TEA PROJECT

TRUSTED EXECUTION & ATTESTATION

Elevating Decentralized Trusted Computing to a **T**

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TEA is like Rails for Web3

Internet Development

Prior to Rails, there was no framework to easily build web applications

Web3 Development

The TEA framework, which includes hosting from decentralized nodes, makes building & deploying Web3 dApps straight forward

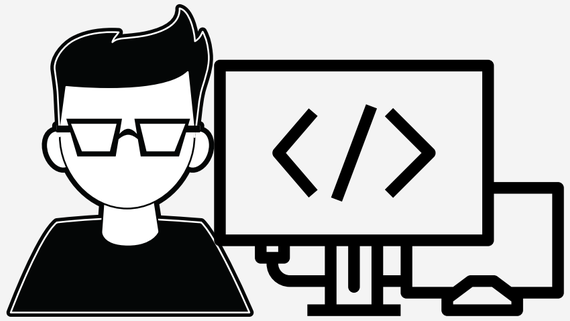
The lack of framework prior to Rails created a bottleneck that limited internet apps.

Similarly, TEA solves the bottleneck for Web3. Lack of framework is why there's a lack of Web3 apps.

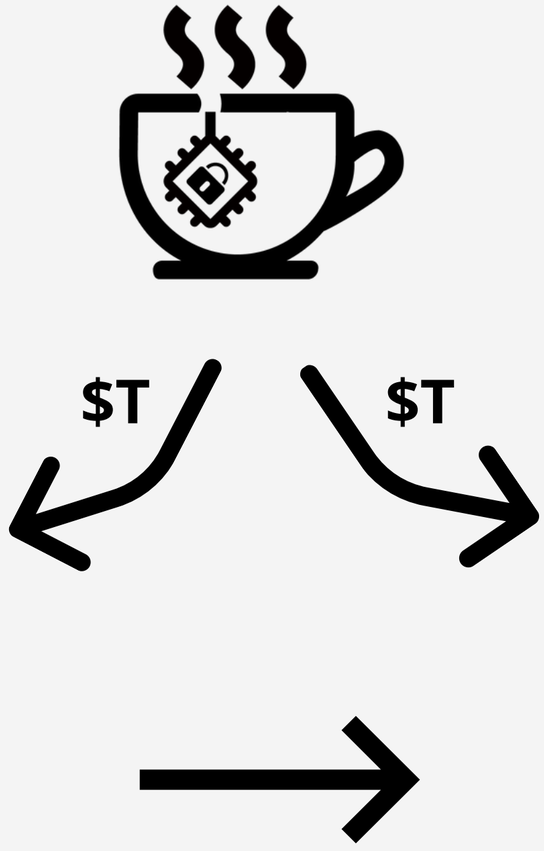
TEA platform handles billing and token incentives for both developers and miners

TEA for Developers

Devs can use TEA's development framework to deploy Web3 dApps

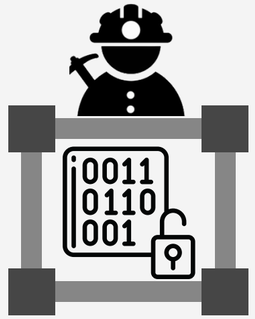


Devs upload code that runs in miners' machines



TEA for Miners

Miner's provide the trusted hardware that runs the TEA distributed computing platform



Code & data are secured inside TPM-protected enclaves

Problems with existing blockchains and cloud computing

Traditional blockchains are slow...

Existing blockchains are decentralized but slow, which prevents applications from running at the speed of traditional cloud computing apps.

... and lack a framework for building fully decentralized apps

Blockchains lack a framework for deploying fully decentralized dApps, often still requiring centralized hosting. They share the fundamental weakness that cloud computing apps have: centralization.

Cloud Computing? Still centralized and untrustable.

The cloud computing business model relies on monetizing user data; even though basic data security is in question, private data is held by tech giants who also have the ability to censor web users.

