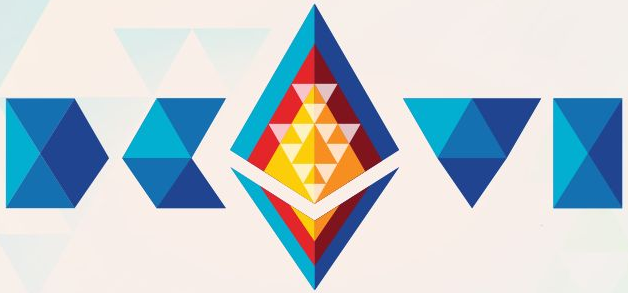


Scroll Pre-Alpha Testnet Upgrade

Ye Zhang

Cofounder @ Scroll

Scroll

What is Scroll?

A scaling solution for Ethereum

Scroll

What is Scroll?

An EVM-equivalent zk-Rollup

Outline

Scroll

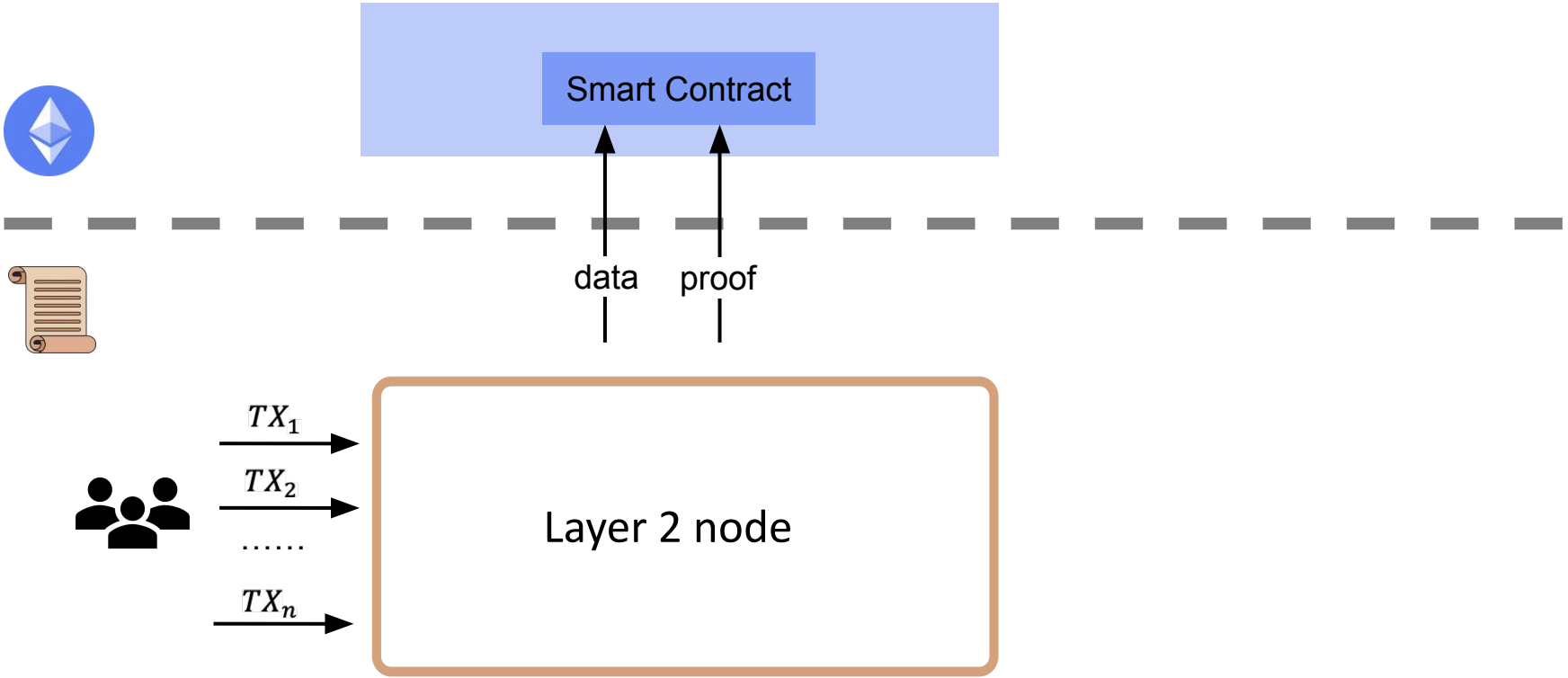
- The architecture of Scroll
- The workflow of Scroll
- Scroll Pre-Alpha Testnet Upgrade
- The roadmap

