

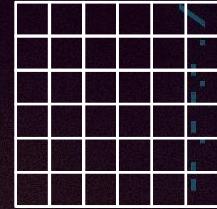


# Realizing The Rollup Centric Roadmap with Rollup-Boost

Daniel Marzec

dmarz

Credible Auctioneer, Flashbots ⚡️🤖  
<https://x.com/DistributedMarz>



01

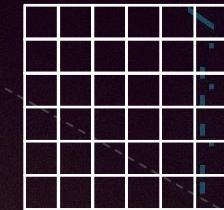
Rollup-centric  
Roadmap  
Reflection

02

Layer 2  
Technology  
Tree

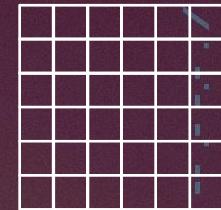
03

Rollup-Boost



Section 1

# Rollup-centric Roadmap Reflection



# We're 4 Years into the Rollup Centric Roadmap

## A rollup-centric ethereum roadmap

ethereum-roadmap, layer-2



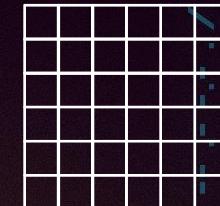
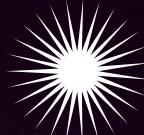
vbuterin

4

Oct 2020

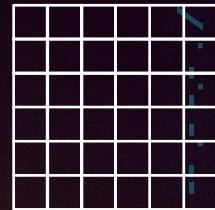
### What would a rollup-centric ethereum roadmap look like?

Last week the Optimism team announced [787](#) the launch of the first stage of their testnet, and the roadmap to mainnet. They are not the only ones; Fuel [492](#) is moving toward a testnet and



# 4 Years Later, How Are We Doing?

- Increase TPS of “Ethereum”
- Reduce Transaction Costs
- Outsource Innovation to Layer 2 Ecosystem



## Daily average transactions per second

2024 Oct 11 – Nov 09

**337.58 TPS**

Scaling factor: 26.05x ⓘ

490.00 TPS

245.00 TPS

0.00 TPS

15 Oct

22 Oct

29 Oct

LOG LIN

ETH Mainnet Transactions

2024 October 29

Average TPS

● Projects	<b>465.51</b>
■ Ethereum	<b>13.57</b>

Transaction count

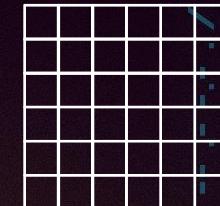
● Projects	<b>40.22M</b>
■ Ethereum	<b>1.17M</b>



05 Nov

30D 90D 180D 1Y MAX

# We've Scaled Ethereum 26x



## Rollups

## Blobs

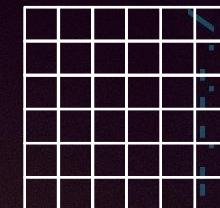
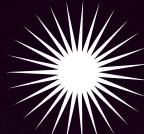
## Totals=

**TPS**222.20  
(13.55x)**Mgas/s**69.54  
(55.63x)**KB/s**148.91  
(24.17x)

## Filters

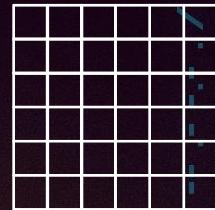
Expand

<b>Network</b>	<b>Block</b>	<b>TPS</b>	<b>Mgas/s</b>	<b>KB/s</b>	<b>Stack</b>	<b>DA</b>	<b>Settlement</b>
*G2 ProofOfPlay - Apex	64551950	19.1	18.61	14.83	arb-nitro	anytrust	arbitrum
Base	22233315	82.9	14.92	51.36	op-stack	blobs	ethereum
*G2 ProofOfPlay - Boss	22873970	14.3	12.19	9.93	arb-nitro	anytrust	arbitrum
ArbitrumOne	273038419	25.9	4.68	12.40	arb-nitro	blobs	ethereum
OP Mainnet	127828600	10.1	3.99	6.32	op-stack	blobs	ethereum
WINR Chain	25227179	8.5	3.02	6.60	arb-nitro	anytrust	arbitrum
Redstone	9535444	1.6	2.38	2.10	op-stack	plasma	ethereum
Blast	11223082	4.1	2.28	2.93	op-stack	blobs	ethereum
Zora	22281070	2.1	1.37	1.54	op-stack	blobs	ethereum
Ethereum	21158456	16.4	1.25	6.16	ethereum	ethereum	ethereum

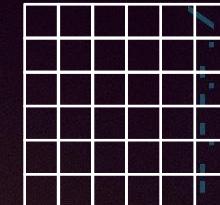
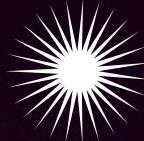
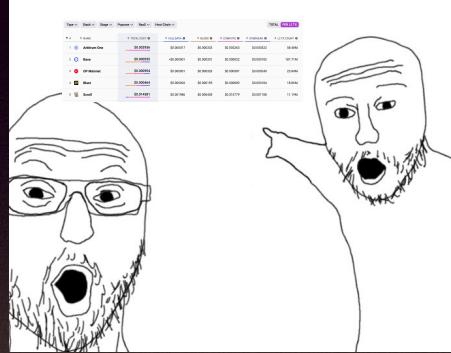
**GPS is through the roof**

## 4 Years Later, How Are We Doing?

- Increase TPS of “Ethereum”
- Reduce Transaction Costs
- Innovate on a more experimental layer

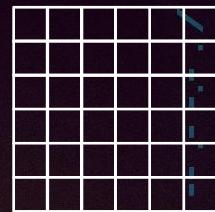
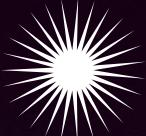


Type	Stack	Stage	Purpose	RaaS	Host Chain	TOTAL	PER L2 TX
#	Name	Total Cost	Calldata	Blobs	Compute	Overhead	L2 TX Count
1	 Arbitrum One	\$0.002936	\$0.000017	\$0.000333	\$0.002263	\$0.000322	58.48M
2	 Base	\$0.000535	<\$0.000001	\$0.000331	\$0.000022	\$0.000182	187.71M
3	 OP Mainnet	\$0.000954	\$0.000001	\$0.000326	\$0.000387	\$0.000240	23.84M
4	 Blast	\$0.000464	\$0.000002	\$0.000195	\$0.000083	\$0.000184	18.86M
5	 Scroll	\$0.014381	\$0.001986	\$0.000428	\$0.010779	\$0.001188	11.19M

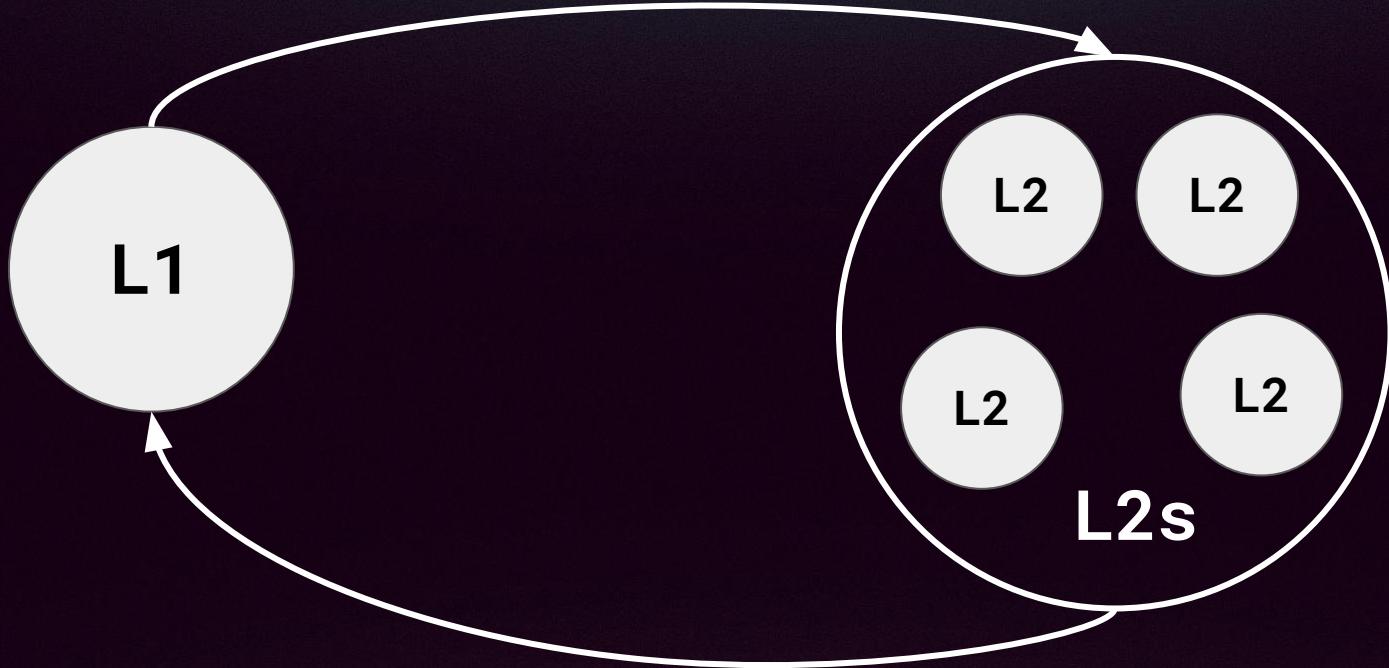


## 4 Years Later, How Are We Doing?

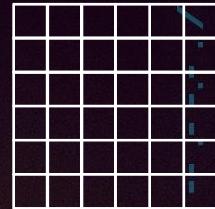
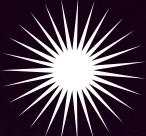
- Increase TPS of “Ethereum”
- Reduce Transaction Costs
- Outsource Innovation to Layer 2 Ecosystem



# Three Ways of Looking At Ethereum Innovation



1. Innovations from L1 ported to L2
2. Innovations from L2 ported to L1
3. Innovations from L2 ported to other L2



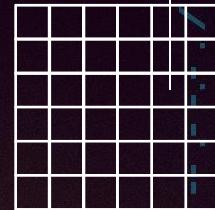
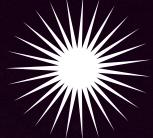
# Three Ways of Looking At Ethereum Innovation