The TEA Project Combines the Best of Blockchain & Cloud Computing

Traditional Blockchain

- Decentralized but slow
- Consensus required because of Byzantine fault tolerance (BFT)

Cloud Computing

- Centralized.
- Can run rich apps/possibly censored
- Potential privacy breaches

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+ Rich Application

+ Decentralization

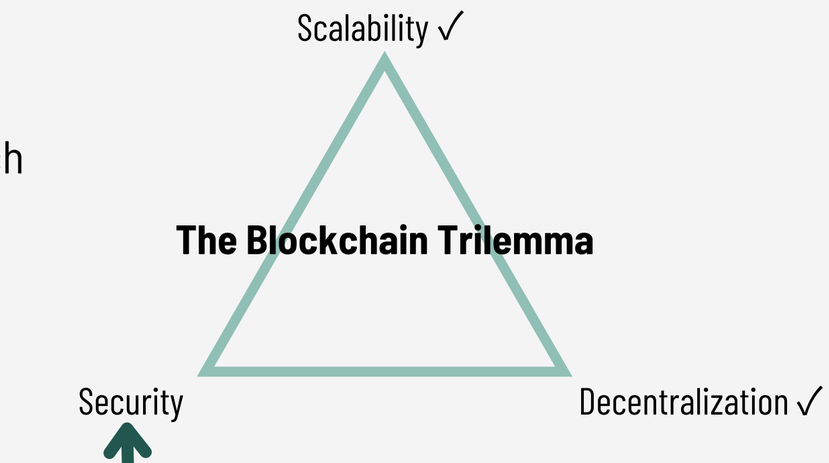
- Decentralized
- **Rich UX dApps run on layer-2 non-BFT consensus; layer-1 blockchain handles BFT**
- Runs rich apps at full speed + no censorship
- Privacy protected by TPM chip

The TEA Project's Two Layer Setup

Layer 2

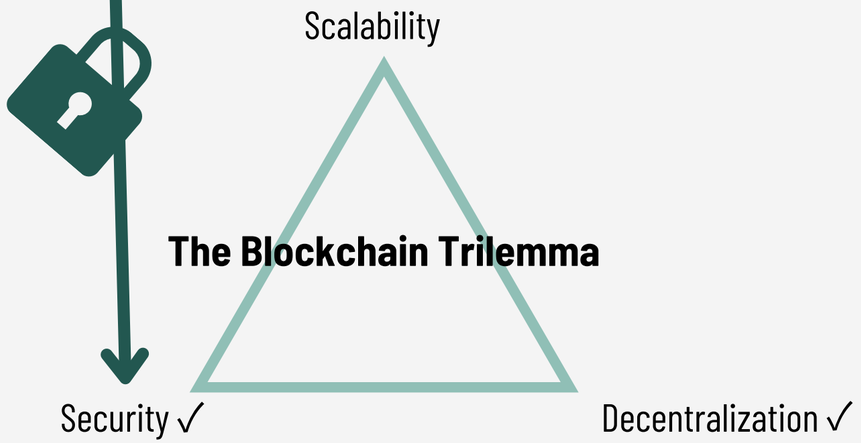
- Layer2 nodes (CML* nodes) only trust other CML with certificates issued by layer1. This allows them to ignore Byzantine faults and reach cloud computing performance and scale.
- Programming logic and data are secured inside hardware protected enclaves.

***CML is an NFT in the TEA network. A TEA mining node can only be activated by associating a CML with it.**



Layer 1

- Layer1 nodes don't run application logic. They deal with Byzantine fault and issue certificates to layer 2 CMLs that pass validation through remote attestation.
- Consensus on the verification result from Layer 2.
- Manages TEA token economy.
- Verifies blocks using Polkadot PoA for consensus.



The Benefits of the TEA Project's Two Layer Setup

Layer-2 dApps run full speed

The best consensus is no consensus. There's no consensus on layer-2 so that dApps can execute at full cloud speeds on this layer.

There's no "roll-up" function

Both chains together enable cloud speeds with trustable decentralization. But they're separate, and our layer-2 doesn't roll-up txs to be confirmed by the layer-1.