Scroll

The architecture of Scroll

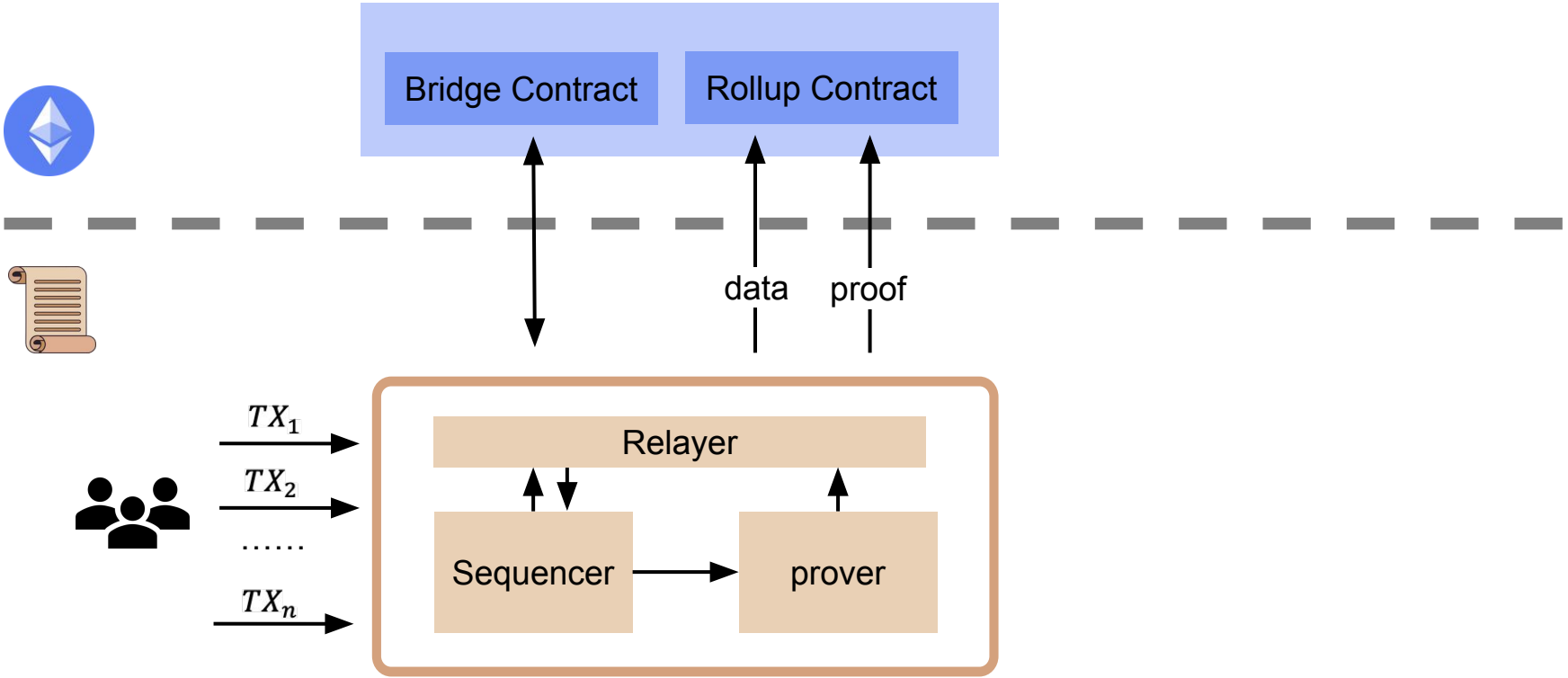
zkRollup

Scroll



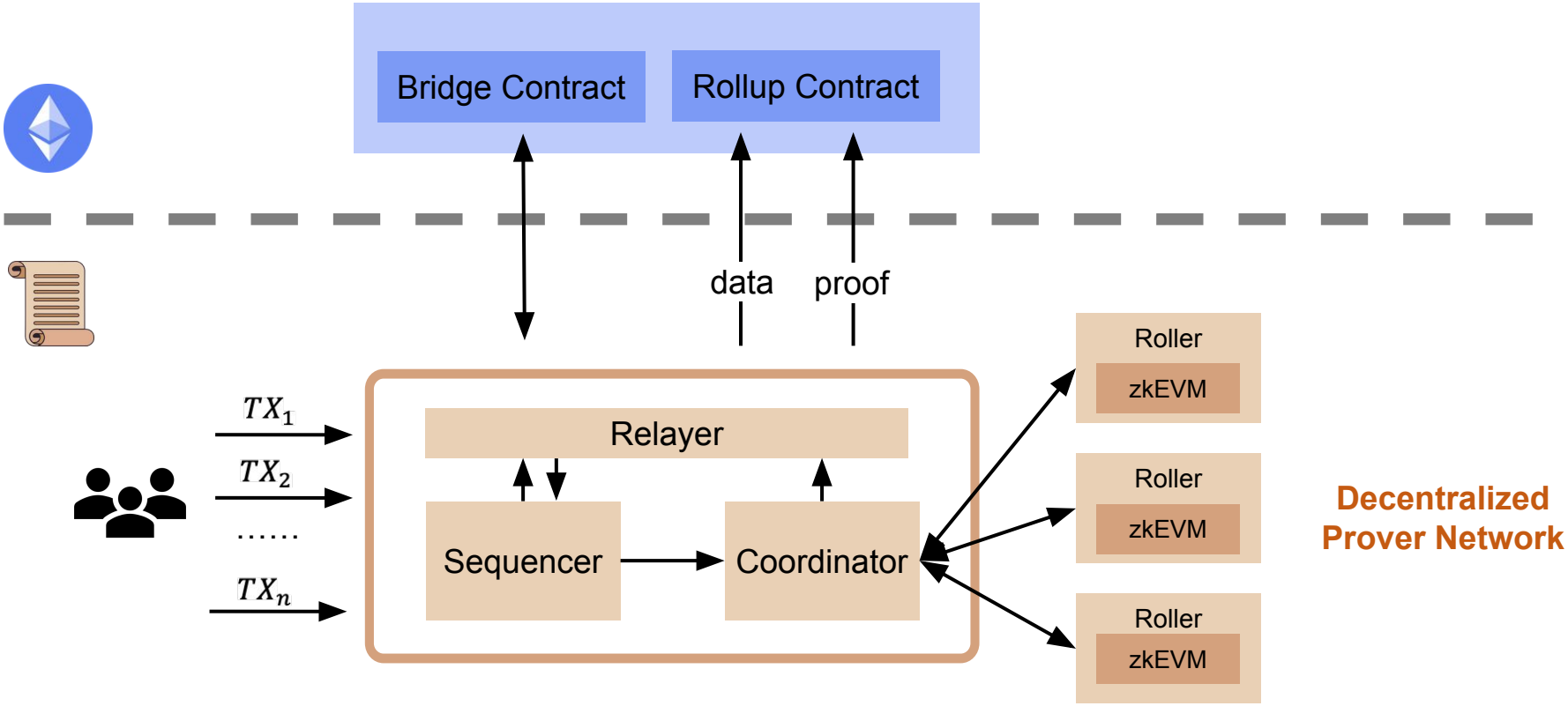
Scroll Architecture

Scroll



Scroll Architecture

Scroll



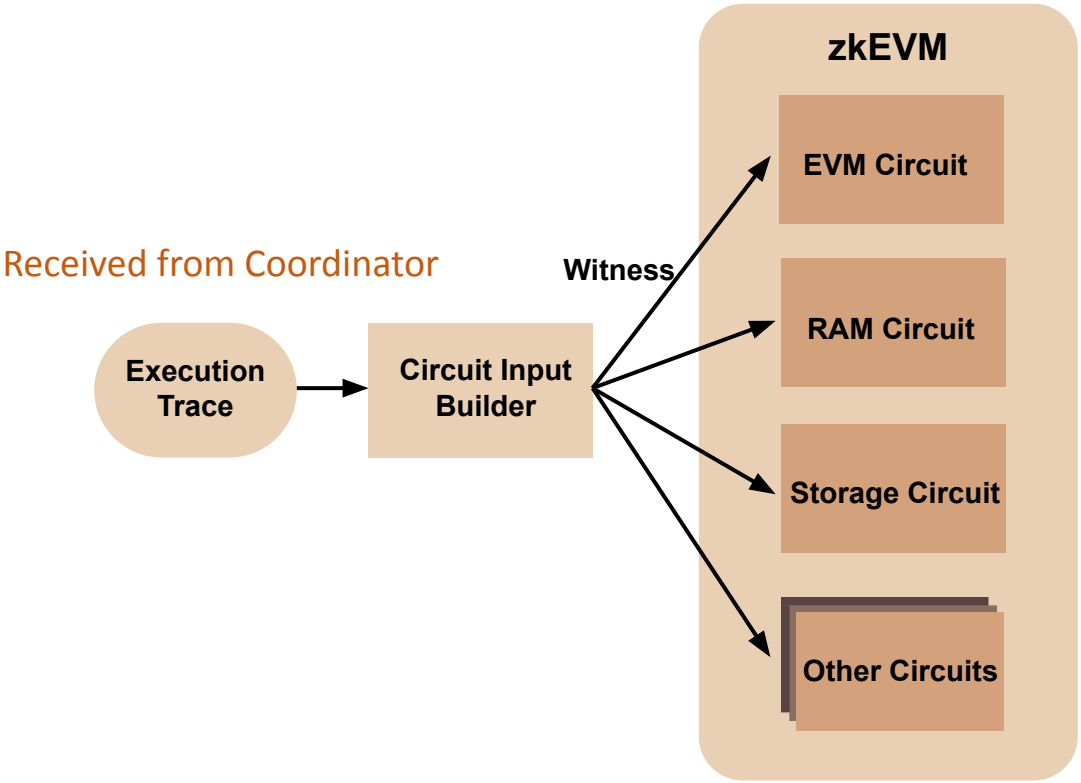
Scroll Architecture – what happens in the Roller?

