


eth2: scaling Ethereum

by @eliasimos

Who this guy?

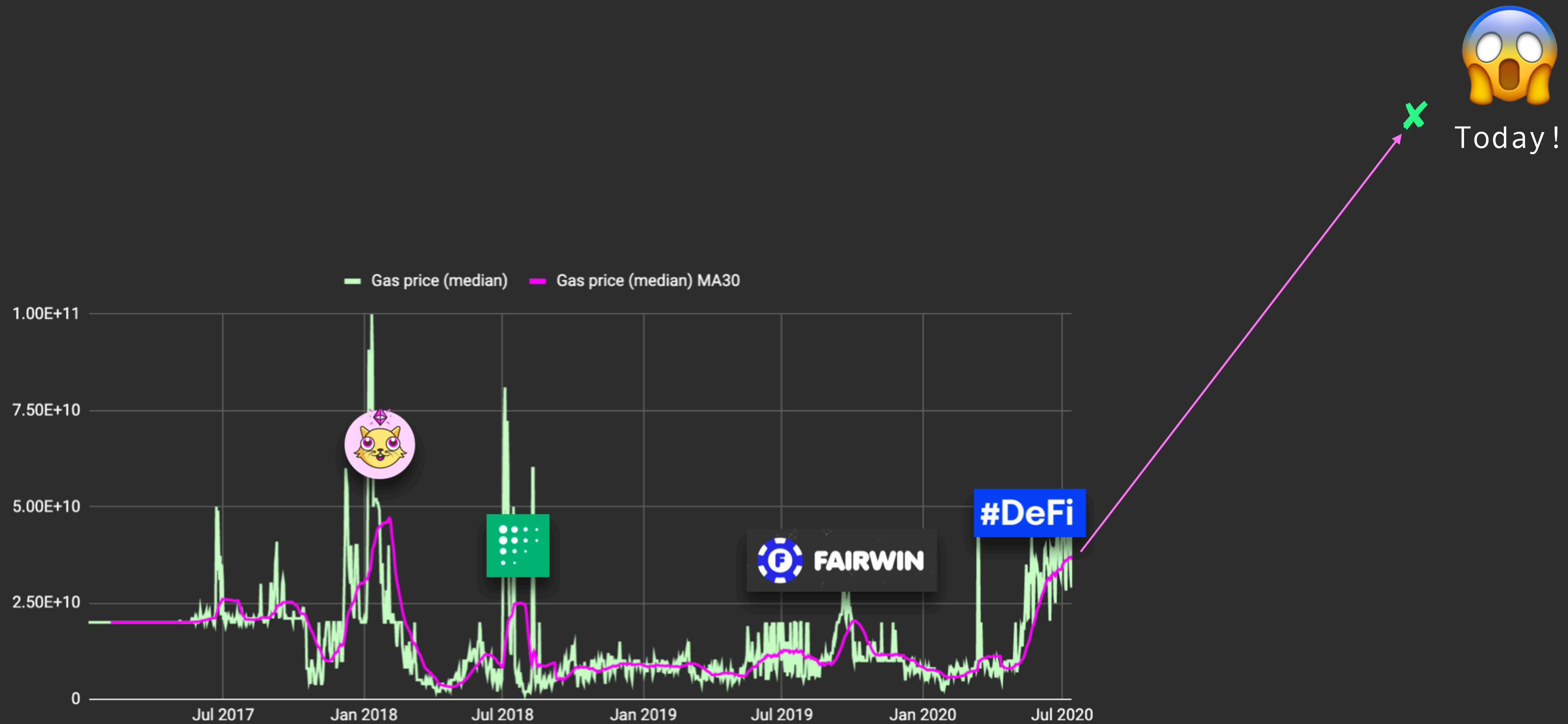


Ethereum is clogged

	AMOUNT + GAS FEE
TOTAL	 0.405261 \$813.35

So you want to mint a NFT on Mainnet you say?

And it will stay this way



Unless...

ES



eth2

Wowowow—what's eth2?