TEA's Layer-1 can migrate to a parachain

Polkadot.

TEA Project's layer-1 is built on substrate and can migrate to a parachain slot. Other DOT parachains can offload computing tasks to us at reduced cost with increased efficiency.

TEA Project's 2 layers: a Blockchain and a Computing Layer

TEA's Layer-1 -> Blockchain Layer

- The layer-1 has a small but important role: keep the trust certificates of layer-2 nodes
- The layer-1 knows nothing about the computation result of layer-2 nodes - it only certifies the trustability of layer-2 nodes

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TEA Project's 2 layers: a Blockchain and a Computing Layer

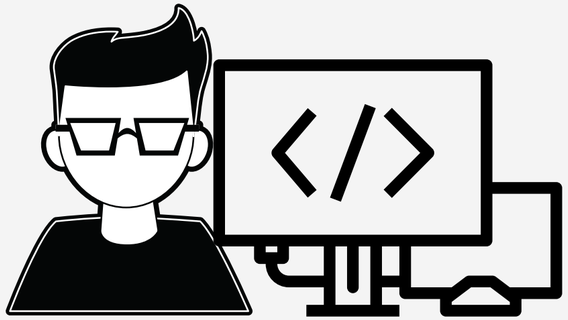
TEA's Layer-2 -> Computing Layer

- Applications run on TEA's layer-2 nodes. They're actual full-stack rich applications, not just smart contracts
- The layer-2 nodes maintain the distributed state.
- Rich apps run decentralized and at full speed as the layer-2 isn't hampered by consensus

Because TEA's layer-2 isn't a blockchain, it runs as fast as the cloud

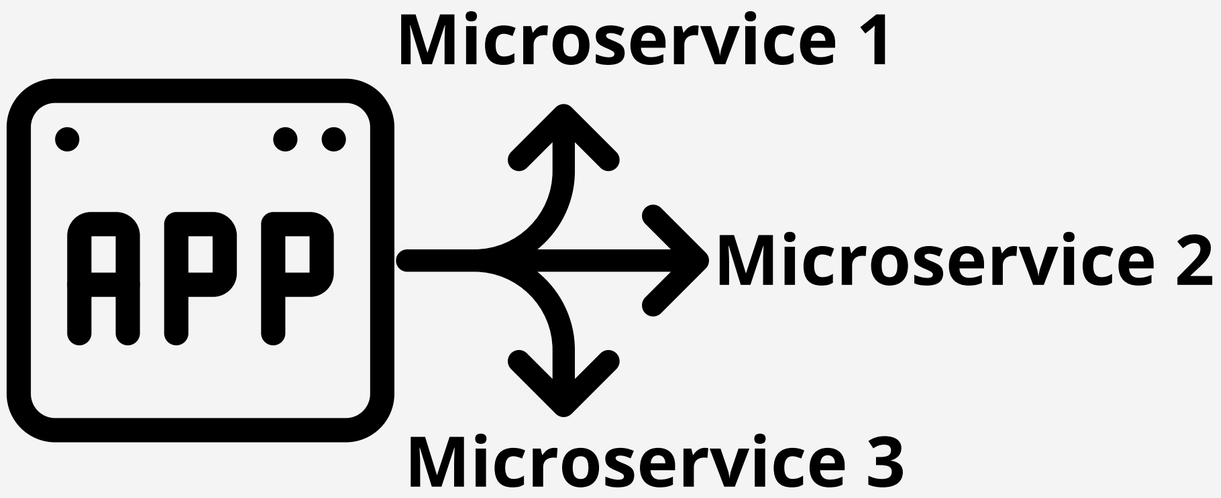
- No blocks
- No traditional consensus
- No TPS limits
- Trust comes from hardware and physical time

How Developers Use the TEA Project



Publish Their Code as a Microservice

- Other apps in the TEA ecosystem can use these microservices.
- All microservice code is loaded into the enclave when called.
- Apps call these microservices locally inside the enclave as needed without having to include the source code as a library within their application.



