyone at anytime. Settings can also allow for royalty collection in future resale events.

NFT game avatars, user parameters, and in-game items can move seamlessly between games. Proof-of-ownership is easy to verify, and this is valuable for

ownership records, domain names and other assets. Just as with other fungible assets (cryptocurrency), token owners can completely control and manage their own assets without relying on a 3rd party.

High gas prices on Ethereum can make it cost prohibitive to mint and trade NFTs on the mainnet. According to developer Austin Griffith "Based on the current gas prices (08/28/2020), it costs between $15.00 and $50.00 to mint a single piece of NFT artwork on Ethereum and $3.00 or more to send it to another account."

EtherLite solves this issue with minting, trading and storing NFTs. Once value is established and/or access on Ethereum is required, unique assets, along with all associated metadata, can be transferred to Ethereum with the TokenBridge. This system provides a fast and inexpensive way to create and manage NFTs across the blockchain ecosystem.

7. Digital Voting –

Blockchain technology promises to empower individuals through secure, transparent and non-censorable systems. An application of this technology is governance and on-chain voting, which provide an opportunity for free and open democracy.

When each vote can be verified and is tamper-proof, users know that their vote is submitted and counts towards the outcome. This is vital for participation, and is true for small communities, petitions, and local governance (and DAOs!), as well much larger communities (such as national elections).

To be effective, voting much be easy with few constraints, allow for anonymity, be scalable for users, very inexpensive (so no-one is excluded), and ideally able to run from a smartphone. Votes must be trackable in real-time and not censorable by any entity.

With fast and inexpensive processing, the EtherLite is well suited to accommodate fair and transparent voting processes for many different situations. The need for this technology is apparent now more than ever, and we are excited to see new innovations on EtherLite related to digital and blockchain voting.

8. DAO Governance –

On-chain voting and management for Decentralized Autonomous Organizations. The EtherLite, with POSDAO consensus, is a type of DAO. The validators are a distributed group of autonomous individuals who provide STAKE and receive benefits based on participation.

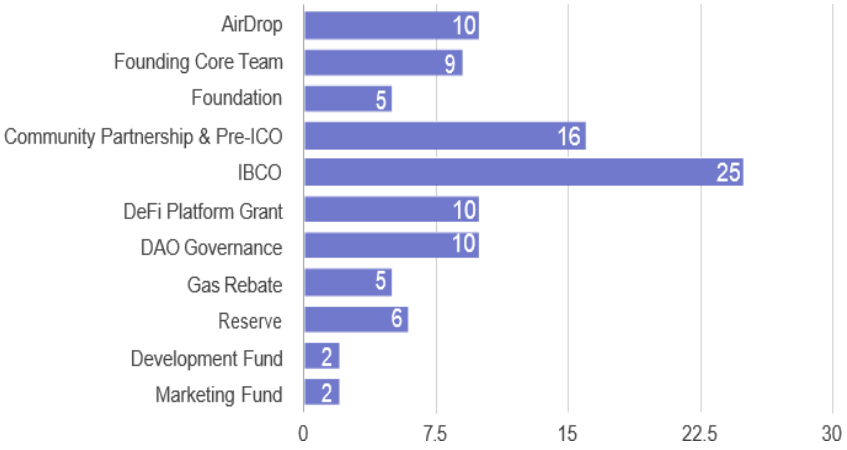
DeFi projects can use the EtherLite to run DAO governance mechanisms like proposal and voting systems, community fund collection and more.

11. Coin Allocation

- IBCO - Initial Bonding Curve Offering
- Platform Grant - Those Who Want Shift on EtherLite Network
- DAO - Governance (Vote) System to Run the EtherLite
- G AS Rebate - Claim Ethereum Gas Fees in EtherLite Network
- Initial Supply: 21,000,000,000

Community Base

WAY'S	AMOUNT IN %
AirDrop	10
Founding Core Team	9
Foundation	5
Community Partnership & Pre-ICO	16
IBCO	25
DeFi Platform Grant	10
DAO Governance	10
Gas Rebate	5
Reserve	6
Development Fund	2
Marketing Fund	2