PoW (15tps) >>>> PoS (x000's in tps)

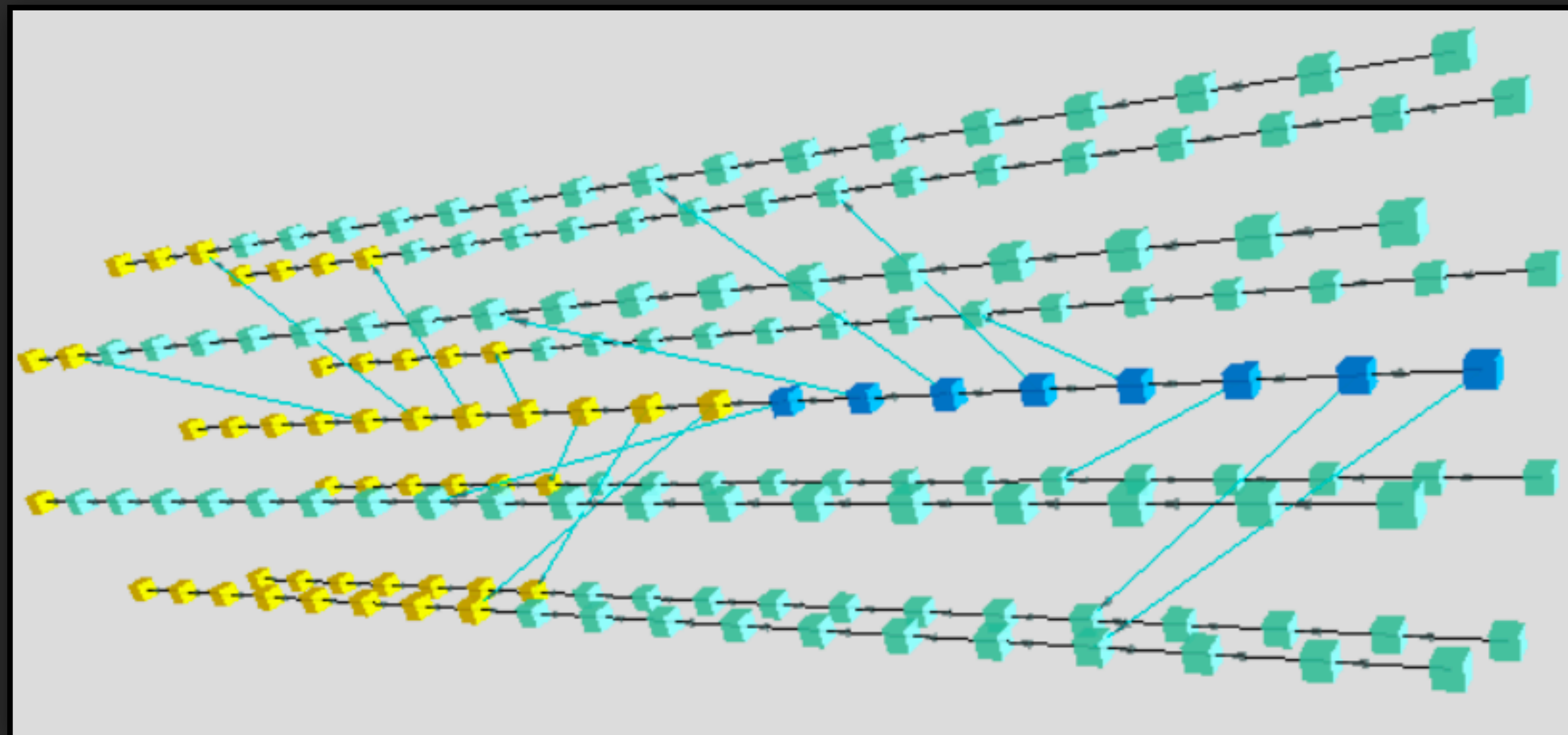
It's been a long time coming



Did you say Bacon Chain?



Ok, I'll bite. What's a Beacon Chain?