Apps Can Be Built From Microservices

- TEA Project apps (TApps) are composed of many reusable WebAssembly modules (actors) from multiple developers.
- The platform bills by usage, so code providers can simply deploy a profitable microservice instead of a full-featured application to get paid.

TEA Project Makes Trustable Decentralized Edge Computing Possible

Accessibility

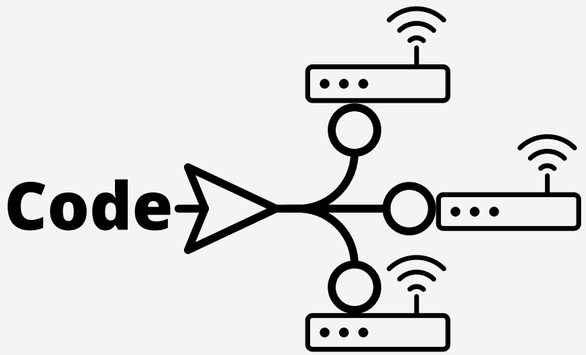
TEA Project turns homes into secure Web3 gateways

- A "mining machine" can be embedded in household routers and provide a secure entry point for accessing all Web3 resources.
- Code is run on this hardware inside the home, different than the current model of users sending private data outside of their control to centralized hosting.

Innovation

If we can integrate TEA modules in decentralized edge nodes, then we open up a new distributed computing infrastructure

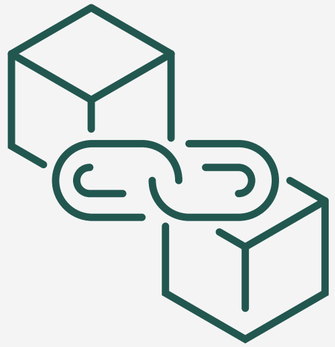
- Data can remain on these distributed devices and the code is sent to the data.
- The data and code meet together and are computed not at the data center but where the data is stored.



Security: The TEA Project's Root of Trust (RoT)

In traditional blockchain...

- There is two RoT (Root of Trust), consensus and cryptography.
- dApps run on the blockchain directly (layer-1)
  - Not possible to get scalability while maintaining decentralization and security.



The TEA Project

- Three RoT:hardware, blockchain, and time.
- dApps run inside hardware protected enclaves on layer-2. No humans (including the app developer and the miners) can have any control of the apps nor can they extract any data from the running enclaves.
- Applications run on layer2 (CML nodes) without any knowledge about blockchain and consensus, as if it were running on cloud computing. These apps run decentralized by virtue of TEA Project's 2-layer blockchain design.

Hardware Support

The roadmap for supporting various Root of Trust (RoT) verification chains depends on the underlying hardware

Architecture	TEA Support	Technology + RoT Verification	Cloud IaaS for Rent?
Amazon Nitro	Completed	• Similar to TPM • Centralized cloud	✓
Raspberry Pi w. GPS & TPM	On roadmap	• TPM-Based • Decentralized	✗
3rd-Party Hardware Provider	On roadmap	• Partnership w. mining hardware manufacturers • Allows dual-mining related projects (HNT & FIL)	✗

TEA Project Versus Competitors

	How Devs Onboard	Layer-1	Miners	Decentralization
TEA Project	Easy onboarding using same 3-tier architecture	Runs as middleware layer to other chains (e.g. parachain)	Requirements (TPM / GPS) within reach of ordinary consumers	Openness to programming languages / diversity of miners
Competitor #1	New language + persistent memory (instead of databases)	Everything happens on its layer-1	Needs special hardware / RAM (2TB / 4TB)	Centralized through • miner infrastructure • Programming language
Competitor #2	Easy Docker deployment	Some partnerships (Polygon / Solana)	Unused datacenter capacity / consumers can deploy as Kubernetes clusters	Privacy of app data is up to the datacenter providers. Can't enforce that datacenter won't steal app data.