Scroll

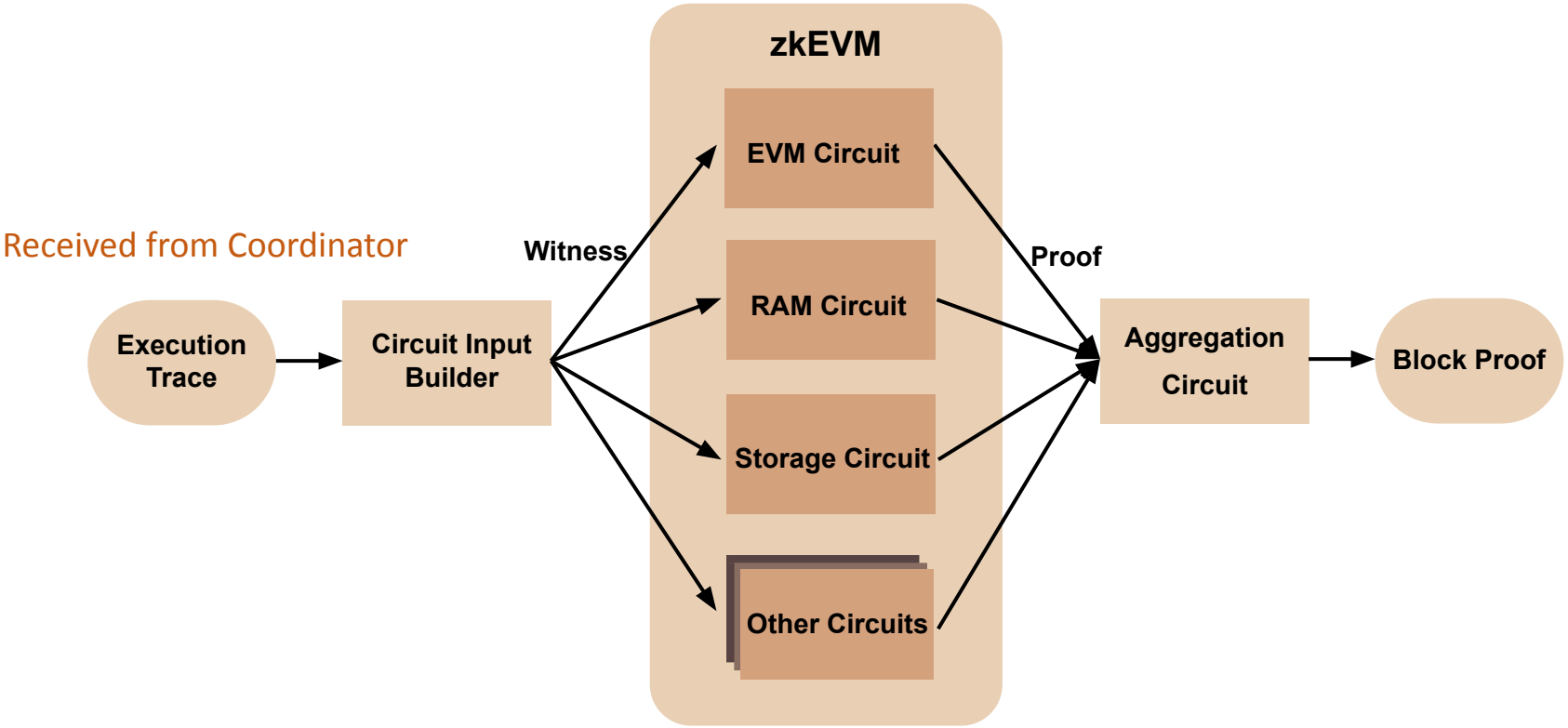
Received from Coordinator

Execution Trace

Scroll Architecture – what happens in the Roller?



Scroll Architecture – what happens in the Roller?

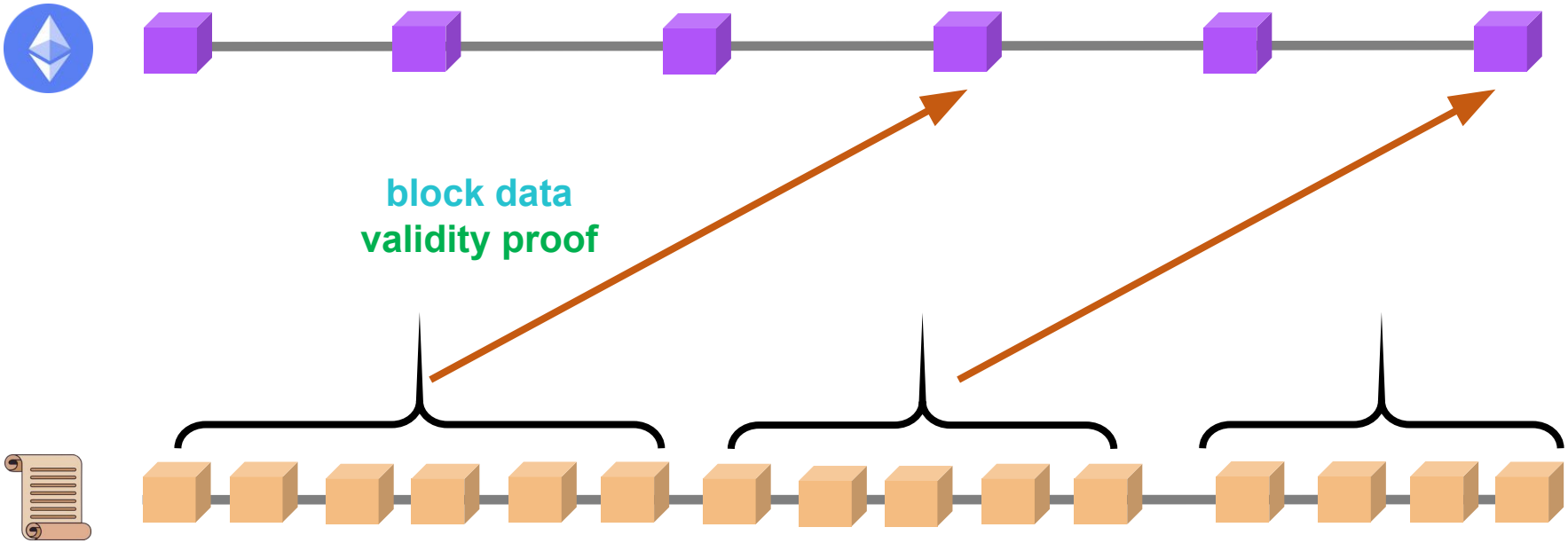


Scroll

The workflow of Scroll

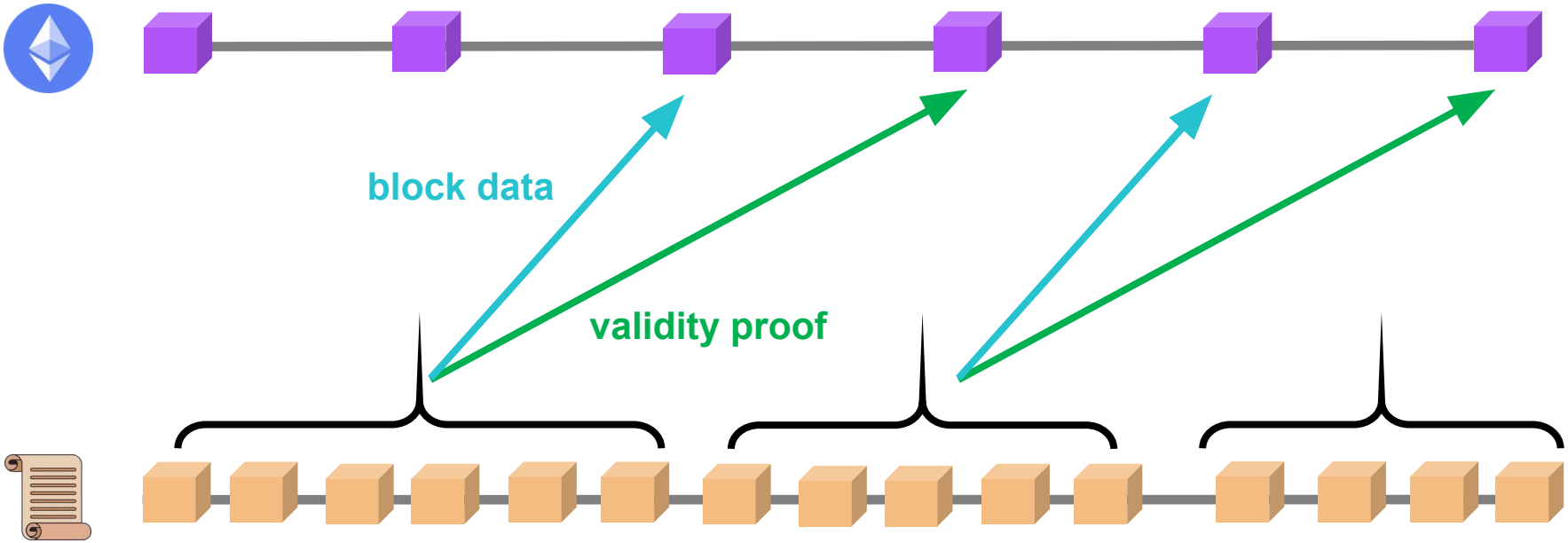
The workflow of zk-Rollup

Scroll



The workflow of Scroll's zk-Rollup

Scroll



L2 Block status

Scroll

- **Pre-committed**: indicates a block has been proposed by a Sequencer and included in the L2 chain.
- **Committed**: indicates the transaction data of this block has been posted on the rollup contract on Ethereum.
- **Finalized**: indicates the correct execution of transactions in this block has been proven by verifying a validity proof on-chain on Ethereum.