Validators

Committees

Proposers

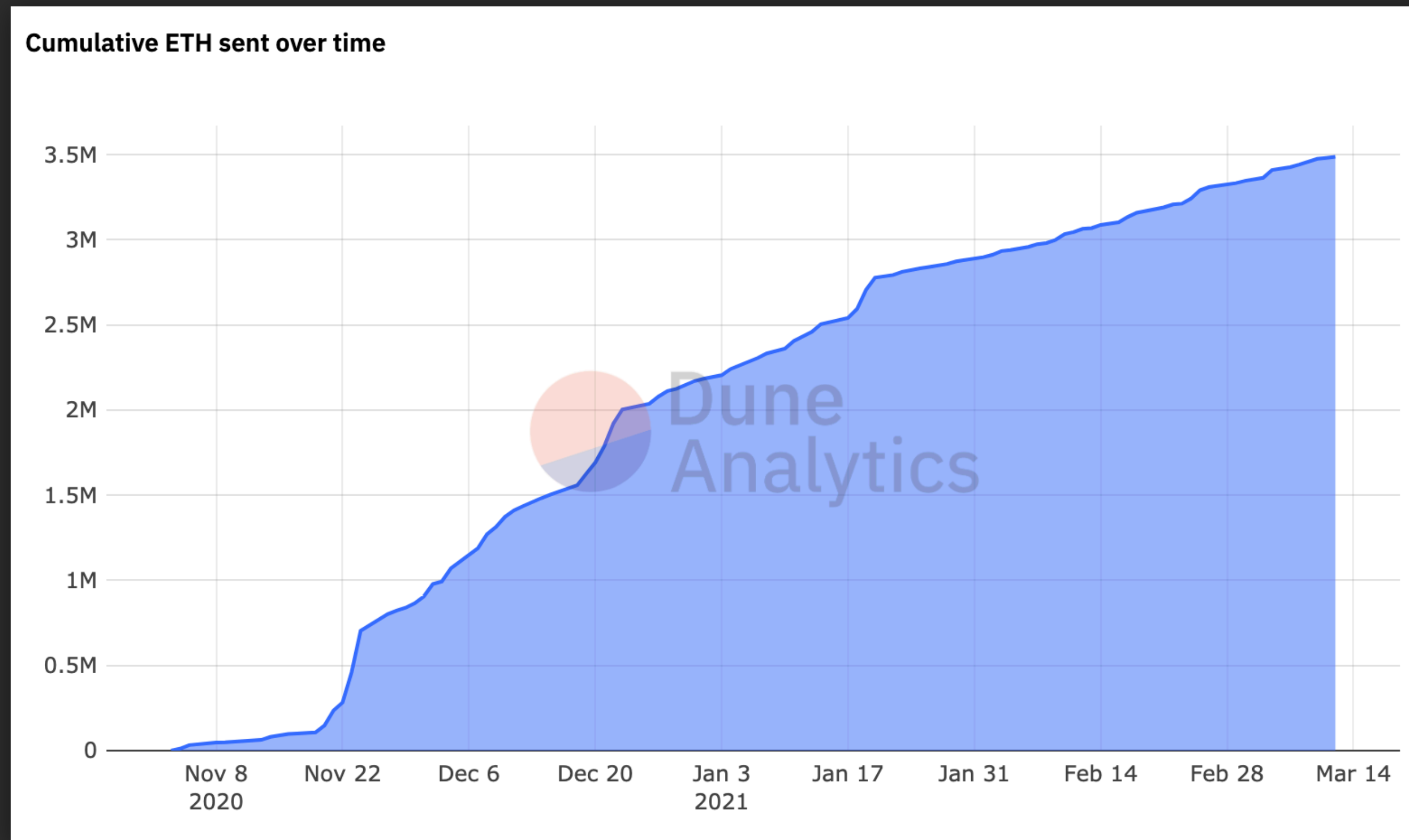
Attesters

Slashing

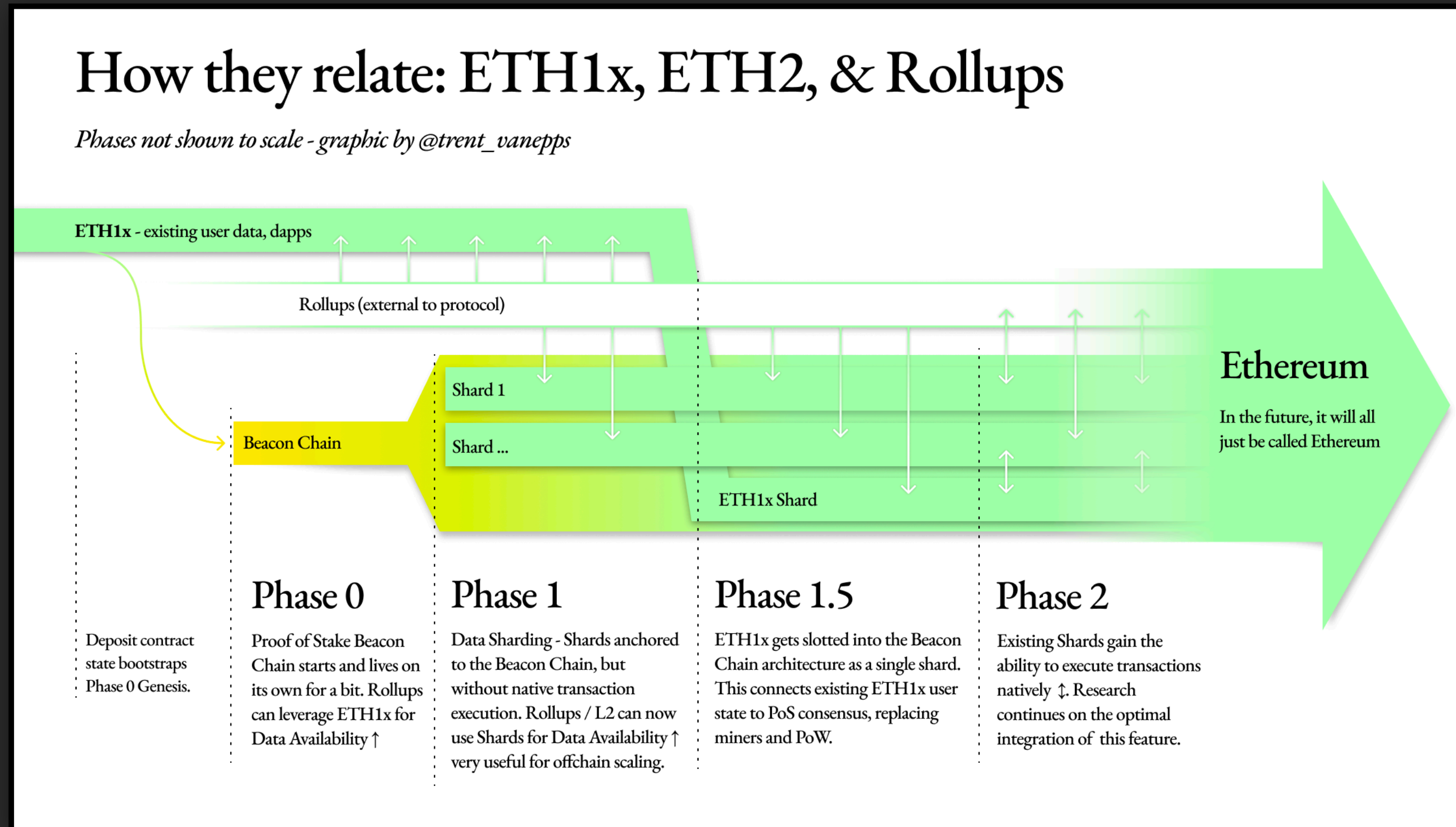
32ETH