Flow of Innovation

Amount of Innovation Transferred



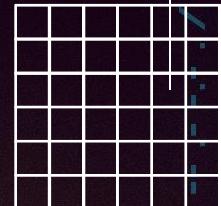
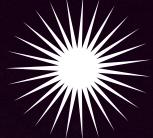
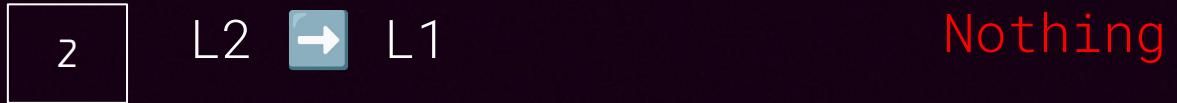
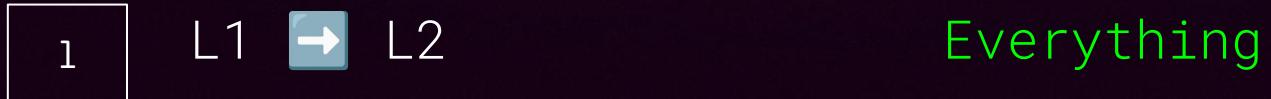
Everything



# Three Ways of Looking At Ethereum Innovation

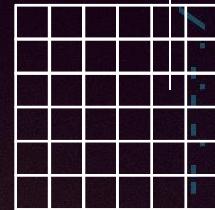
Flow of Innovation

Amount of Innovation Transferred



# Three Ways of Looking At Ethereum Innovation

	Flow of Innovation	Amount of Innovation Transferred
1	L1 → L2	Everything
2	L2 → L1	Nothing
3	L2 → L2	Almost Nothing

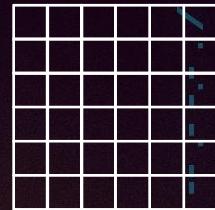


# Coordination failure has trapped us into walled gardens



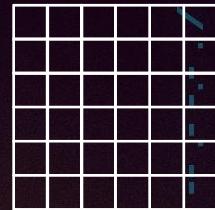
# Let's Debug: Why Is That?

- Peripheral Tooling Lock In (wallets, indexers, SDKs)



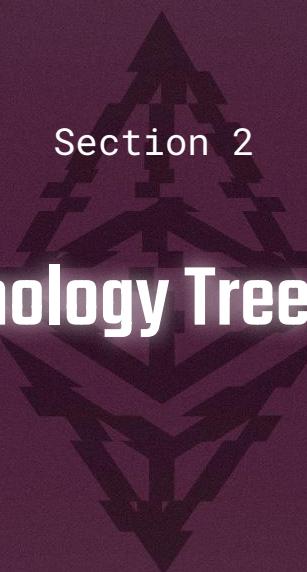
# Why Is That?

- Peripheral Tooling Lock In (wallets, indexers, SDKs)
- Tokens & Tribalism: An Innovation Death Loop



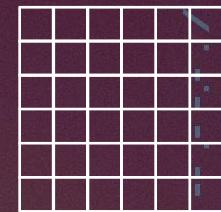
# Ethereum's Edge is Innovation

## Heroic Opportunities Abound: Help Fix The L2 Innovation Death Loop

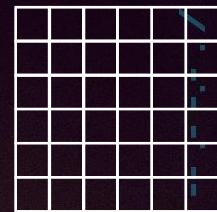


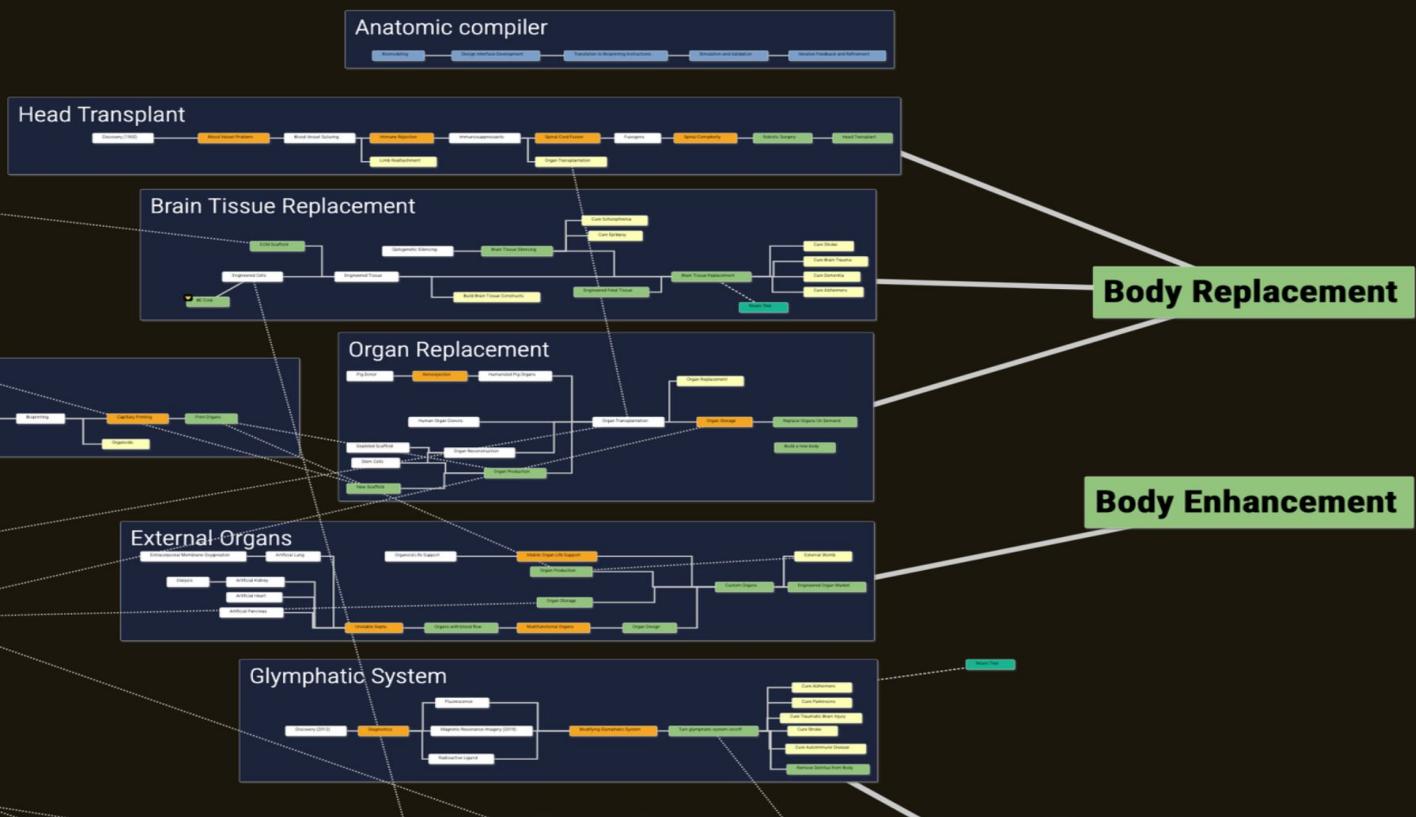
Section 2

# Layer 2 Technology Tree and Mapping



**What is a Technology Tree?**  
**Why do we want a Technology Tree?**



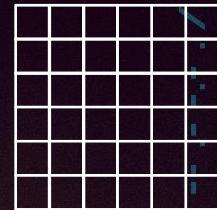


# What is a Technology Tree?

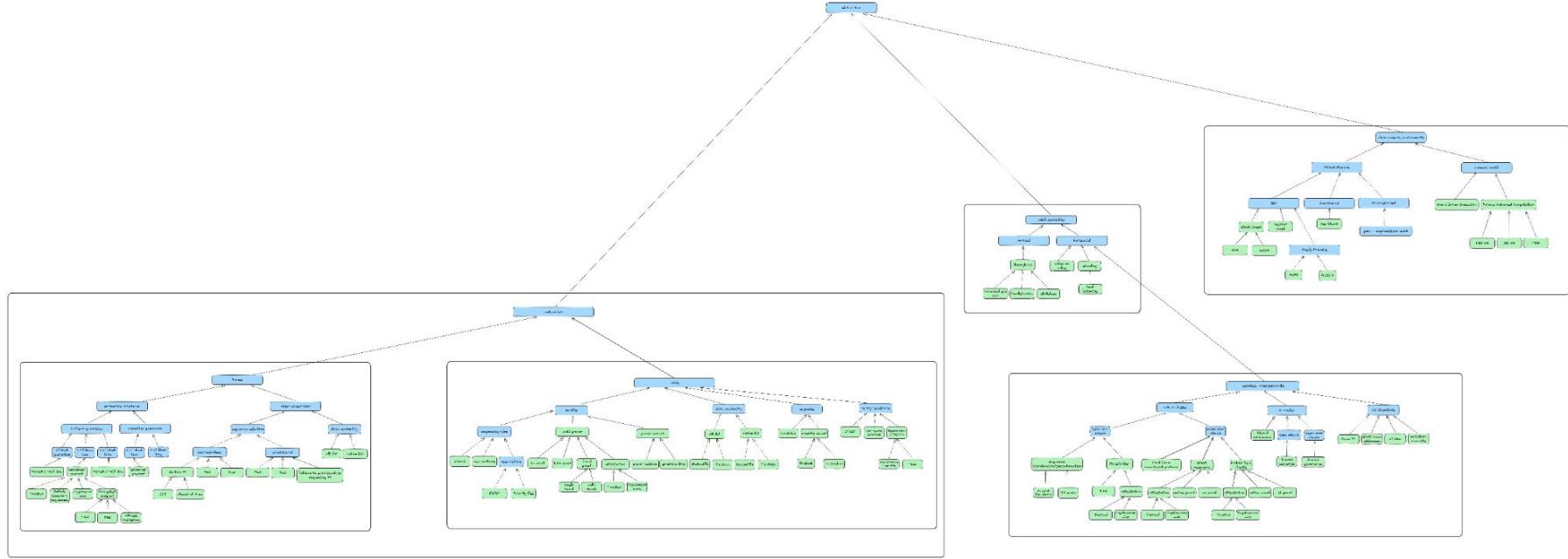
# Why do we want a Technology Tree?