The workflow of Scroll's zk-Rollup

The workflow of Scroll's zk-Rollup

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The workflow of Scroll's zk-Rollup

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The workflow of Scroll's zk-Rollup

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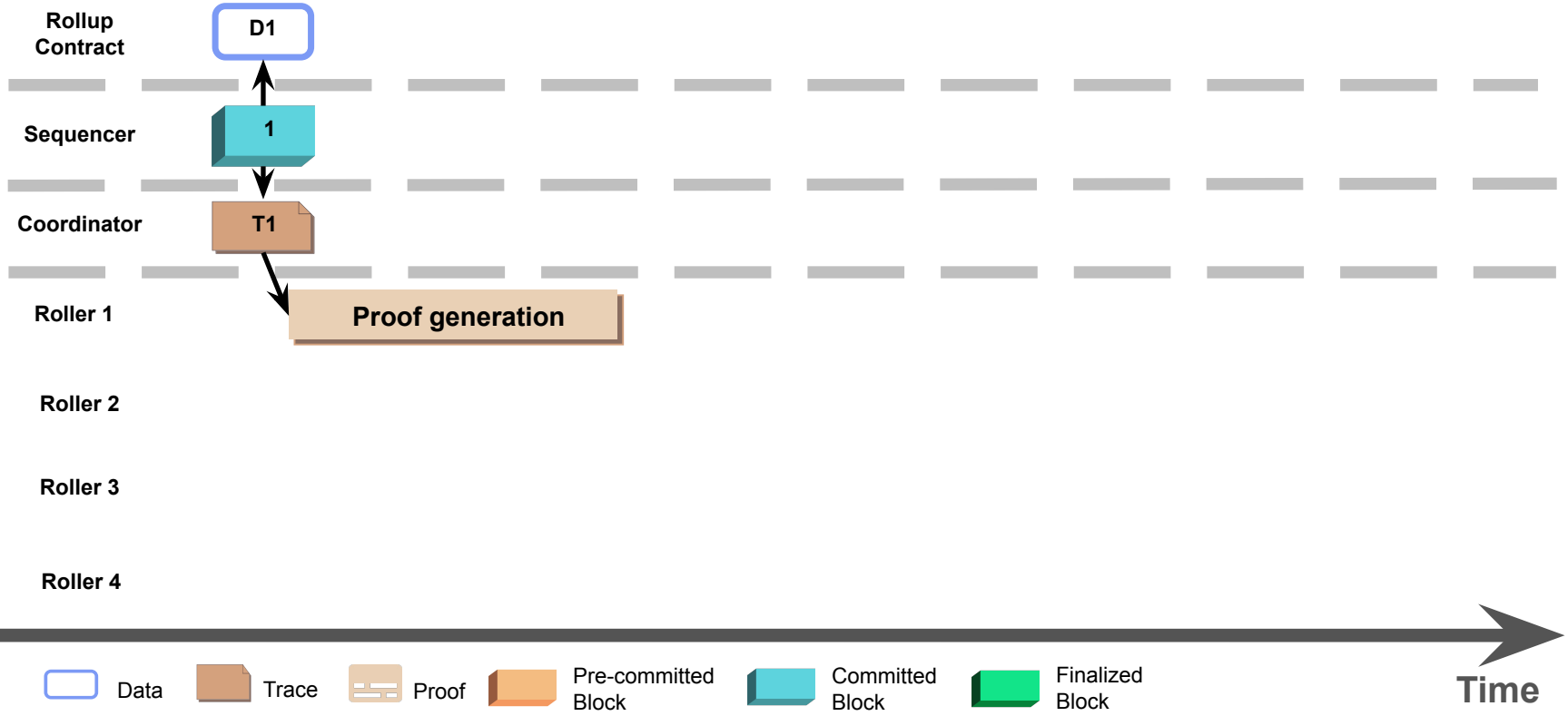

The workflow of Scroll's zk-Rollup

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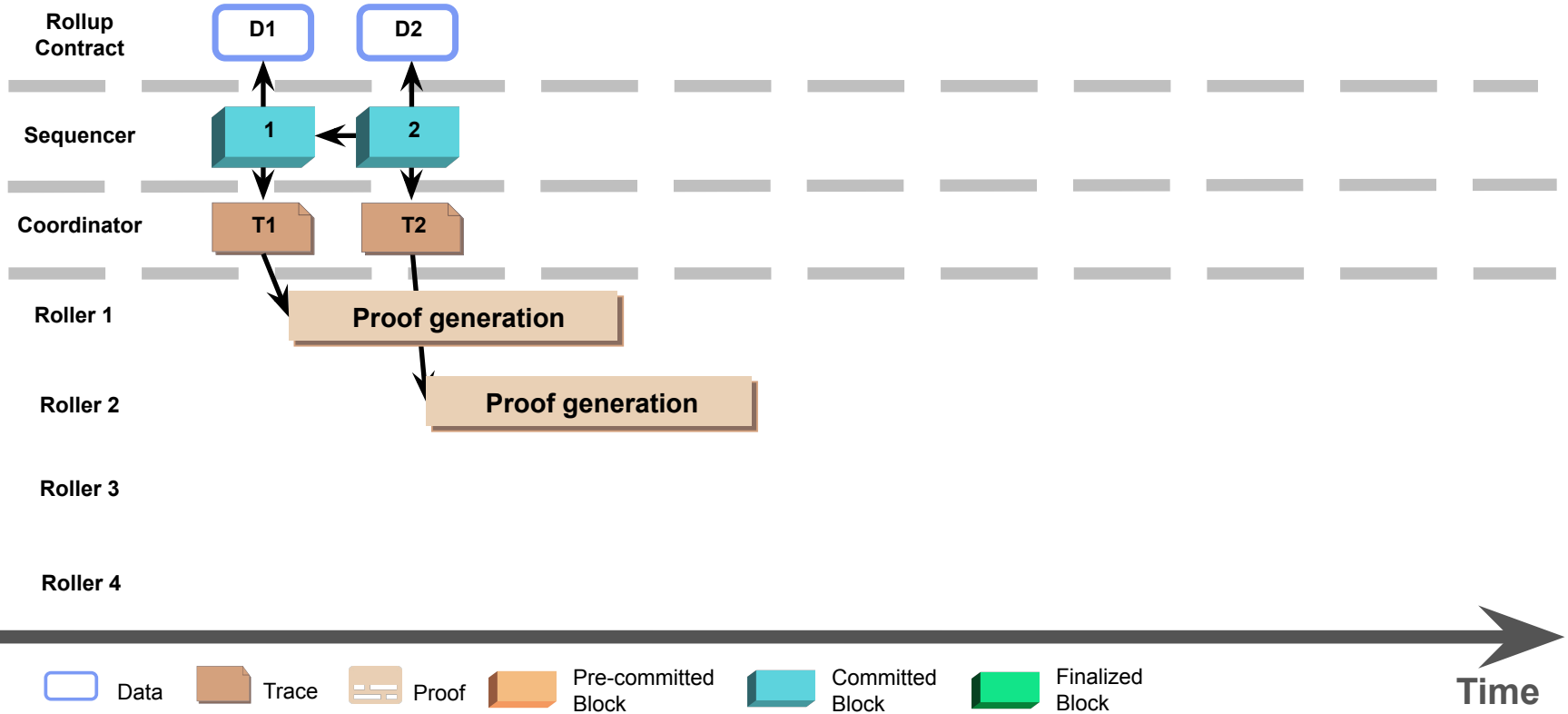