Multi-client

It's here and it's live



Ok, we got Beacon Chain...now what?!



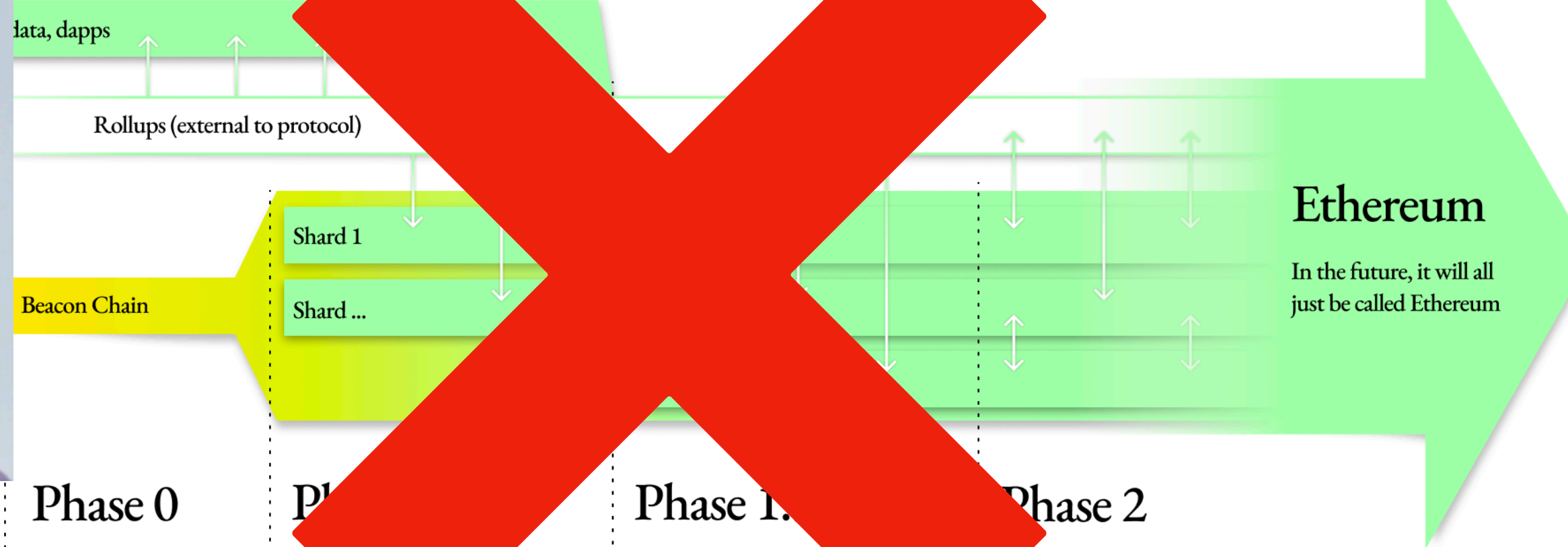
We gun do this in Phases, right?!