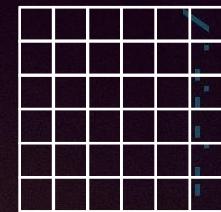
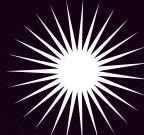
**We Needed a Layer 2 Tech Tree,  
So We Built a Layer 2 Tech Tree**



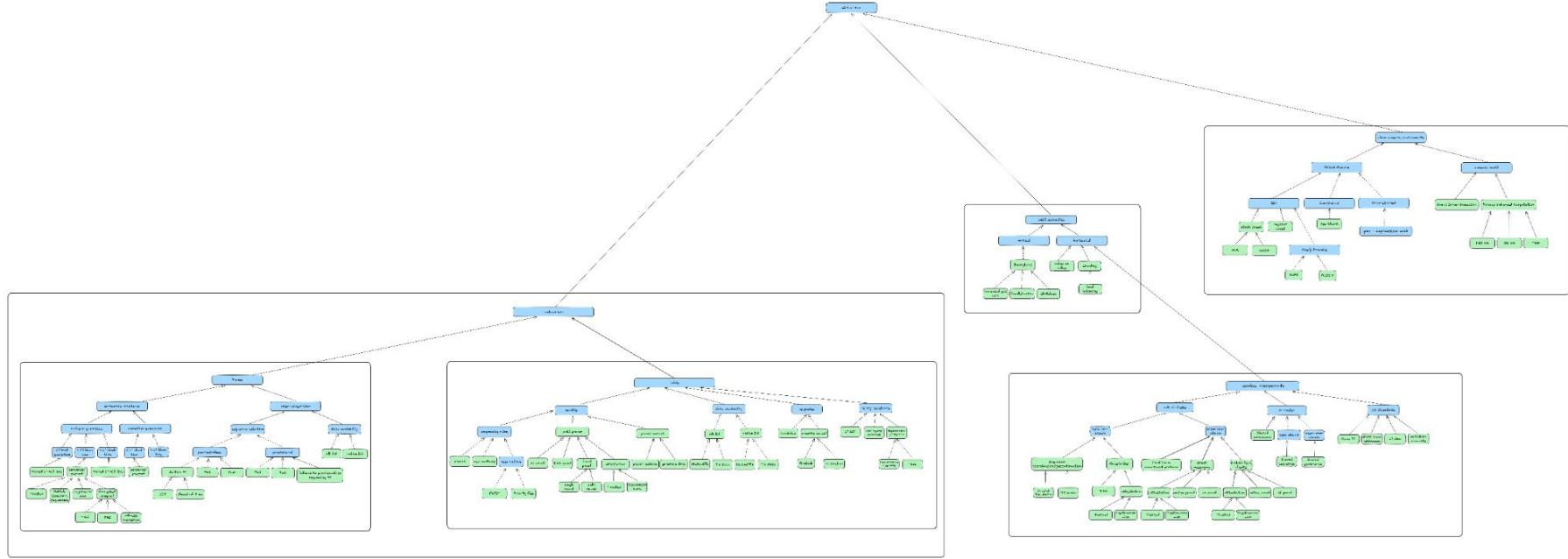
# Ethereum Layer 2 Tech Tree



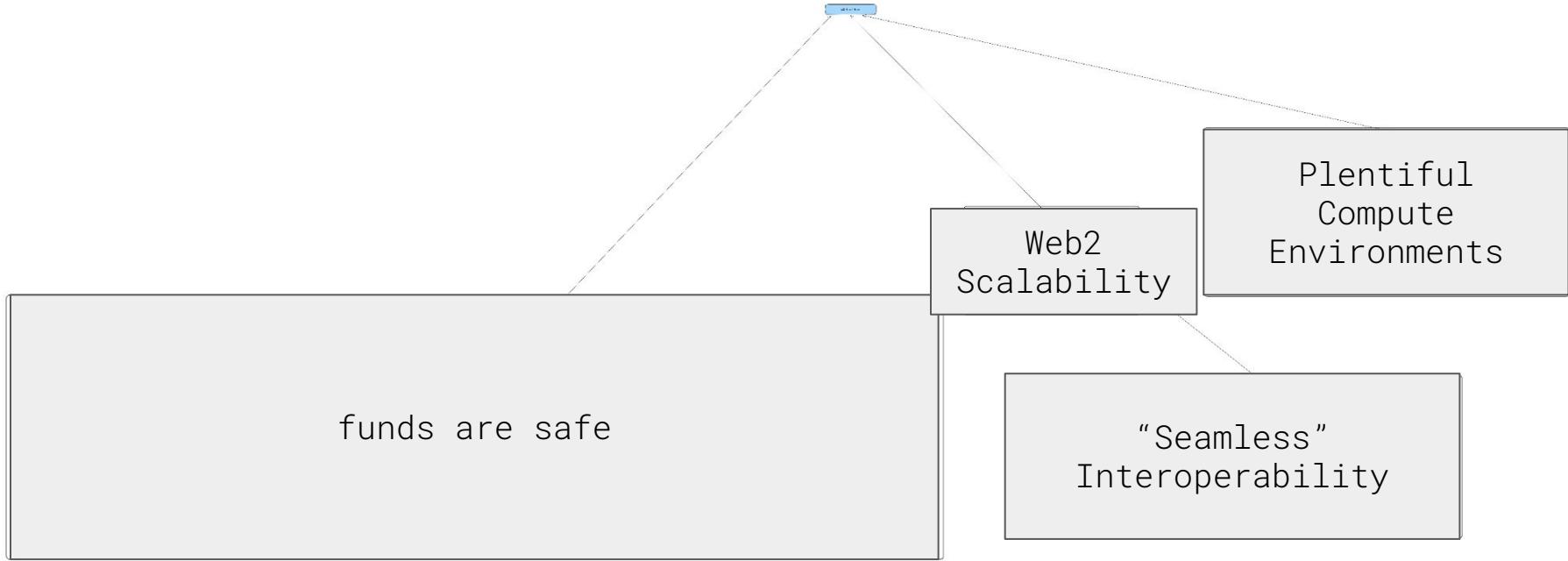
<https://tinyurl.com/l2-tech-tree>



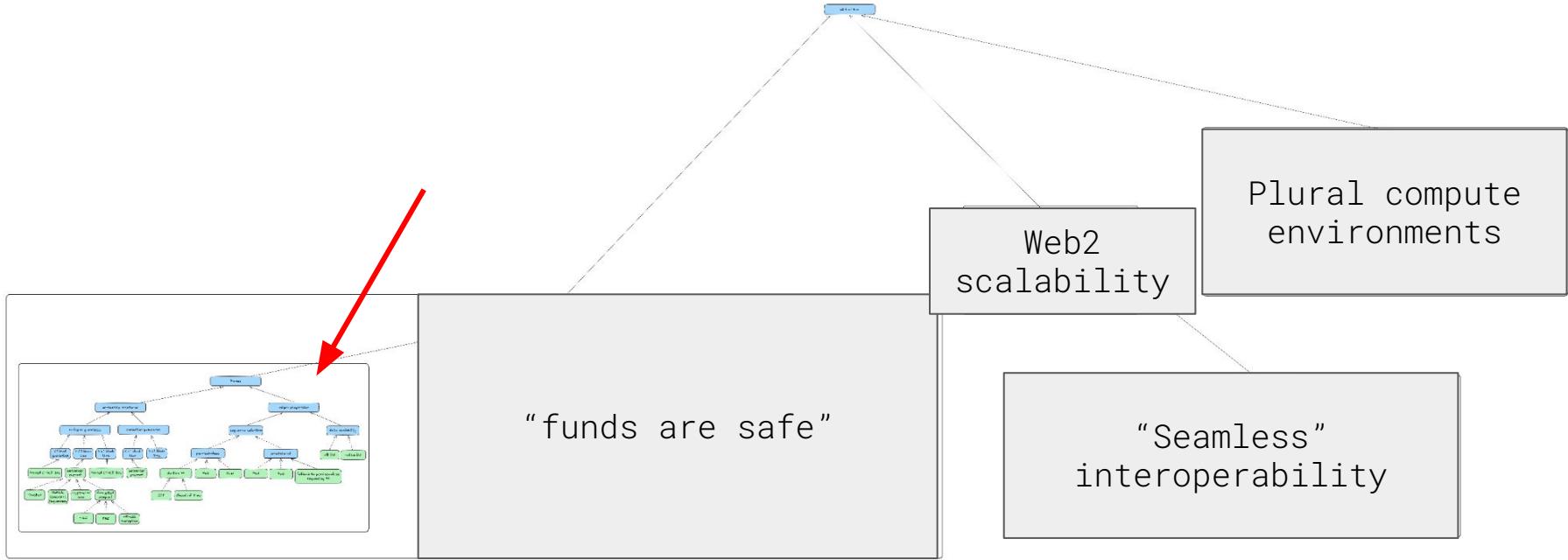