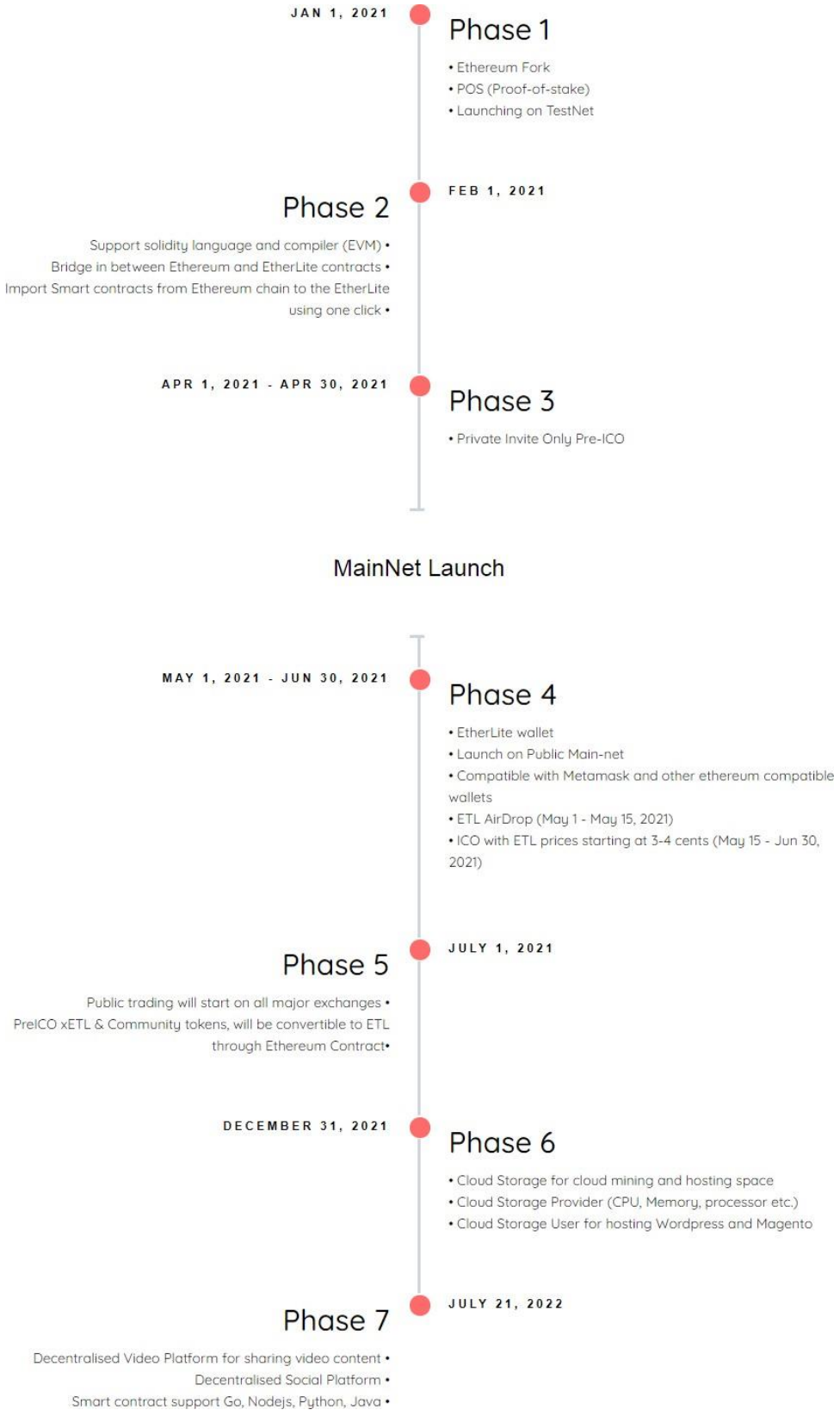


12. Team

The EtherLite Foundation is dedicated to building the infrastructure for a more democratic and efficient future. Our team is made up of engineers, scientists, researchers, designers, and entrepreneurs who share the same vision. Together, we're working to improve everyone's lives by making advanced technologies more accessible and seamlessly integrated. True to the maxim of decentralization, our team is distributed across the world. Join our community to make this vision a reality.

To know more about EtherLite team click here

13. Roadmap –


JAN 1, 2021
Phase 1
• Ethereum Fork
• POS (Proof-of-stake)
• Launching on TestNet
FEB 1, 2021
Phase 2
Support solidity language and compiler (EVM) •
Bridge in between Ethereum and EtherLite contracts •
Import Smart contracts from Ethereum chain to the EtherLite using one click •
APR 1, 2021 - APR 30, 2021
Phase 3
• Private Invite Only Pre-ICO
MainNet Launch
MAY 1, 2021 - JUN 30, 2021
Phase 4
• EtherLite wallet
• Launch on Public Main-net
• Compatible with Metamask and other ethereum compatible wallets
• ETL AirDrop (May 1 - May 15, 2021)
• ICO with ETL prices starting at 3-4 cents (May 15 - Jun 30, 2021)
JULY 1, 2021
Phase 5
Public trading will start on all major exchanges •
PreICO xETL & Community tokens, will be convertible to ETL through Ethereum Contract•
DECEMBER 31, 2021
Phase 6
• Cloud Storage for cloud mining and hosting space
• Cloud Storage Provider (CPU, Memory, processor etc.)
• Cloud Storage User for hosting Wordpress and Magento
JULY 21, 2022
Phase 7
Decentralised Video Platform for sharing video content •
Decentralised Social Platform •
Smart contract support Go, Nodejs, Python, Java •

14. References –

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6. https://www.xdaichain.com/about-xdai/use-cases
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10. https://openethereum.github.io/Network-Configuration