Ok, we got Beacon Chain...now what?!



How they relate: ETH1x, ETH2, & Rollups

to scale - graphic by @trent_van...



Phase 0

- Deposit contract state bootstraps
- Phase 0 Genesis.

Proof of Stake Beacon Chain starts and lives on its own for a bit. Rollups can leverage ETH1x for Data Availability ↑

Phase 1

Data is anchored to the Beacon Chain, but without native transaction execution. Rollups / L2 can now use Shards for Data Availability ↑ very useful for offchain scaling.

Phase 2

ETH1x gets slotted into the Beacon Chain architecture as a single state to PoS consensus, replacing miners and PoW.

Phase 3

Existing Shards gain the ability to execute transactions natively ↓. Research continues on the optimal integration of this feature.

~~We can do this in Phases, right?~~

WRONG!!

Enter rollups



How do rollups work?

Block 1

Balances: Alice [10], Bob [0]

Block 2

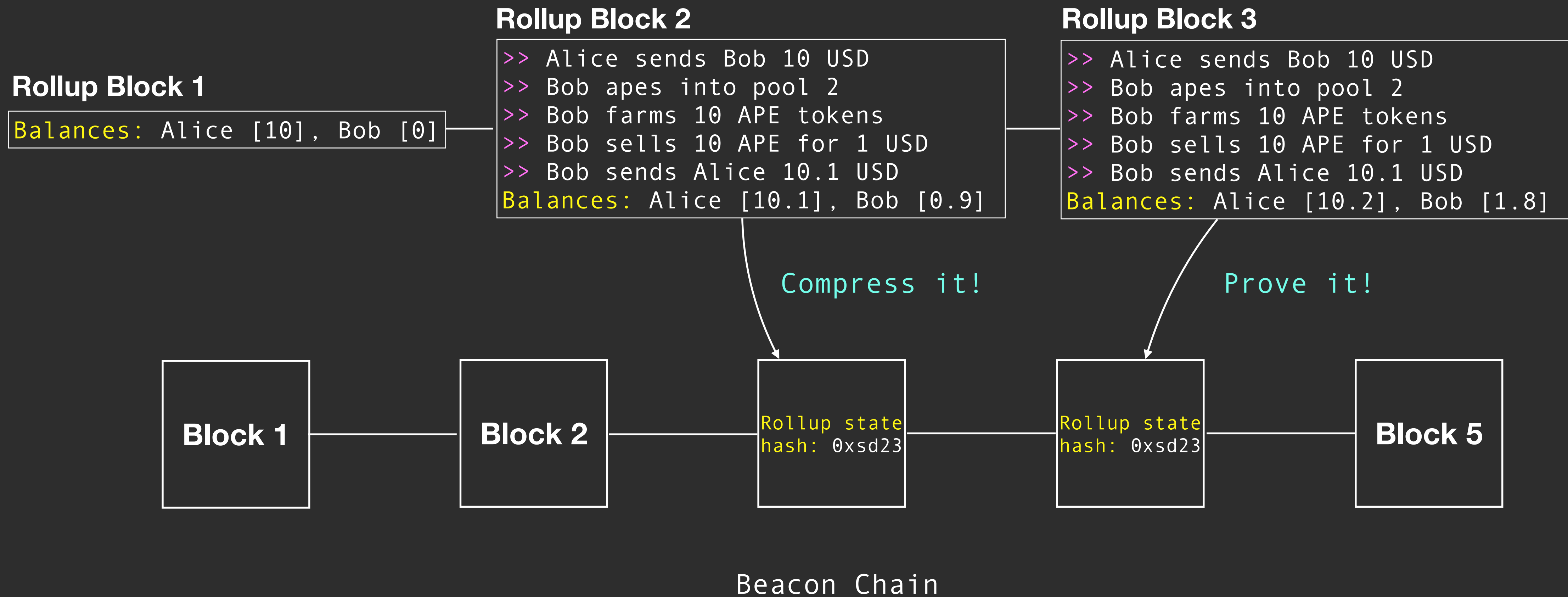
```
>> Alice sends Bob 10 USD  
>> Bob apes into pool 2  
>> Bob farms 10 APE tokens  
>> Bob sells 10 APE for 1 USD  
>> Bob sends Alice 10.1 USD  
Balances: Alice [10.1], Bob [0.9]
```