# Ethereum Layer 2 Tech Tree

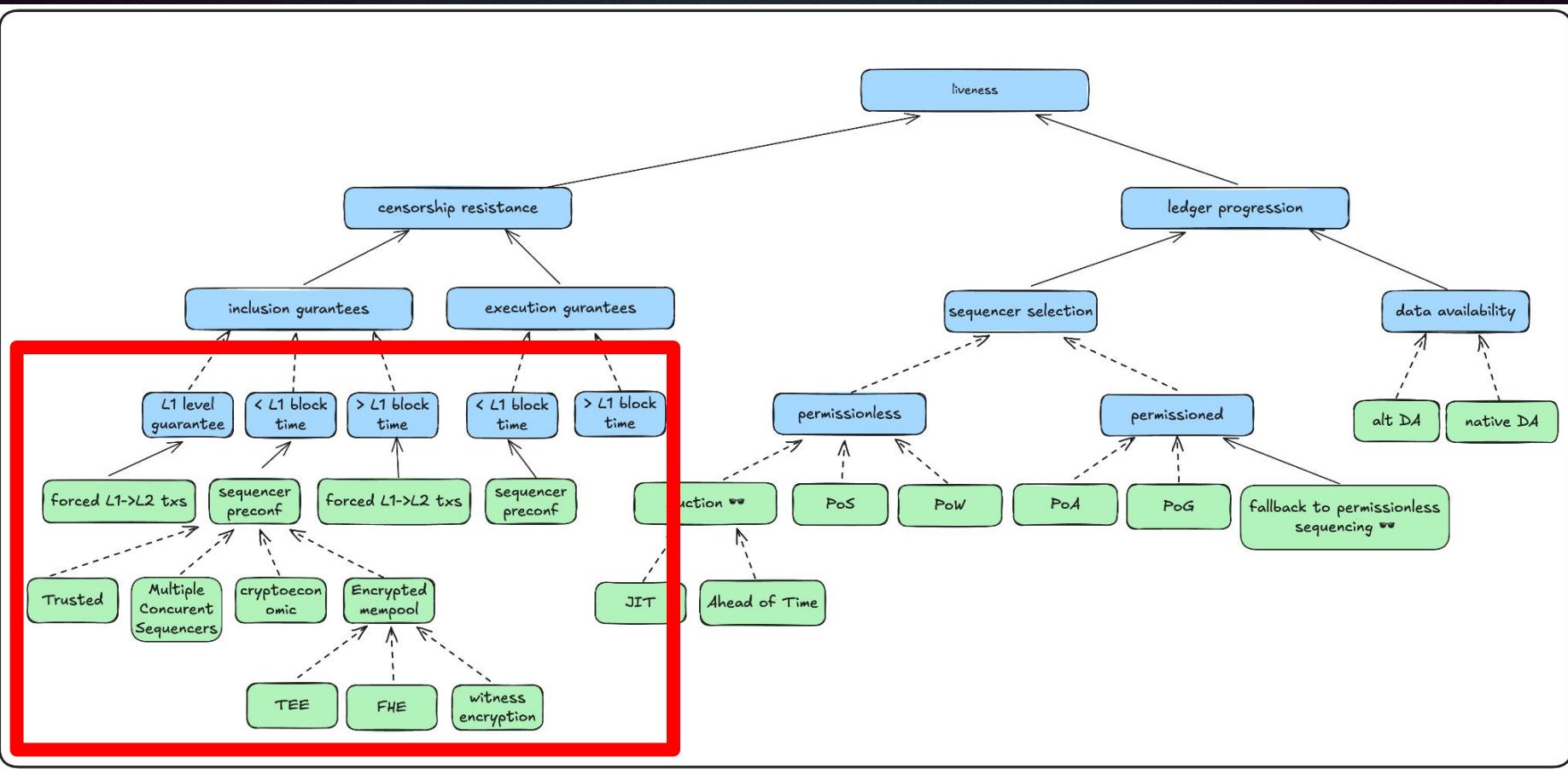


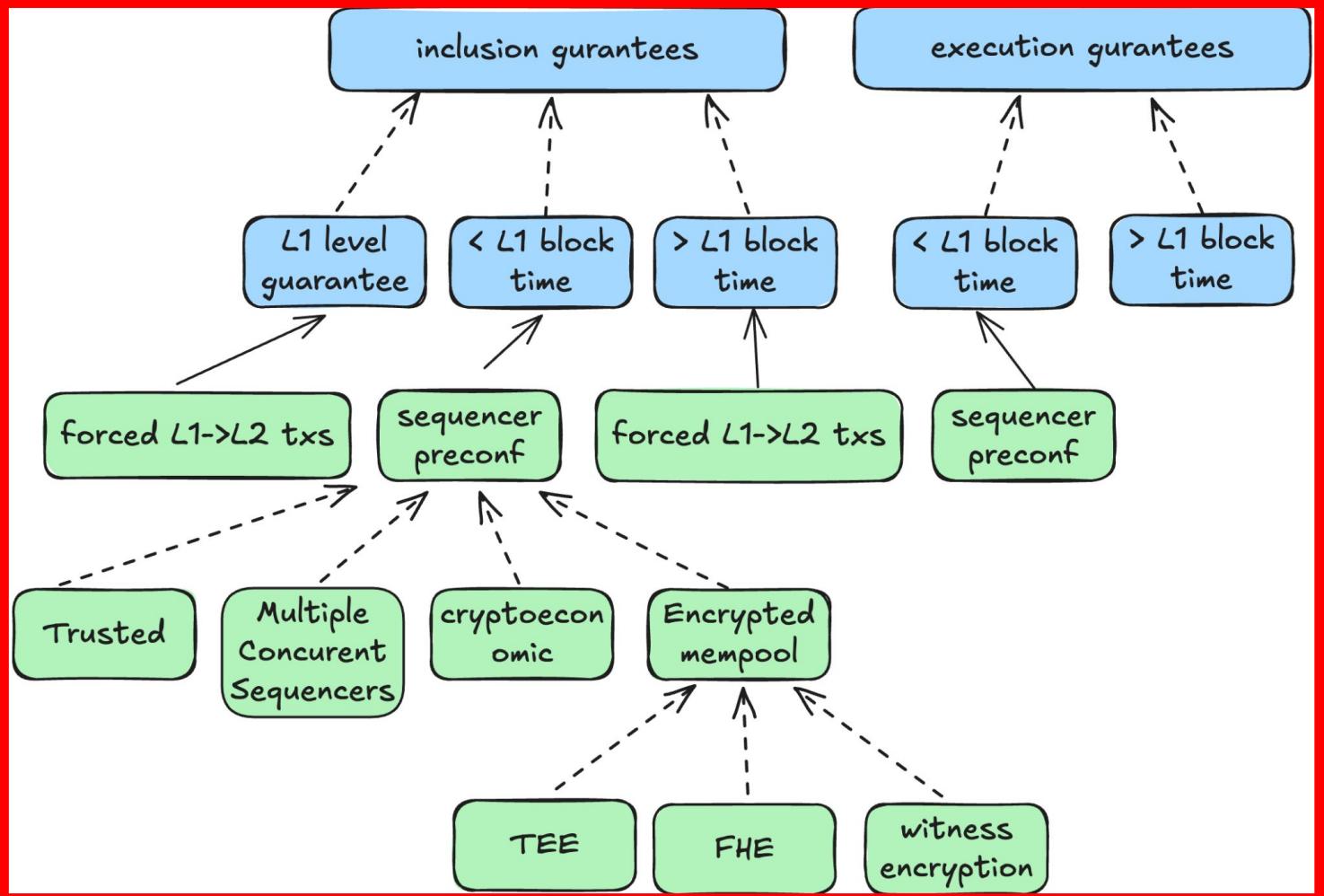
# The Layer 2 Tech Tree



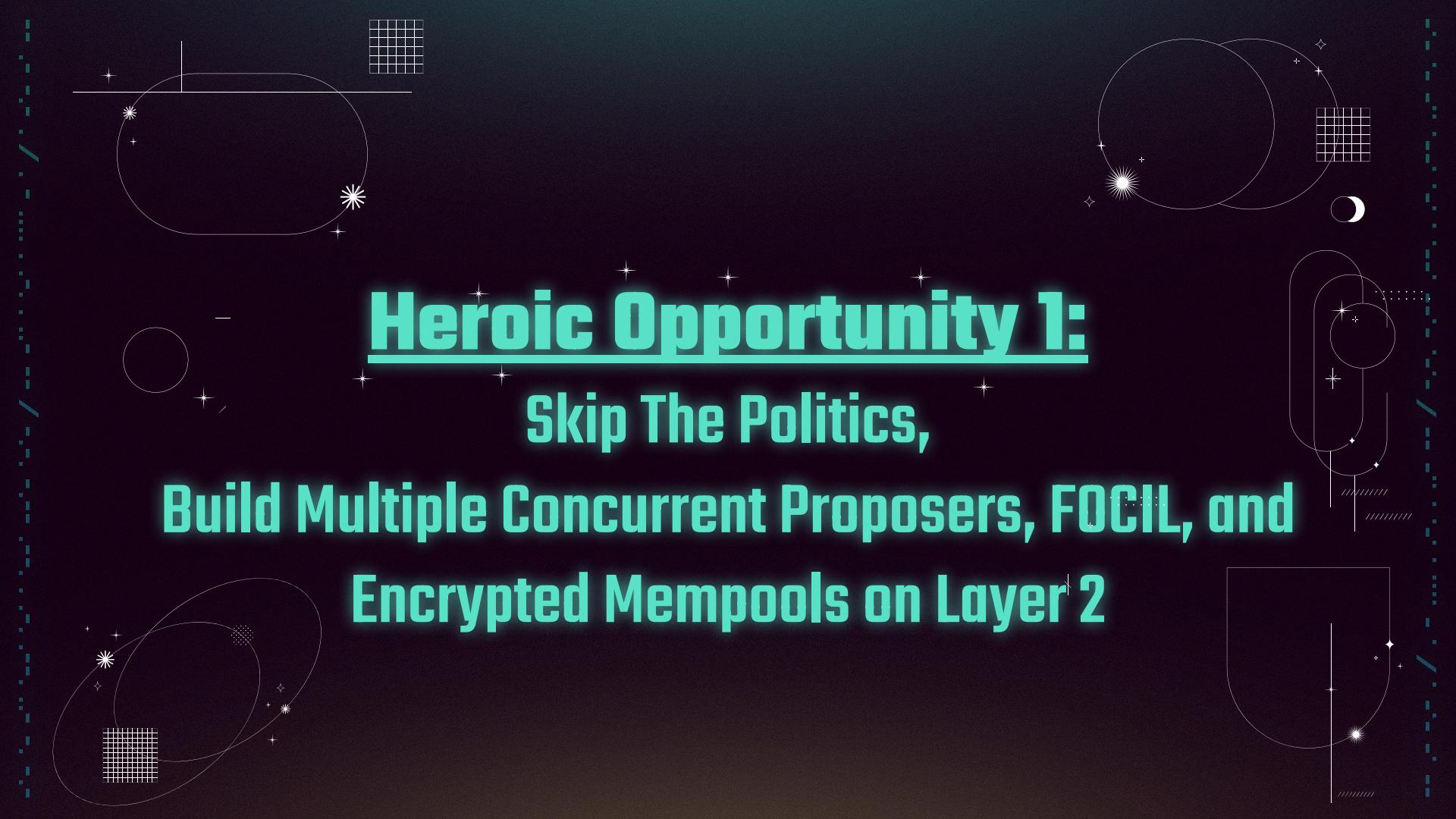
# The Layer 2 Tech Tree



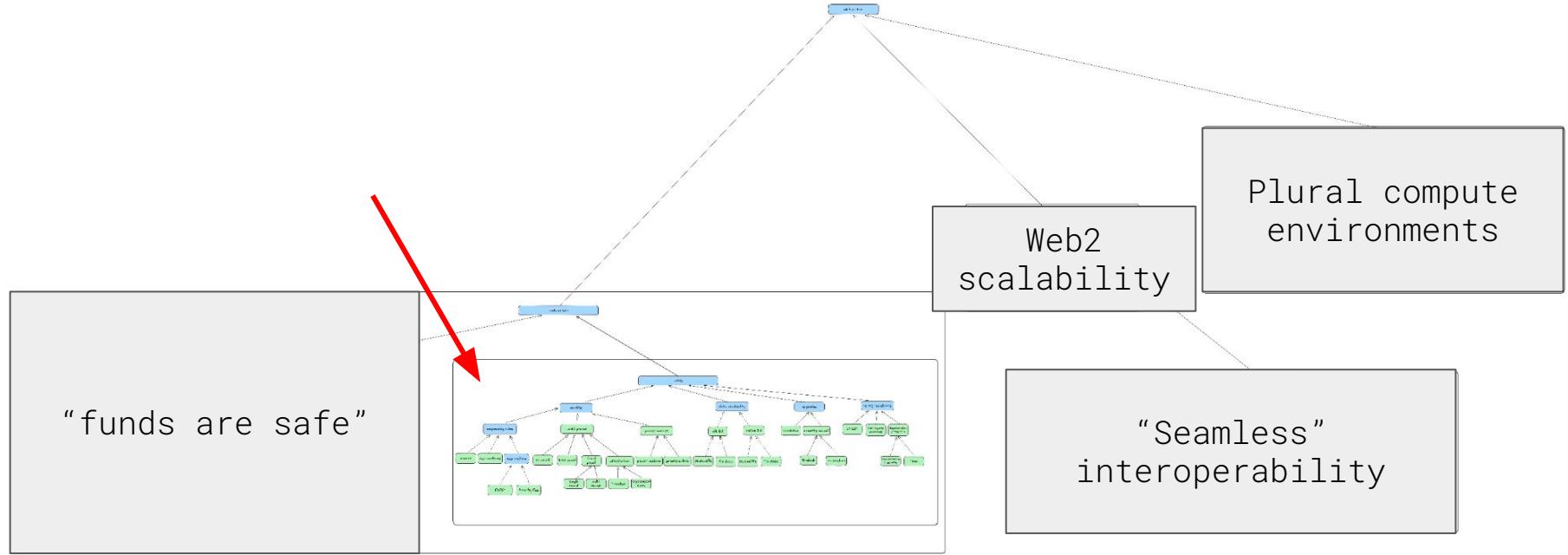




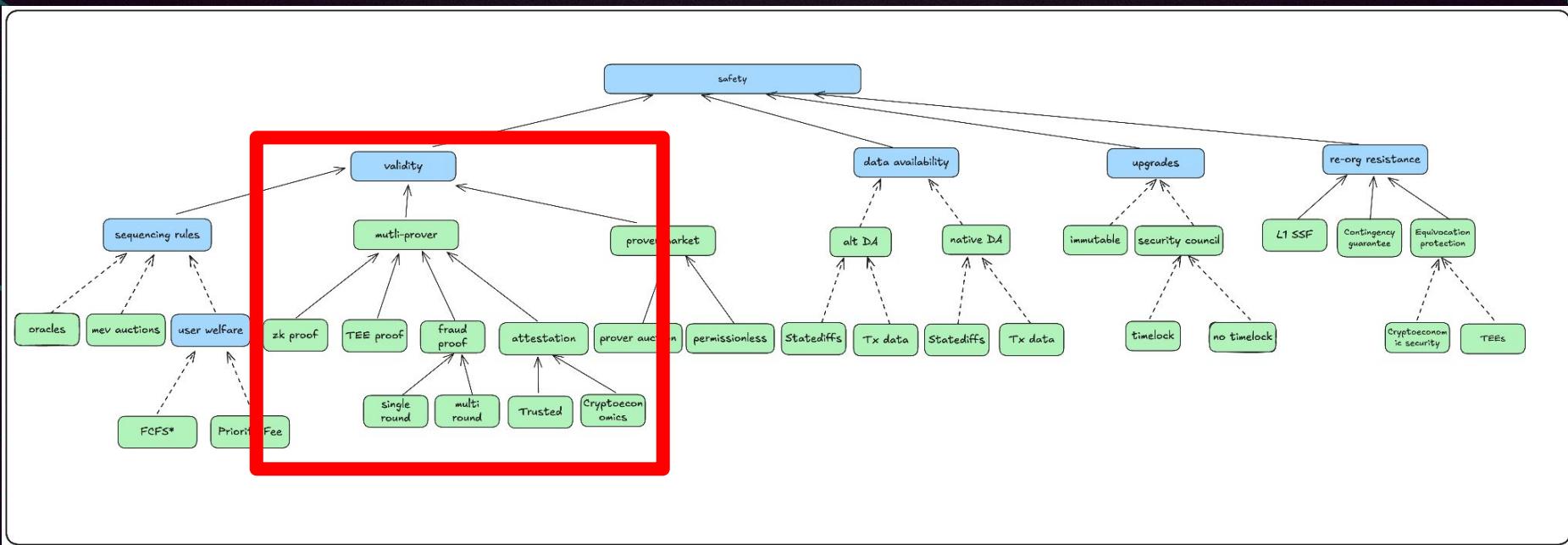
# Heroic Opportunity 1: Skip The Politics, Build Multiple Concurrent Proposers, FOCIL, and Encrypted Mempools on Layer 2