Two Tokens of the TEA Project

TEA

- Utility token used as gas.
- TEA is used by consumers to interact with TApps.
- 100 million pre-mined + block rewards for miners.
- Burnt by DAO when CML seeds are bought at auction.

NFT: Camellia (CML)

- A TEA mining node can only be activated by associating a Camellia NFT with it. CML functions as a mining license and credit record.
- Miners buy new Camellia seeds through open bidding and burning TEA.
- Camellia seeds are unique NFTs. They each have varying defrost times, life spans, and productivity determined via an algorithm.

How tokens are used

Miners

At the very beginning, miners buy CML to start mining to earn TEA.

Presale Investors

Presale investors can use TEA to stake to miners and earn TEA revenue from their mining.

dApps

When dApps are deployed, clients buy TEA to purchase computing services (dApps). Miners earn the TEA from the clients and share the revenue with their stakeholders.

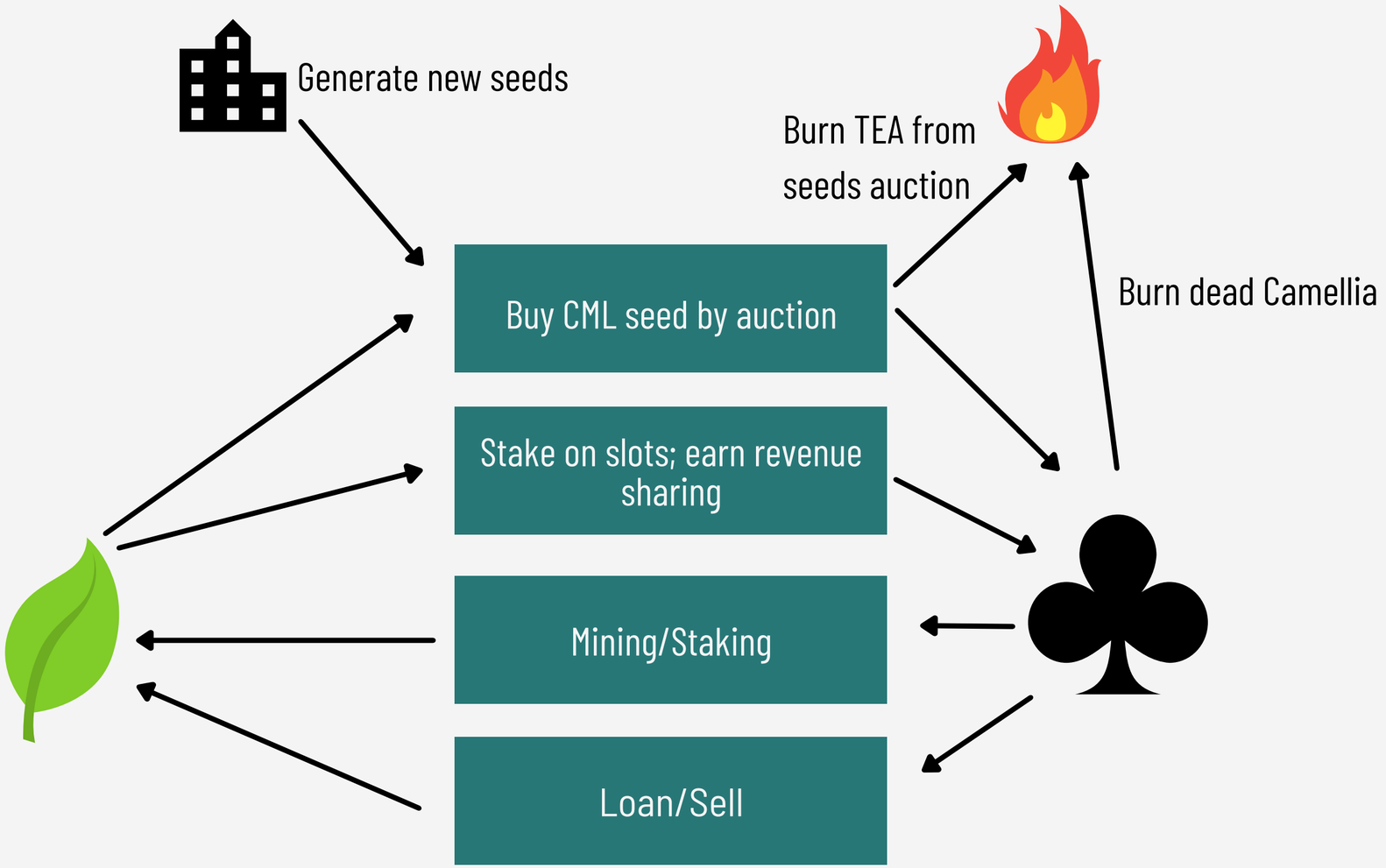
DAO Burns TEA

New miners joining the TEA network & bid for new CML seeds necessary for mining. The DAO burns the received TEA payment from the winning bidder.

DAO Ensures CML Scarcity

The DAO generates seeds based on auction prices and maintains a reasonable scarcity of CML.
Each CML seed has a limited lifetime which adds to its scarcity.

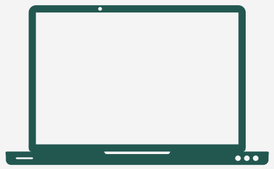
CML Life Cycle



The 3-Phase Rollout

Phase 1:
Miners

- The TEA Project aims to build a healthy ecosystem by starting with the miners.
- Miners plant CML into their mining machines and harvest TEA tokens from hardware mining.
- Mining machines host Web3 applications and are rewarded in TEA tokens based on the app's consumed computing resources.