The workflow of Scroll's zk-Rollup

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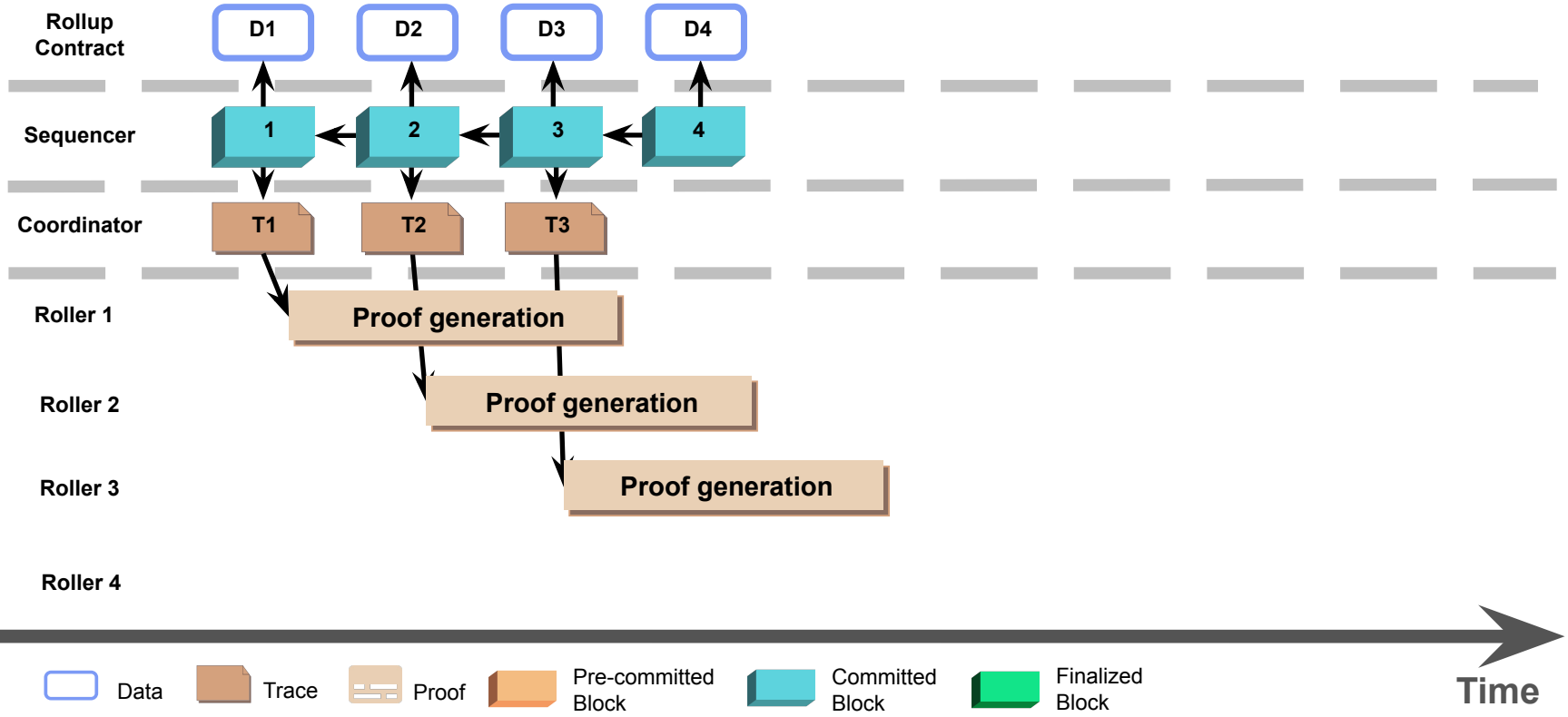

The workflow of Scroll's zk-Rollup

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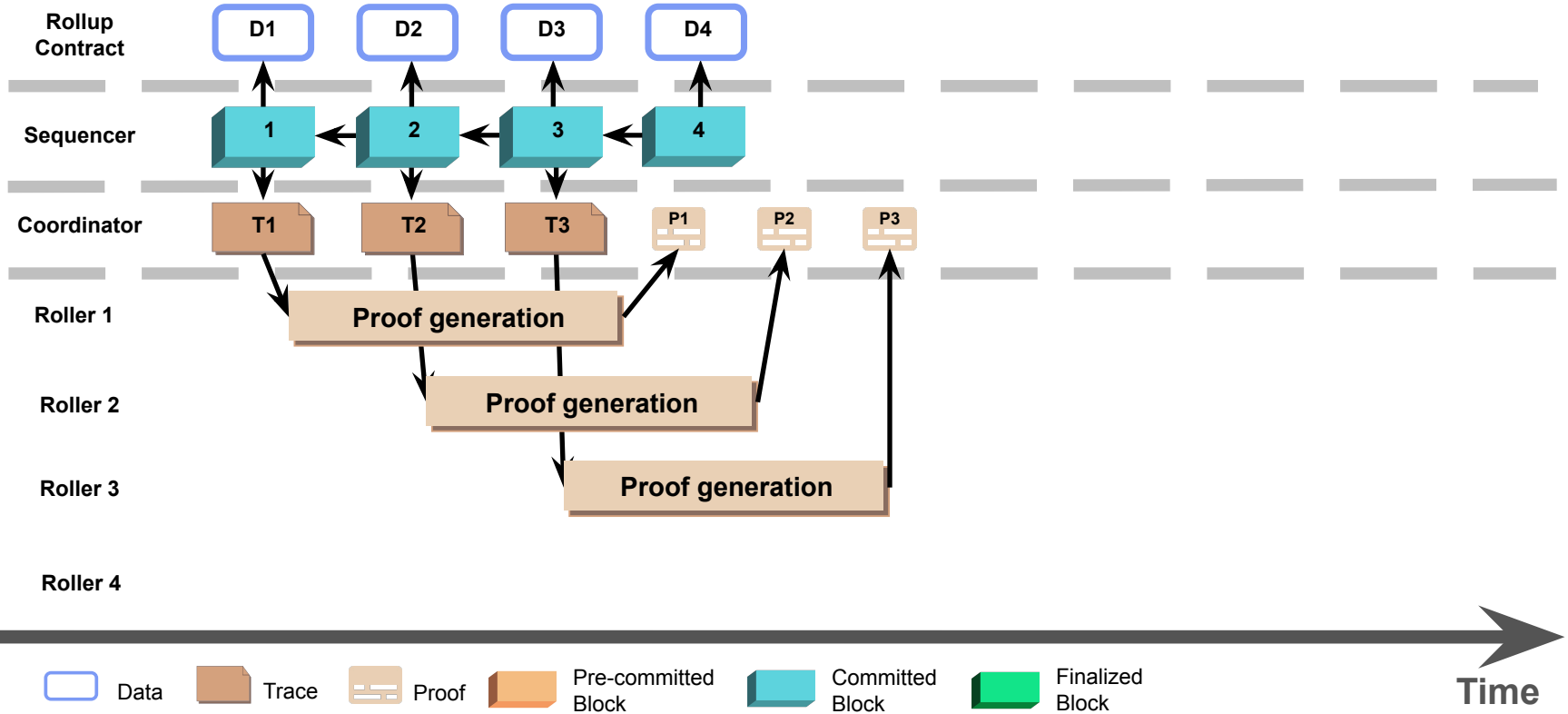

The workflow of Scroll's zk-Rollup

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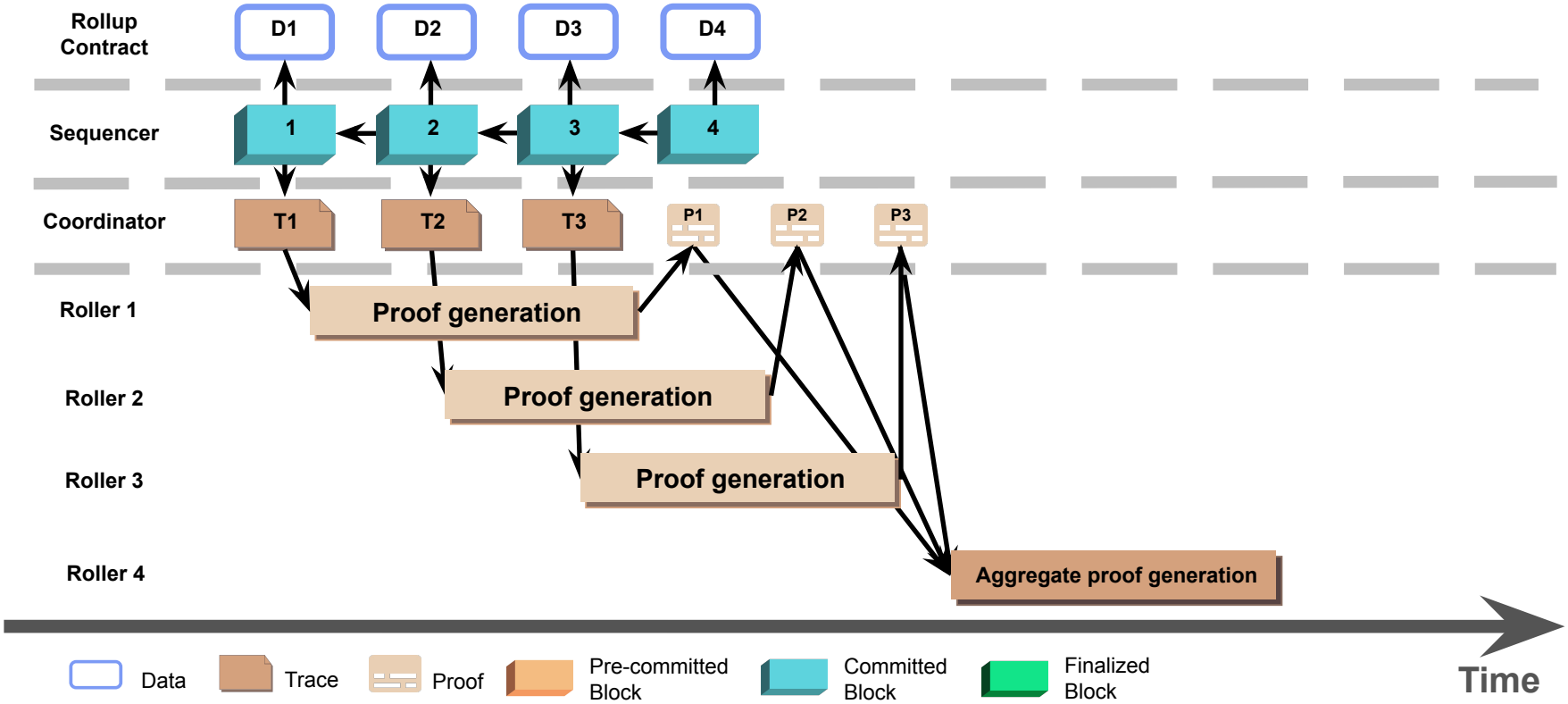