# The Layer 2 Tech Tree

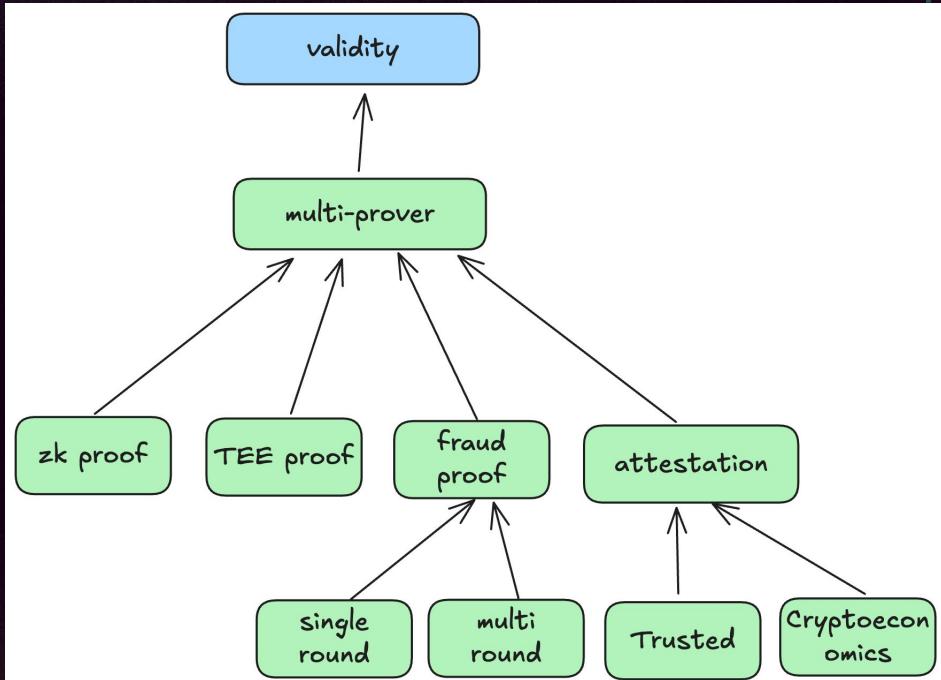


# The Layer 2 Tech Tree



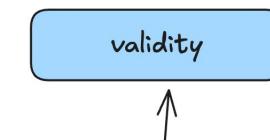
# Multi-prover Interface Call To Action

- Rollups should never trust only one proof system
- Proof system teams have similar tribal dynamics as rollups
- Need to standardize interface to request and fulfill proofs from various types of proofs