- Miners can burn TEA to buy more CML.



Phase 2:
Developers

- Focus shifts to onboarding developers, including tech education & outreach on how to build on the TEA ecosystem.
- Hackathons / grant program released and SDK available.
- Build apps using the TEA dev framework (similar 3-tier architecture to existing cloud applications, but without a host).
- Devs apps listed in TApp store and hosted by miners.
- App revenue goes directly to a bonding curve shared by app developers, hosting miners, and investors.

Phase 3:
Consumers

- Consumer outreach phase: now that rich TApps are available in the TApp store, the TApps are marketed to consumers.
- Positive feedback loop: more consumers enter ecosystem -> devs can see what apps consumers want -> devs focus on making TApps that meet consumer demand -> popular TApps financially reward both miners and developers.

Milestones

2019

- TEA Project starts in 2019
- Self funded until 2021

2020

- First milestone in Nov 2020: Released the AI image recognition demo running on simulator

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2021 Q2

- Second milestone ongoing in 2021
- Gluon wallet
- Web3 Foundation Open Grant
- Migrating TEA runtime to Amazon Nitro
- Seed round secured including investment from Hashkey

2021 Q3

- Preview 1 version launch
- Begin Go2Market strategy starting with miners' economy
- Testnet starts

2021 Q4

- Public mining in preview mode
- Rich dApps running on network

2022 Q1

- Testnet mining up to epoch 9
- TEA Party dApp released

2022 Q2

- Majority of business logic migrated from layer-1 to layer-2
- TEA framework dev guide released

2022 Q3

- Layer-1 Cumulus code integration in preparation for parachain auction
- Mainnet starts