Block 3

```
>> Alice sends Bob 10 USD  
>> Bob apes into pool 2  
>> Bob farms 10 APE tokens  
>> Bob sells 10 APE for 1 USD  
>> Bob sends Alice 10.1 USD  
Balance at end: Alice [10.2], Bob [1.8]
```

Computation
State transition

How do rollups work?



How do rollups work?

Rollup Block 1

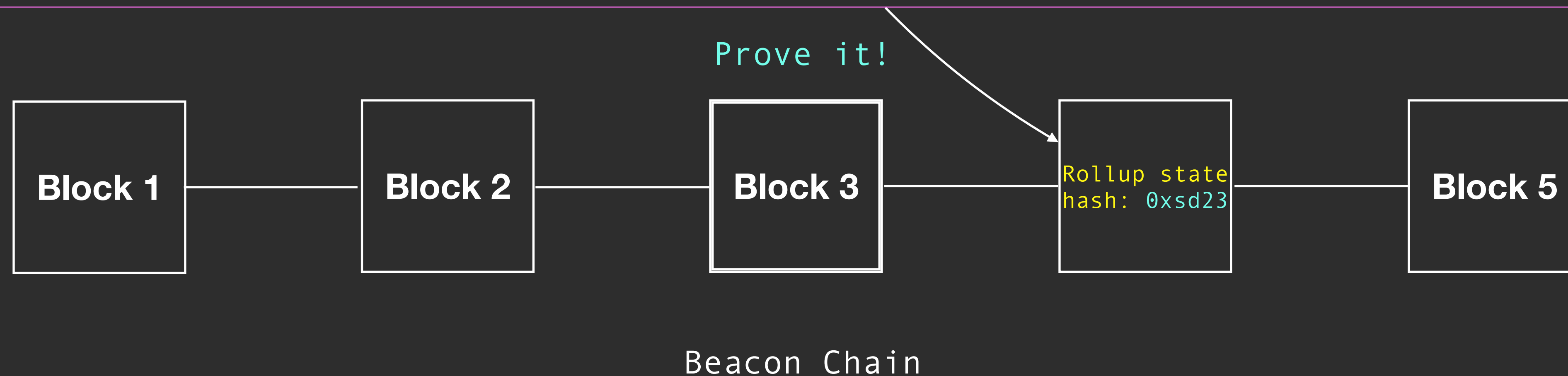
Balances: Alice [10], Bob [0]

Rollup Block 2

```
>> Alice sends Bob 10 USD
>> Bob apes into pool 2
>> Bob farms 10 APE tokens
>> Bob sells 10 APE for 1 USD
>> Bob sends Alice 10.1 USD
Balances: Alice [10.1], Bob [0.9]
```

Rollup Block 3

```
>> Alice sends Bob 10 USD
>> Bob apes into pool 2
>> Bob farms 10 APE tokens
>> Bob sells 10 APE for 1 USD
>> Bob sends Alice 10.1 USD
Balances: Alice [10.2], Bob [1.8]
```



Cool huh?