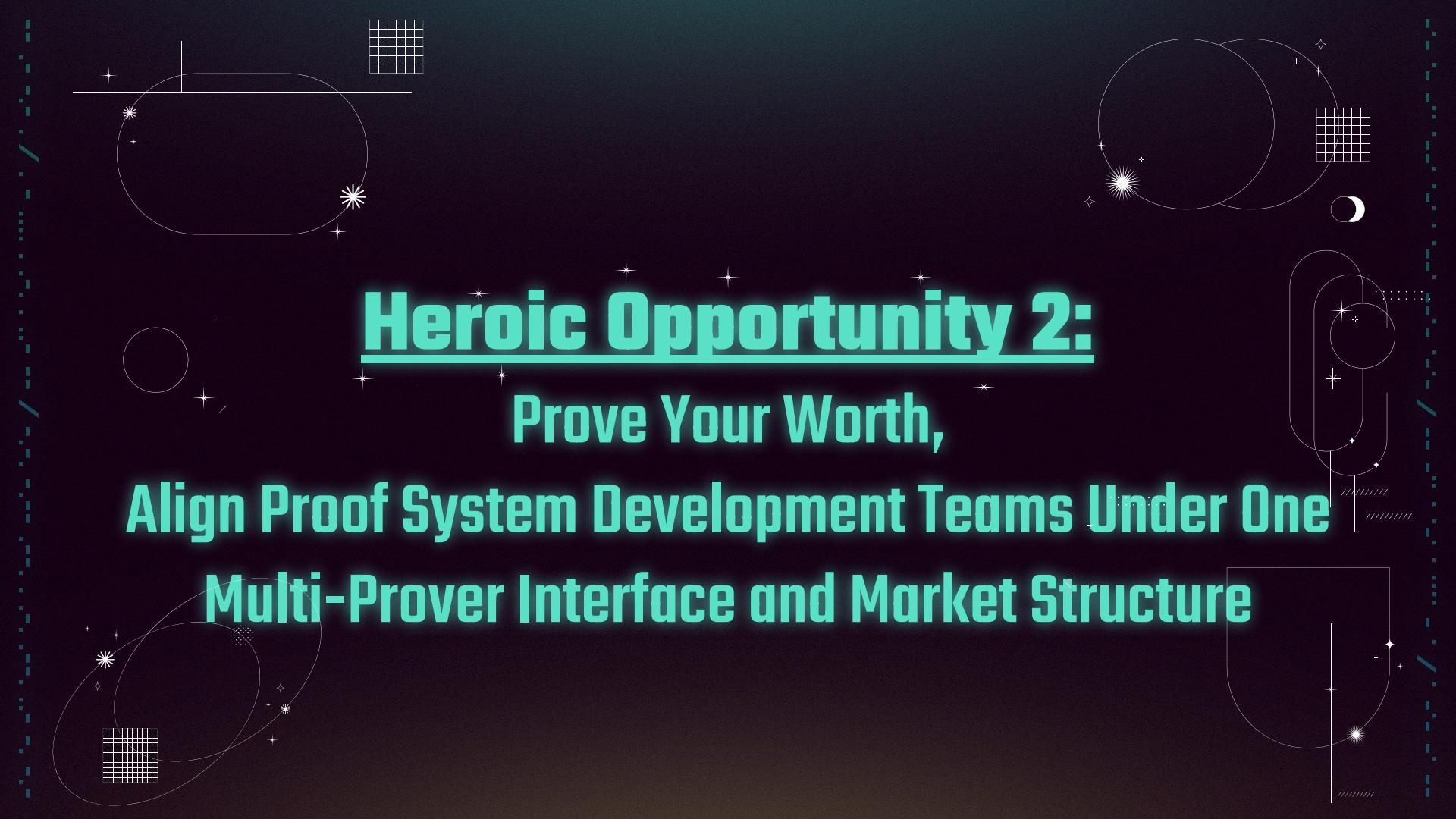
# Multi-prover Interface Call To Action

- Rollups should never trust only one proof system



-	Gas Used	Txs	Std Mode	TDX Mode
Mainnet <a href="#">120794432</a>	43,851	1	0.2297 ms	0.2327 ms (+1.292%)
Mainnet <a href="#">121057303</a>	423,281	4	2.4699 ms	2.5084 ms (+1.558%)
Mainnet <a href="#">121065789</a>	27,255,387	13	665.95 ms	675.51 ms (+1.435%)
Mainnet <a href="#">121135704</a>	1,885,913	18	9.8434 ms	9.9962 ms (+1.552%)

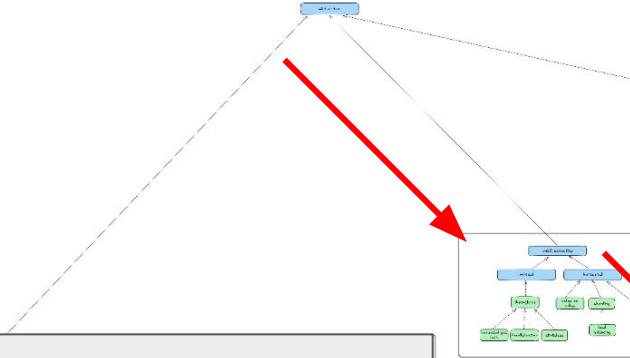
Benchmarks from Automata



# **Heroic Opportunity 2:** **Prove Your Worth, Align Proof System Development Teams Under One Multi-Prover Interface and Market Structure**

# The Layer 2 Tech Tree

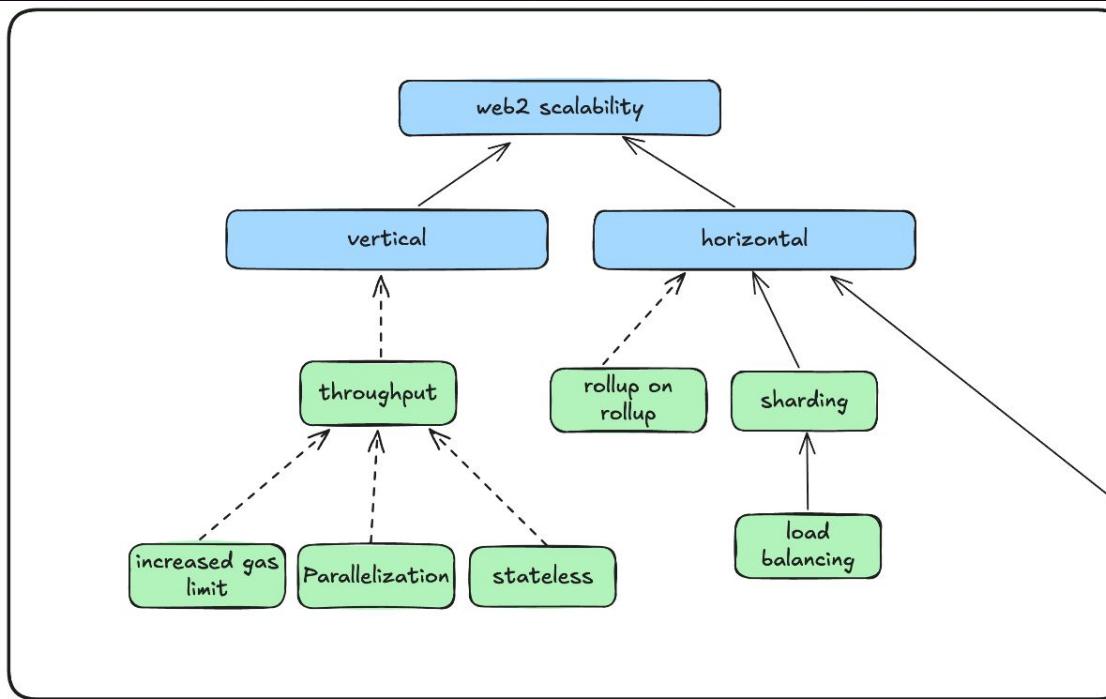
“funds are safe”



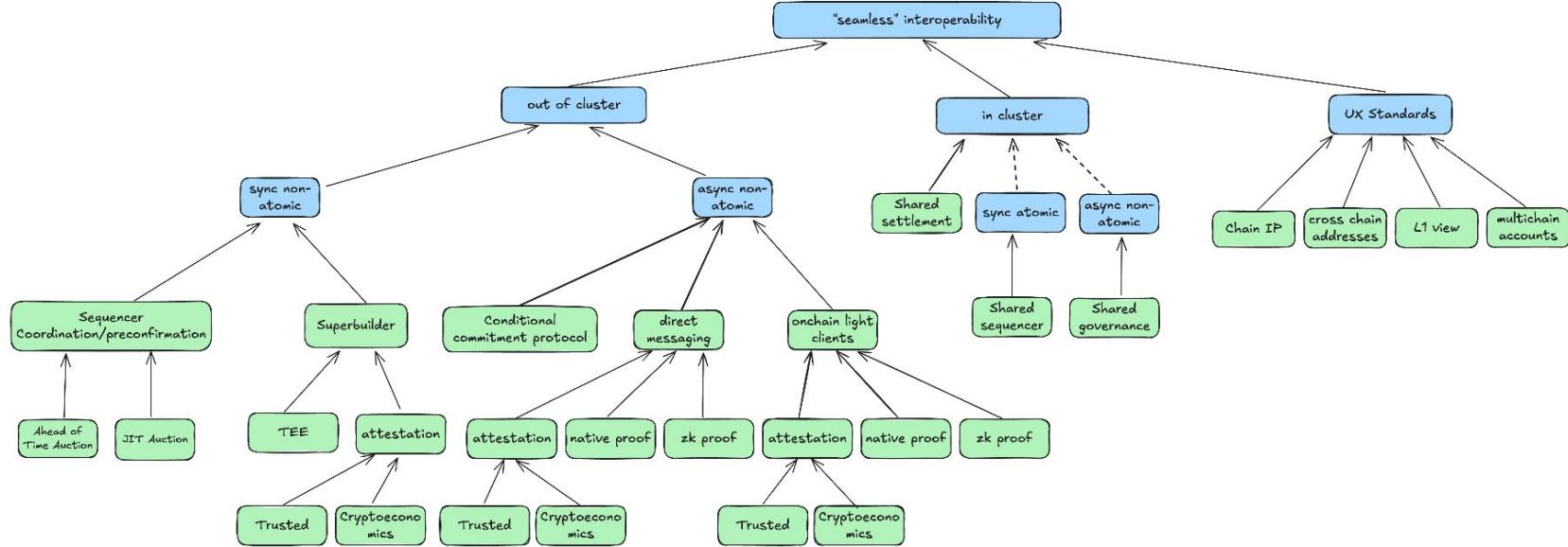
## Plural compute environments



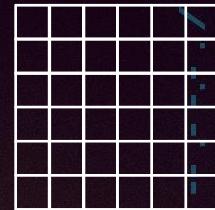
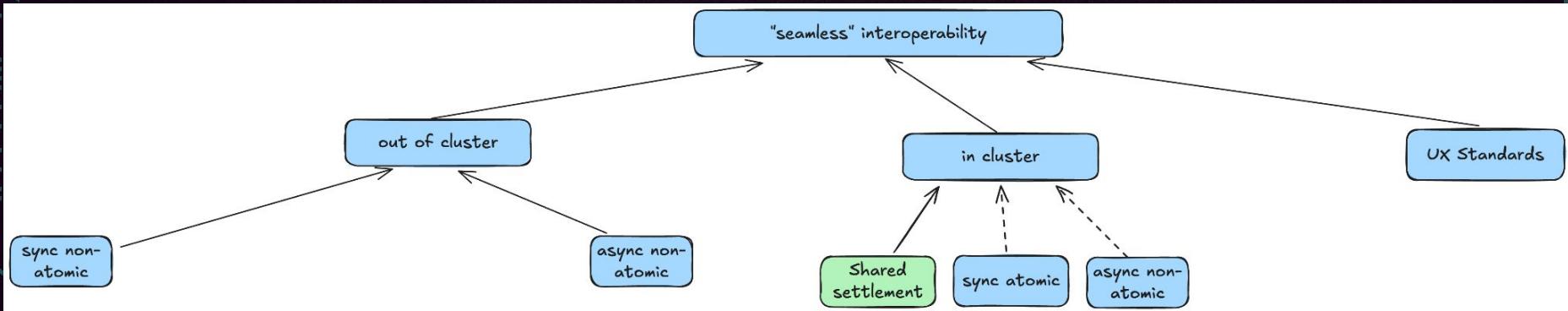
# The Layer 2 Tech Tree