The workflow of Scroll's zk-Rollup

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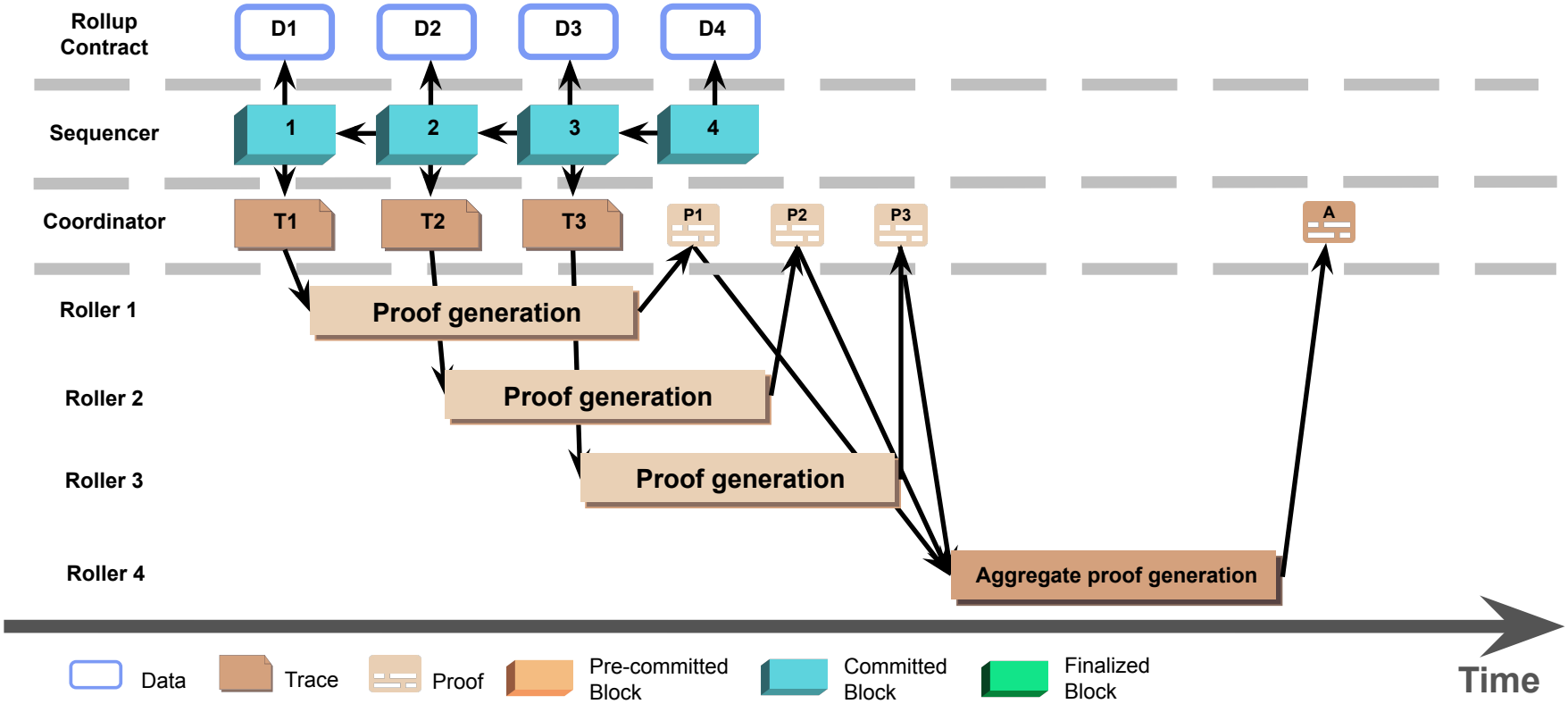