But there's a problem....

So many rollups!!

Such zk



Much optimism

So what's the plan?

Beacon chain >>> Eth1 <> Eth2 merge >>> Rollup merge >>> Maybe sharding

So what's the plan?

Beacon chain >>> Eth1 <> Eth2 merge >>> Rollup me



Hungry for more?

Elias Simos @eliasimos · Oct 23, 2020

Eth2 Medalla: a journey through the underbelly of eth2's final call before takeoff.

@sidsekhar24 and I spent the last couple weeks digging through all the data that the Medalla Testnet produced.

Today, we're thrilled to share our findings!

🌟 eth2data.github.io 🌟

Eth2 Medalla - a data driven deep dive

A journey through the underbelly of eth2's final call before takeoff.



By Elias Simos and Sid Shekhar.

About this work: Elias is a Protocol Specialist at Bison Trails. Sid leads Blockchain Research at Coinbase. This report was an independent collaborative research effort to review the overall performance of the Medalla Testnet, answering the EF's call for submissions on the eth2 Medalla data challenge.

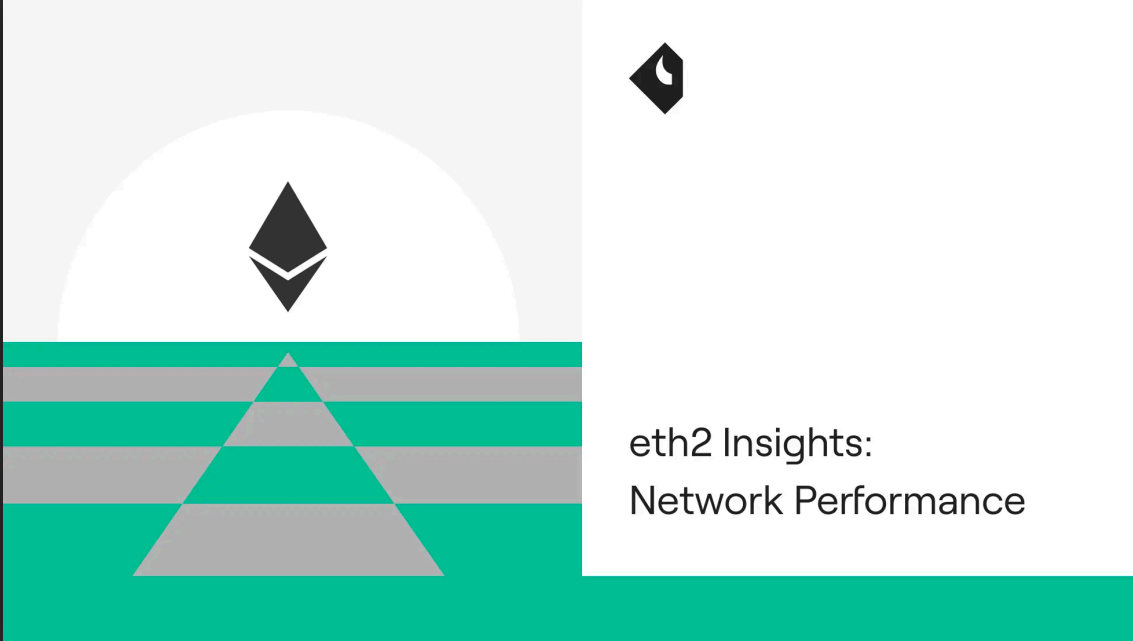
All data, scripts, and notebooks that powered this analysis are available on [github](https://github.com).

SID SHEKHAR

7 27 74 Tip

RAUL JORDAN / PRYSMATIC LABS



eth2 Insights:
Network Performance

What's New in Eth2 - 27 February 2021

Ben Edgington (Eth2 at [ConsenSys](https://consensys.net) — all views expressed are my own)

Edition 63 at eth2.news

Top picks

The final part of Coogan Brennan's personal staking odyssey is [hot off the press](#), covering migrating his validator from AWS to Digital Ocean to save some dollar. This whole series is brilliant. Coogan is a terrific writer, and I can attest first-hand that he thoroughly did his homework on every detail of these articles.

Finalized no. 23

the Ethereum consensus-layer

Posted by Danny Ryan on March 11, 2021

Research & Development

eth2data.github.io
 in the Medalla data challenge

bisontrails.co

Google it!

ευχαριστώ sers!



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