# The Layer 2 Tech Tree

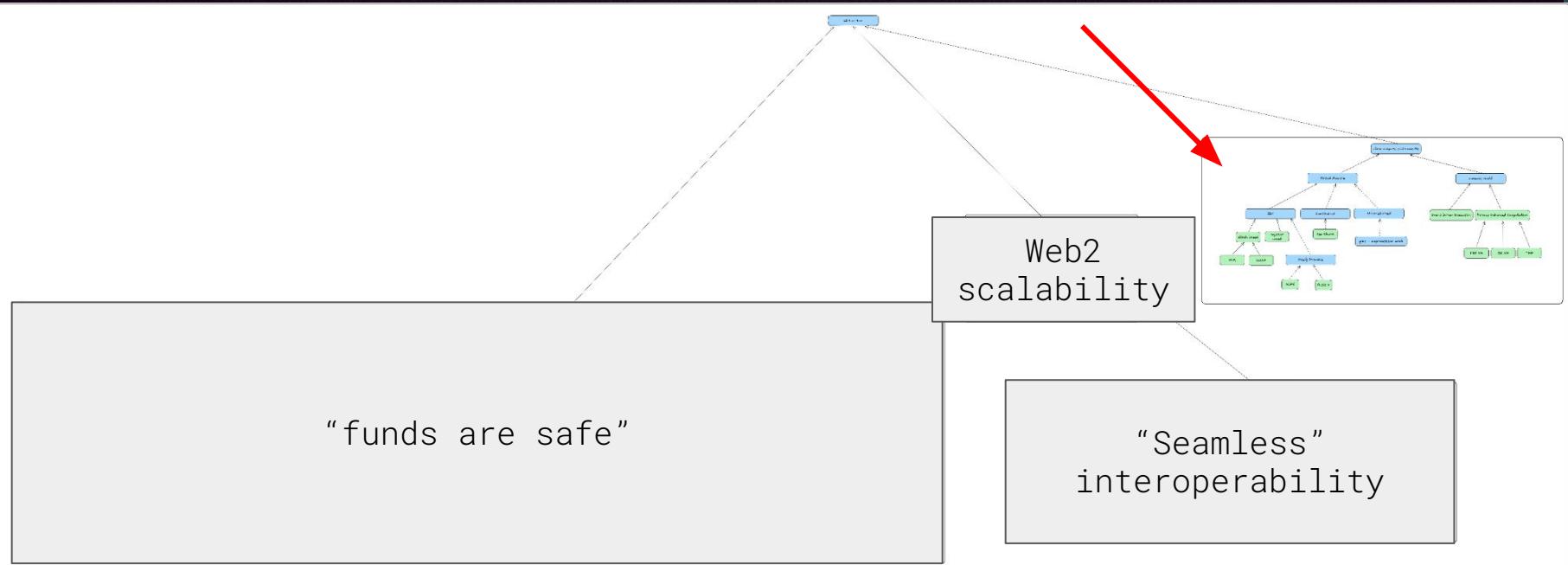


# The Layer 2 Tech Tree

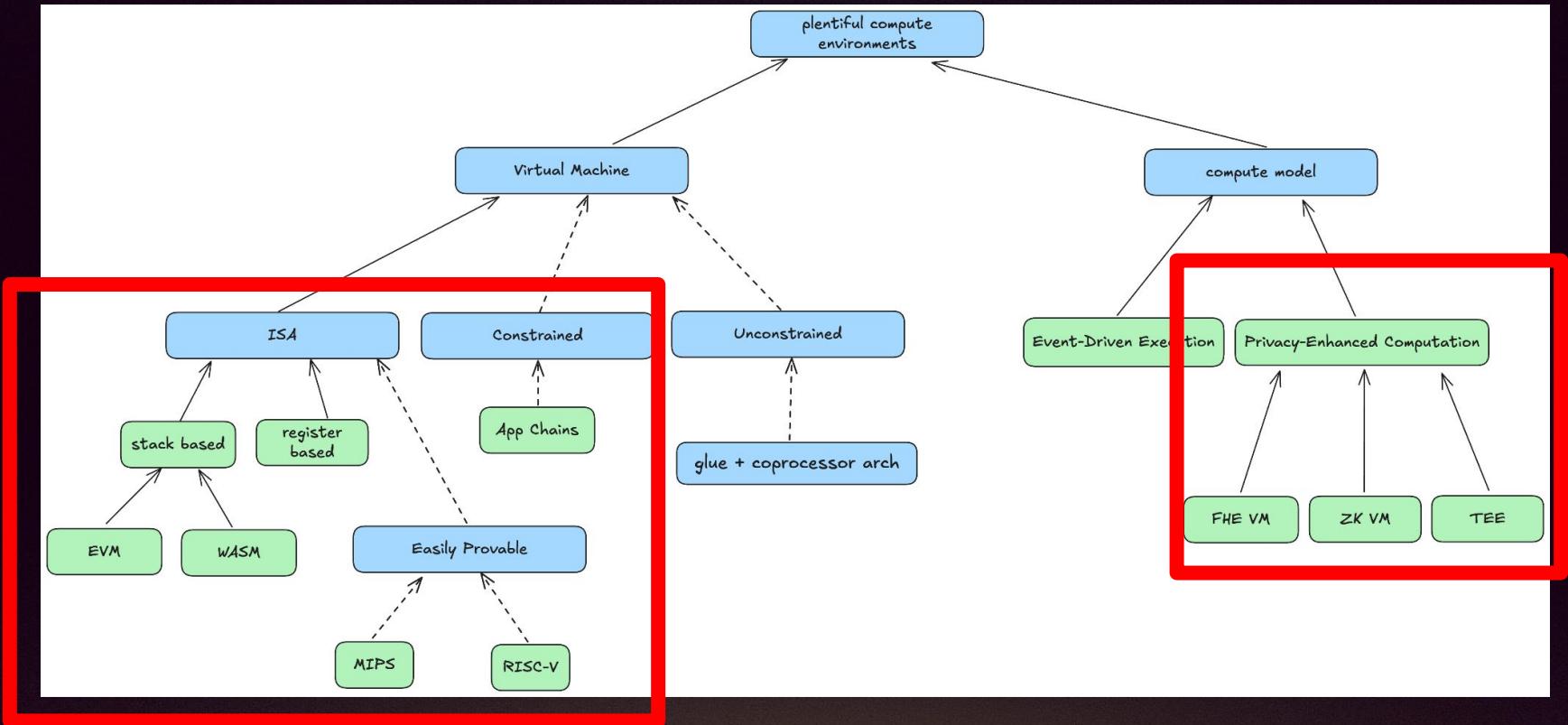


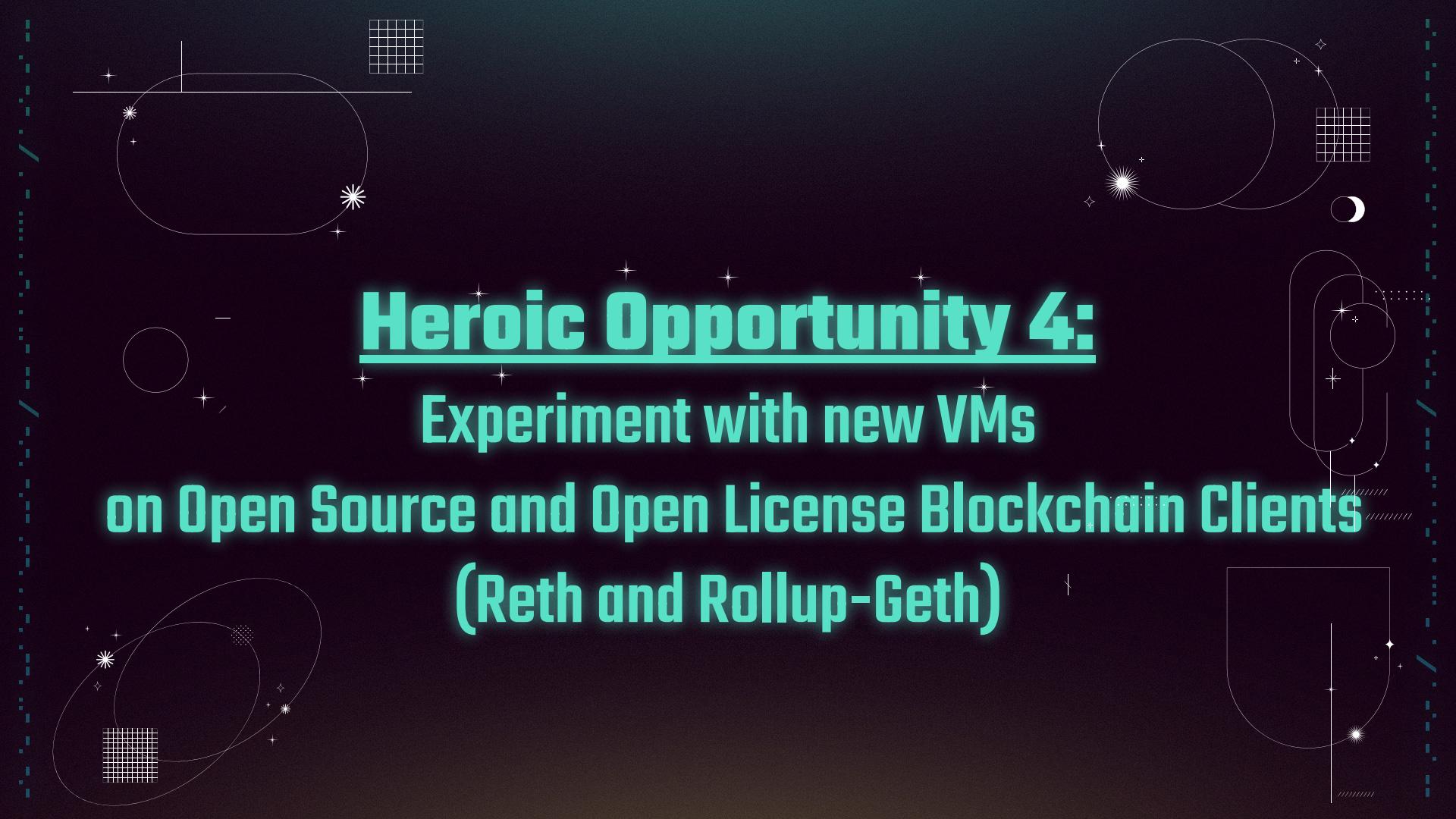
# Heroic Opportunity 3: Communicate to Standardize Communication: Contribute to Cross-Chain Standards