The workflow of Scroll's zk-Rollup

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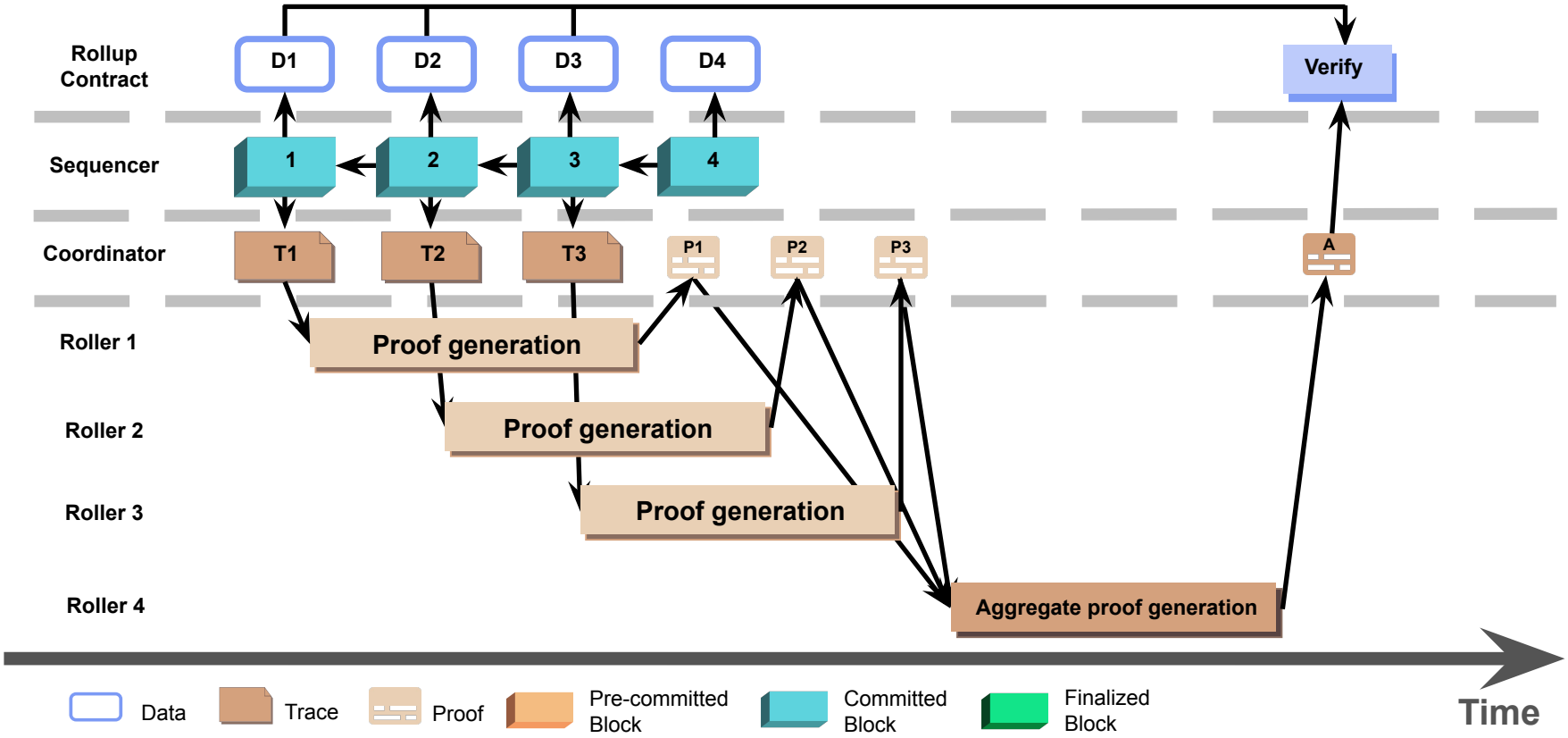
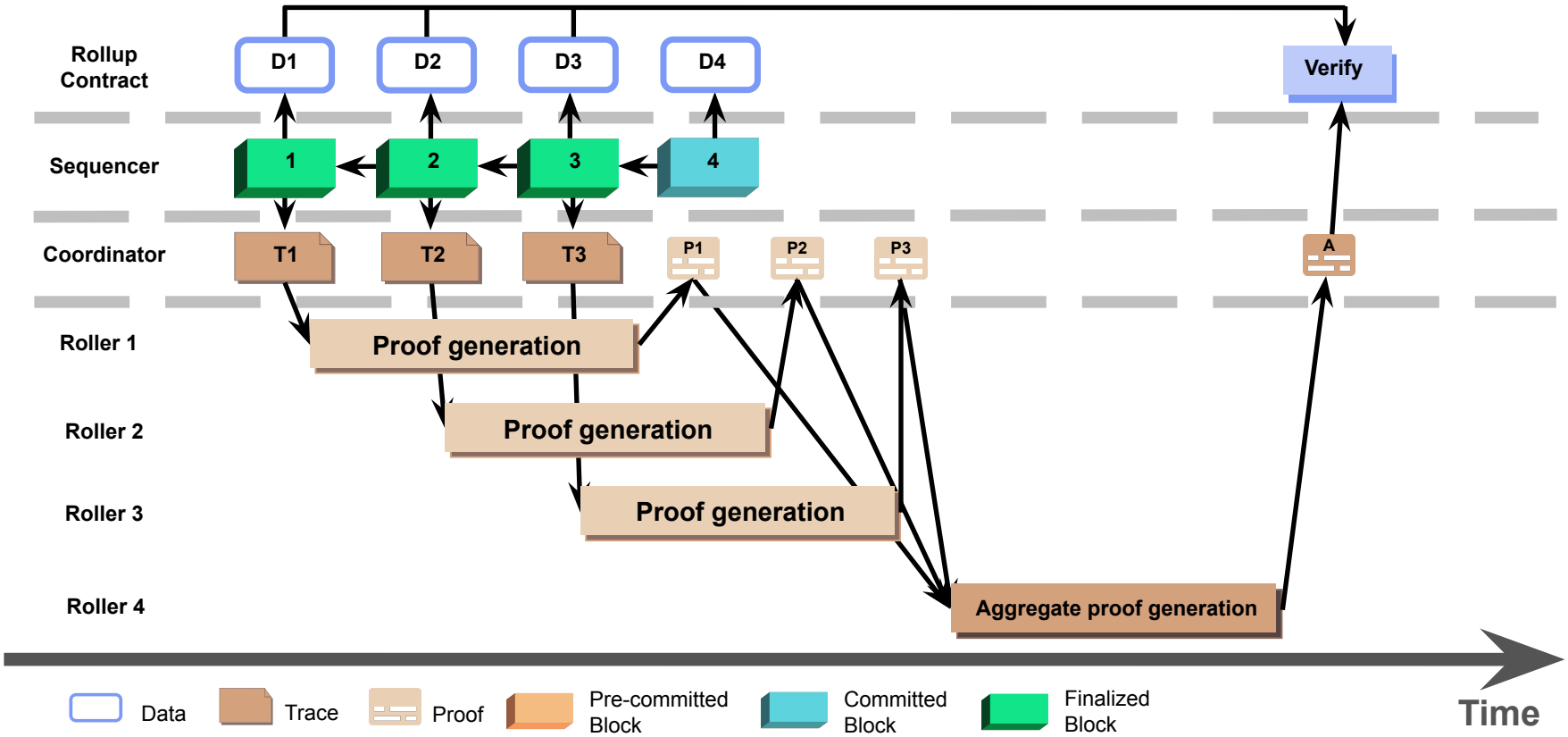


The workflow of Scroll's zk-Rollup

Scroll



Rollup explorer shows the block status

Scroll

Last Pre-committed Block No.	Last Committed Block No.	Last Finalized Block No.
31540	31538	31438

L2 Block No.	Block Hash	Tx(s)	Timestamp	Status	Commit Tx Hash	Finalize Tx Hash
31538	0xcea1...f773	1	a few seconds ago	Precommitted	0x5310...b6b1	-
31537	0xe46c...1109	1	a minute ago	Committed	0xfeb8...4dc3	-
31536	0x1f43...d5da	1	a minute ago	Committed	0x4e91...7baa	-
31535	0x620d...87c7	1	2 minutes ago	Committed	0xc544...7c07	-
31534	0x0f46...b3d4	1	2 minutes ago	Committed	0x9fa9...f81f	-
31533	0xd12b...cc54	1	2 minutes ago	Committed	0x3625...0054	-

Rollup explorer shows the block status

Scroll

Last Pre-committed Block No.	Last Committed Block No.	Last Finalized Block No.
31540	31540	31444

L2 Block No.	Block Hash	Tx(s)	Timestamp	Status	Commit Tx Hash	Finalize Tx Hash
31440	0x3803...7a7e	1	18 minutes ago	Committed	0xb9cc...7c20	-
31439	0x37f9...b121	2	18 minutes ago	Committed	0x1d61...712e	-
31438	0xd4c6...0ed6	4	18 minutes ago	Finalized	0x1d61...712e	0xfeb8...4dc3
31437	0xcd6e...dd14	3	18 minutes ago	Finalized	0x1d61...712e	0x4e91...7baa
31436	0x7c87...8ac5	2	18 minutes ago	Finalized	0x1d61...712e	0x4e91...7baa
31435	0x798e...0f85	2	19 minutes ago	Finalized	0x432c...dfaa	0xc544...7c07

Scroll

Scroll Pre-Alpha Testnet

Three months ago, we have released our testnet

- Users can play with pre-deployed DApps through metamask
- Users can bridge their asset between L1 and L2
- Users can see their Tx status through Rollup explorer

Three months ago, we have released our testnet

- We'd like to thank the community for their helpful feedback!
- We have onboarded over 10k users to test bridge and DApps
- Scale up our proving infrastructure to support 100K+ users on waitlist!

Scroll

Announcement: The upgrade!

The upgrade of our Pre-Alpha Testnet

Scroll

- Support arbitrary smart contract deployment!
    - Seamless migration without any need to change the code!
    - Support all the toolings around (Remix, Harhat, Foundry, etc)!
- Hackathon at ETH Global and Open register to all developers

Pre-Alpha Testnet

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To become an early tester and contributor

Sign up at https://scroll.io/early-dev

A summary for users and developers

Scroll

- The developer experience will be exactly the same as Ethereum
- Layer 2 block generation takes <3 seconds
- Deposit takes 2 minutes (wait for 6 L1 blocks to be safe)
- Withdraw takes more than 6 minutes (depends on prover & TPS)