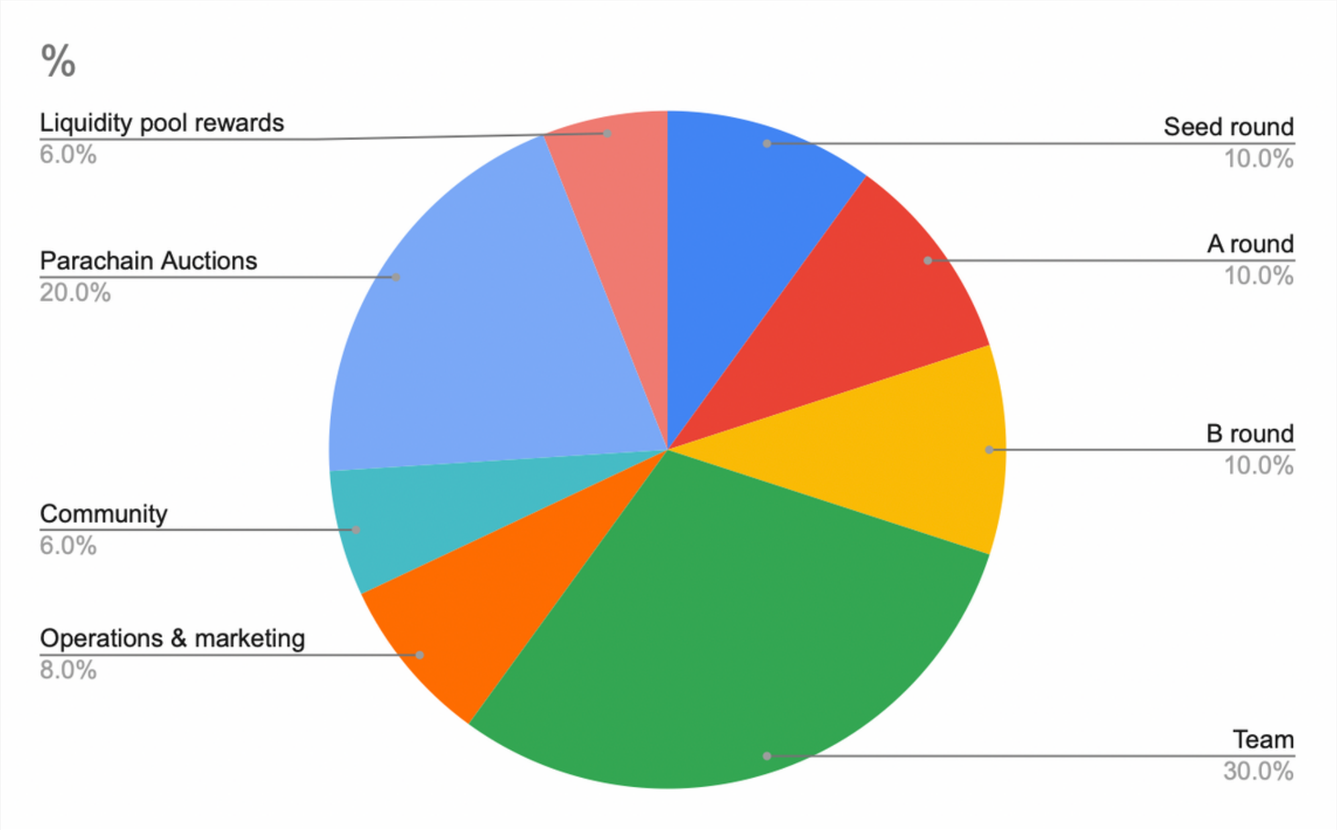
FUNDING ROUNDS

Seed round: $1 million investment with $10 million valuation

Current round goal: $5 million investment with $50 million valuation

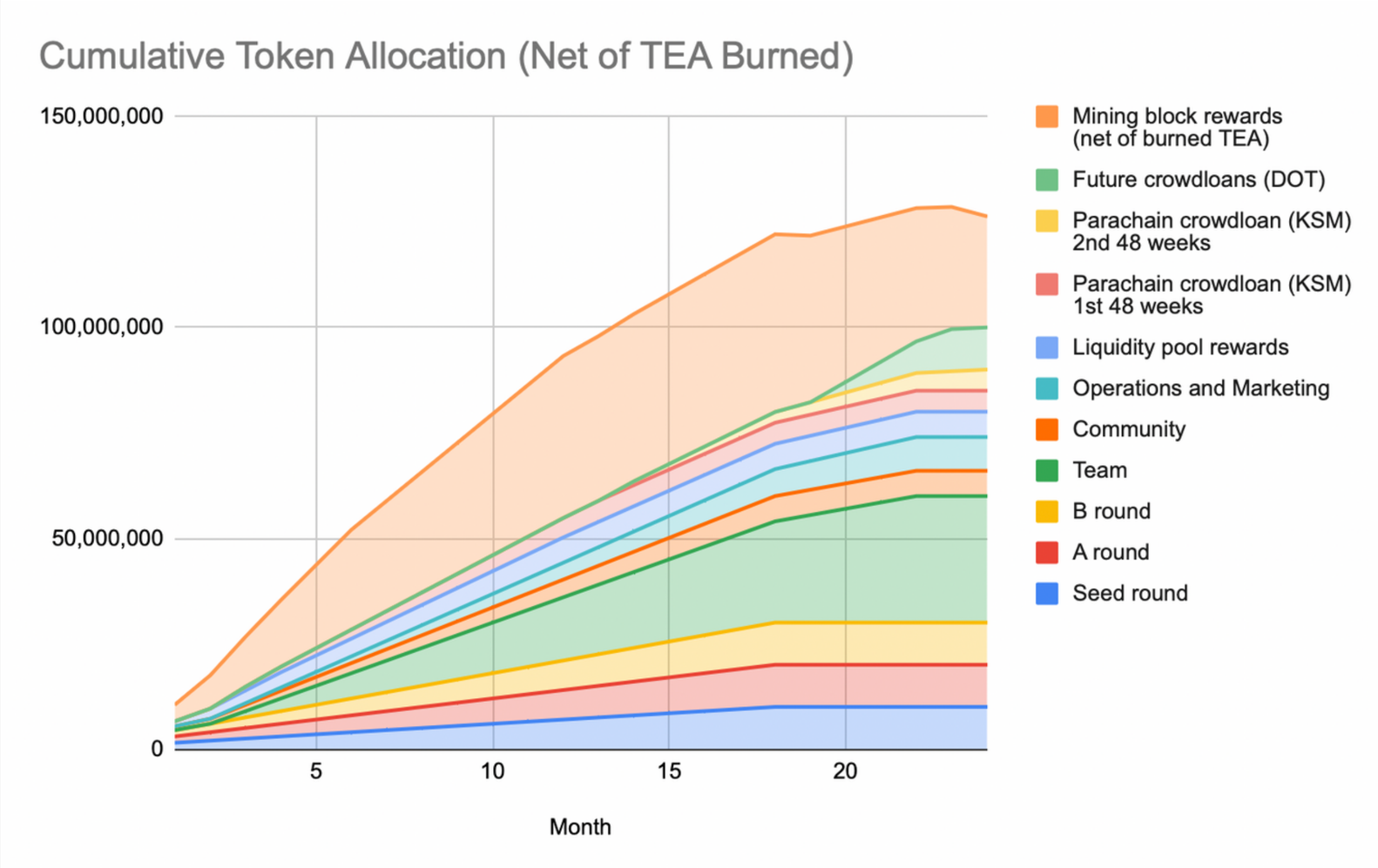
TEA TOKEN ALLOCATION

Allocations	%	Total TEA
Seed round	10%	10M
A round	10%	10M
B round	10%	10M
Team	30%	30M
Operations & marketing	8%	8M
Community	6%	6M
Parachain Auctions	20%	20M
Liquidity pool rewards	6%	6M
Total	100%	100 Million
Vesting schedules	**Immediate unlock**	**Vesting**
Seed, A, B rounds	10%	5% per month for 18 months
Team & Community	0%	2 month lockup 5% per month for 20 months
Parachain auctions	10%	linear vesting for length of slot lease



TEA TOTAL SUPPLY AFTER 2 YEARS (NET OF BURNED TEA)

	TEA (2 Years)
Total allocated TEA supply	100,000,000
Public service (mining rewards) TEA	60,538,164
Total unlocked TEA supply	160,538,164
Total CML sold after 2 years (forecast)	6,200
Average CML price (forecast)	5,500
TEA burnt for CML after 2 years (forecast)	34,200,000
Total unlocked supply after 2 years	126,338,164



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Run rich dApps on the blockchain at cloud speeds by leveraging silicon security and time.