# The Layer 2 Tech Tree



# The Layer 2 Tech Tree

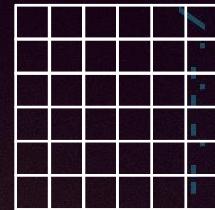


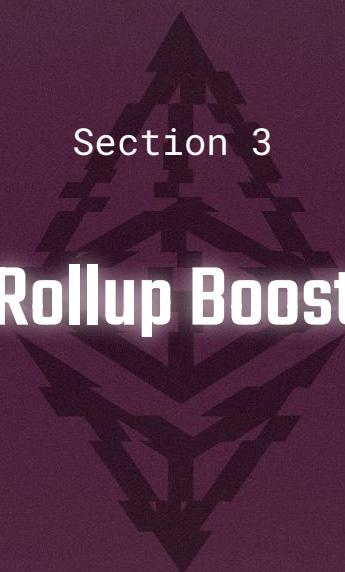


# Heroic Opportunity 4: Experiment with new VMs on Open Source and Open License Blockchain Clients (Reth and Rollup-Geth)

## Areas for Improvement

- Experiment with Inclusion and Execution Guarantees
- Build a Multi-Prover Interface and Market
- Help Coordinate Interoperability Standards
- Build Open Source and License Codebases  
(allocators allocate here, benevolently)

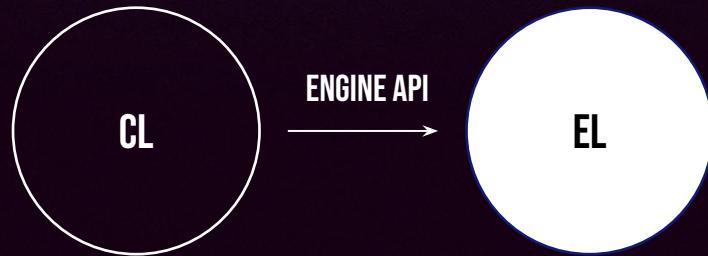




Section 3

# Rollup Boost

# CL/EL In Ethereum L1

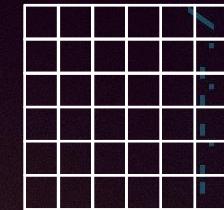
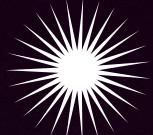


## CONSENSUS LAYER (CL)

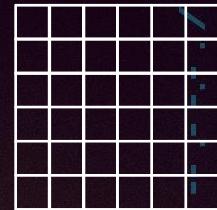
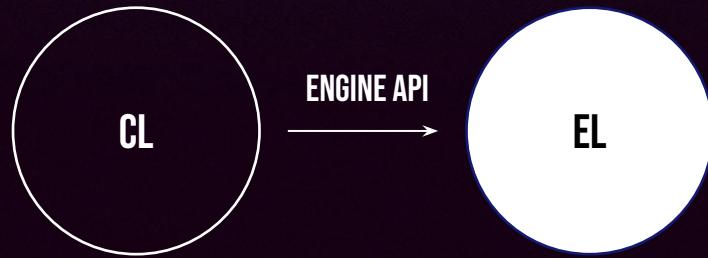
- Responsible for deciding what transactions and blocks should be included in the blockchain
- Actively participate in the consensus mechanism to agree on the state.

## EXECUTION LAYER (EL)

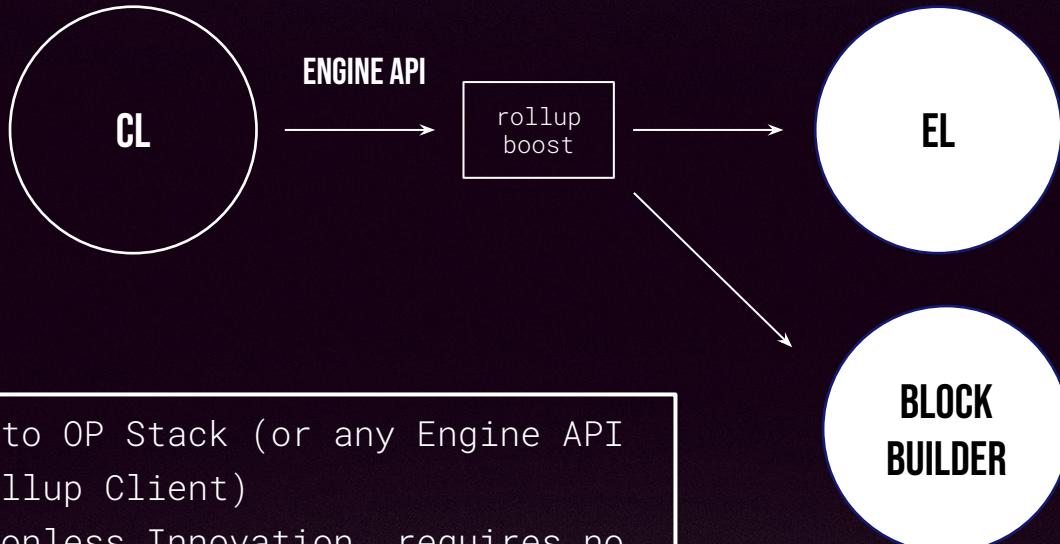
- Responsible for executing the actual transactions and smart contracts
- They keep and update the current state of the blockchain, including account balances and contract storage



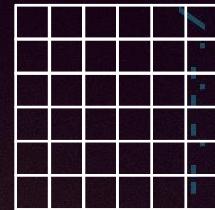
# CL/EL In Ethereum L2



# CL/EL In Ethereum L2



- Sidecar to OP Stack (or any Engine API based Rollup Client)
- Permissionless Innovation, requires no forks to OP Stack
- Open Source and MIT License from Day 1



# CL/EL In Ether

Introducing Rollup-Boost - Launching on Unichain

Flashbots

2024-10-09 · 9 min read

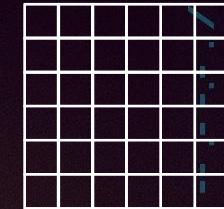
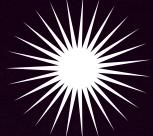
[Leave a reply](#)

We've developed a platform for performance, programmability, and decentralization extensions for Rollups. It is powering the upcoming Unichain.

## Introducing Rollup-Boost



- Sidecar to OP based Rollup
- Permissionless forks to OP Sidecars
- Open Source and audited



# CL/EL In Ether

## Introducing Rollup-Boost - Launching on Unichain



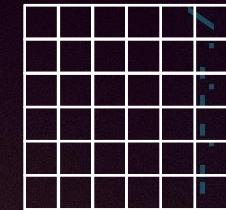
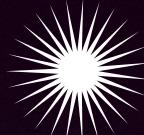
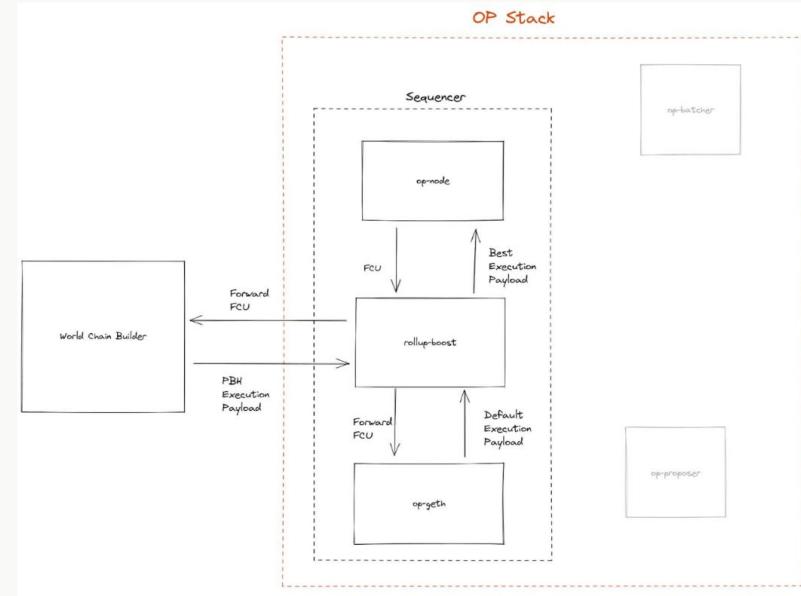
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Lifecycle of a transaction on the OP Stack

Transaction ordering in the OP Stack

World Chain Payload Builder

Next steps



# **Rollup-Boost Is The New Innovation Hub for Ethereum Layer 2**

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