Scroll

Our roadmap

Roadmap

Scroll

PHASE1

Pre-Alpha testnet

PHASE2

Alpha testnet

PHASE3

Layer-2 proof outsourcing

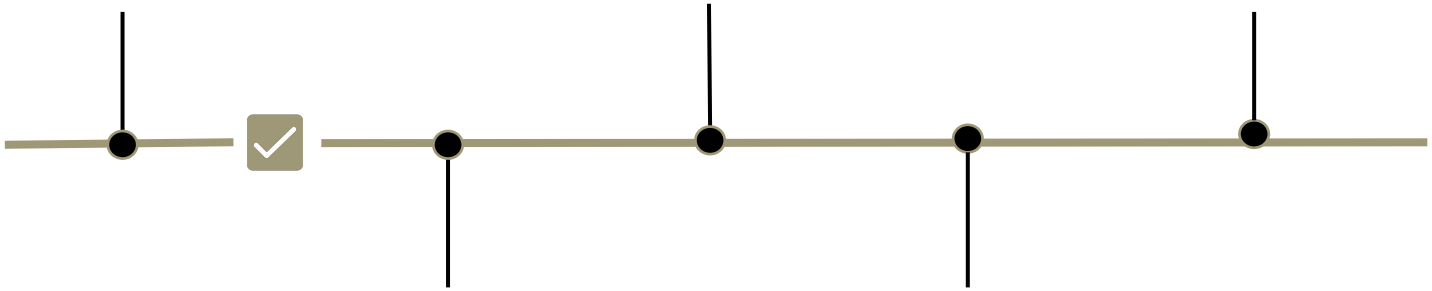
PHASE4

zkEVM mainnet

PHASE5

Decentralized sequencer

more efficient zkVM



Our plan for hardware acceleration

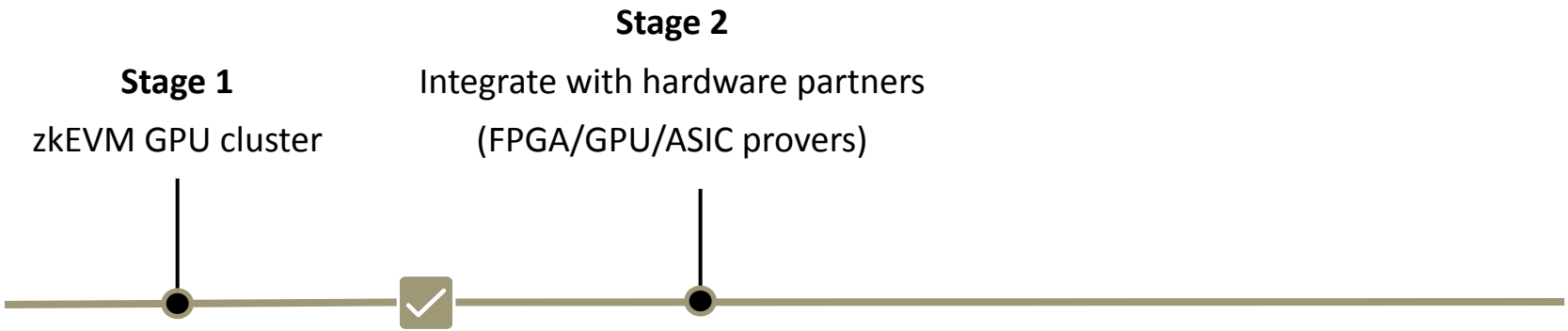
Scroll

Stage 1

zkEVM GPU cluster

- We have built a very fast GPU solution to generate proofs for zkEVM circuits (1M gas takes 6 minutes)
- We have built a private GPU cluster to provide more stable computation power for our Testnet in Stage 1
- We are collaborating with companies on more customized hardware acceleration (FPGA, ASIC and GPU)

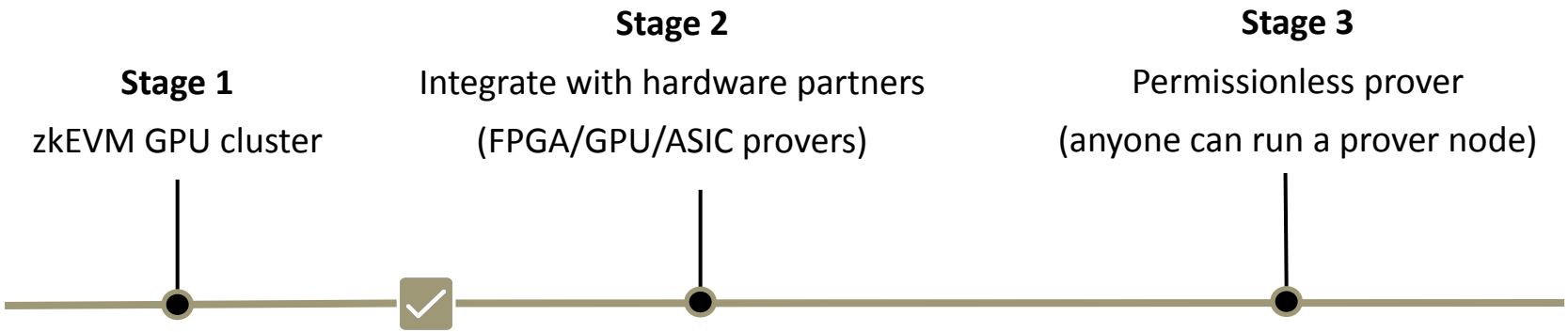
Our plan for hardware acceleration



- We will give access to hardware partners and they can test their prover and generate proofs for us
- Customized provers can significantly shorten the finality time and improve UX

Our plan for hardware acceleration

Scroll



- We will open-source our GPU prover with a permissionless license for everyone to use
- The prover access will become permissionless, anyone can be Roller and generate proof for us
- They can also buy customized hardware from hardware companies/stake to use some prover service

One Last thing!

Our tech team

Scroll

- Infrastructure team (Asia & Europe)
- zk team (Asia & US)
- Security team
- Research team

Our vision

Scroll

- Onboard the next billion of users for Ethereum
- Build in the open, co-build with community
- Fight for decentralization across different levels

We are hiring! Check out jobs.lever.co/ScrollFoundation

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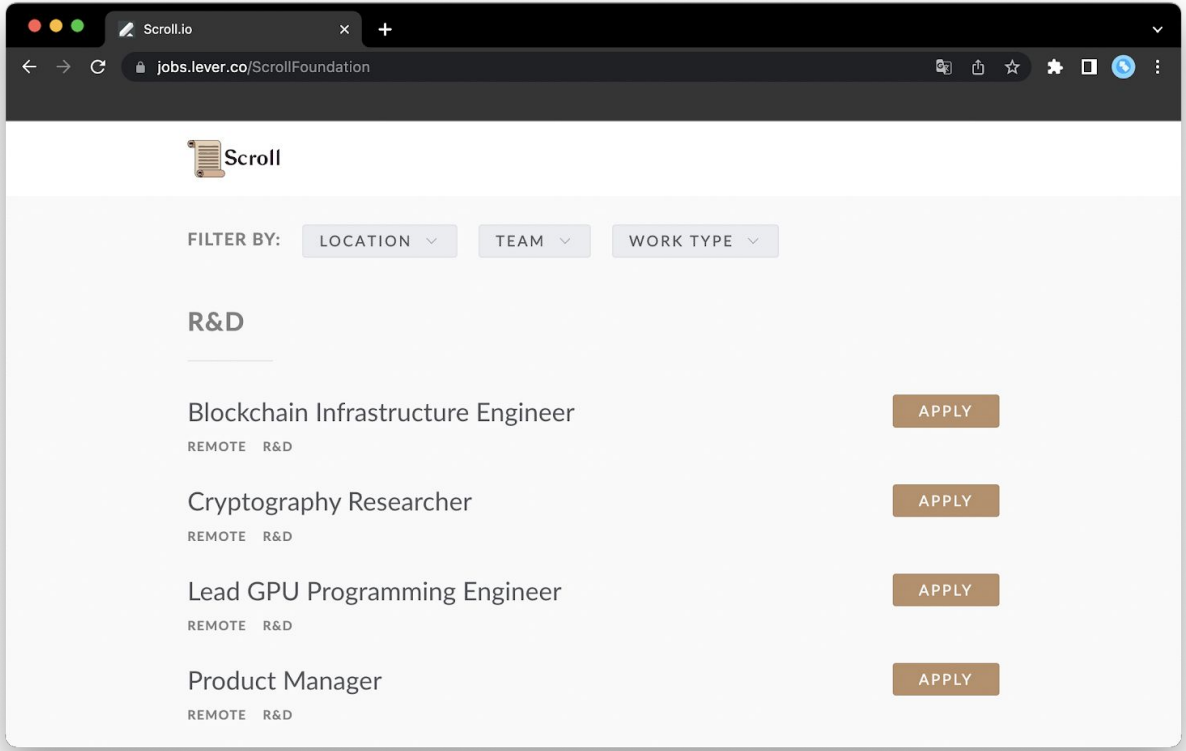

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Thank you!

@yezhang1998