Moonbeam

Using Precompiles to Create a Staking DAO on Moonbeam

PureStake

Henry Duong, Developer Relations Engineer

Speaker Introduction - Henry Duong

- Worked as an SDE for Microsoft Corp., Visual Studio team
- BS in Industrial Engineering from UC Berkeley, MS in CS from Georgia Tech (in progress)
- First experimented with Substrate in 2018
- Joined Moonbeam DevRel team in summer of 2021
- Based in Taipei, originally from Beijing

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Workshop Overview

Moonbeam and Staking Overview

Introduce Precompiles

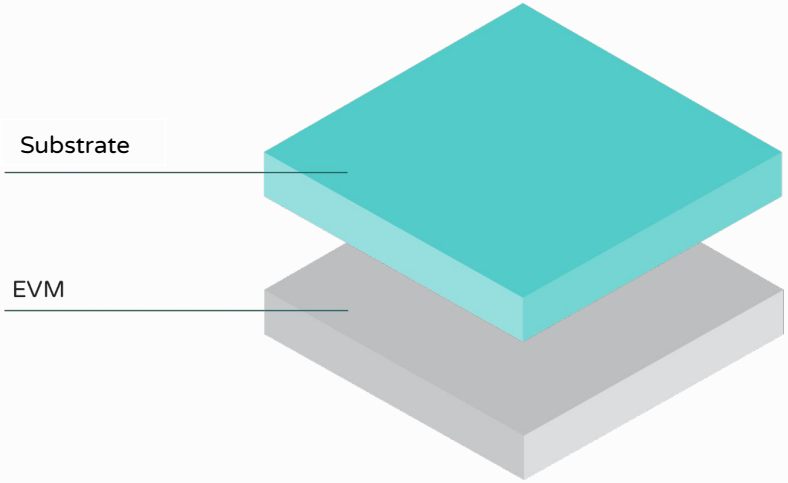
Delegation DAO

Deployment and Demo Using Scaffold-ETH

Moonbeam: an EVM Compatible Parachain on Polkadot

What is Moonbeam?

An Ethereum-Compatible Smart Contract Parachain on Polkadot



Built with Substrate

Connected to Polkadot for native interoperability

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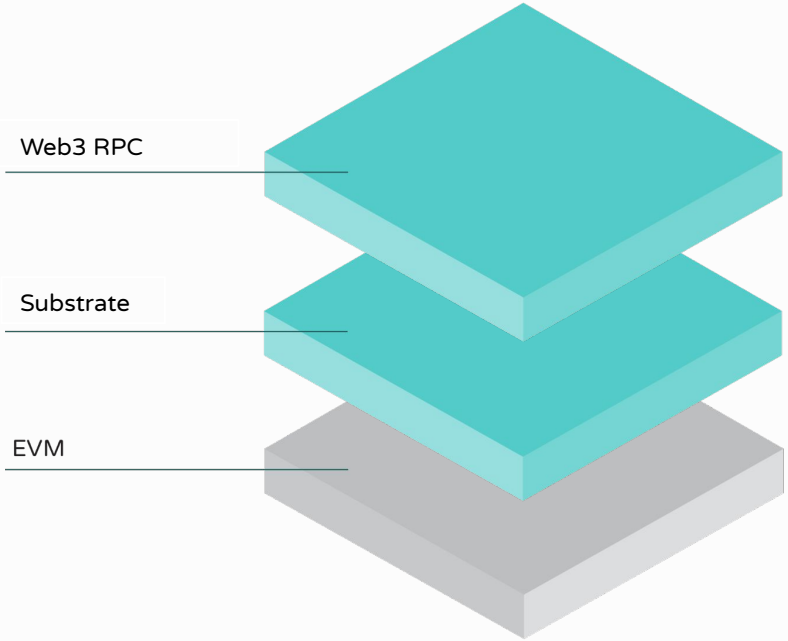

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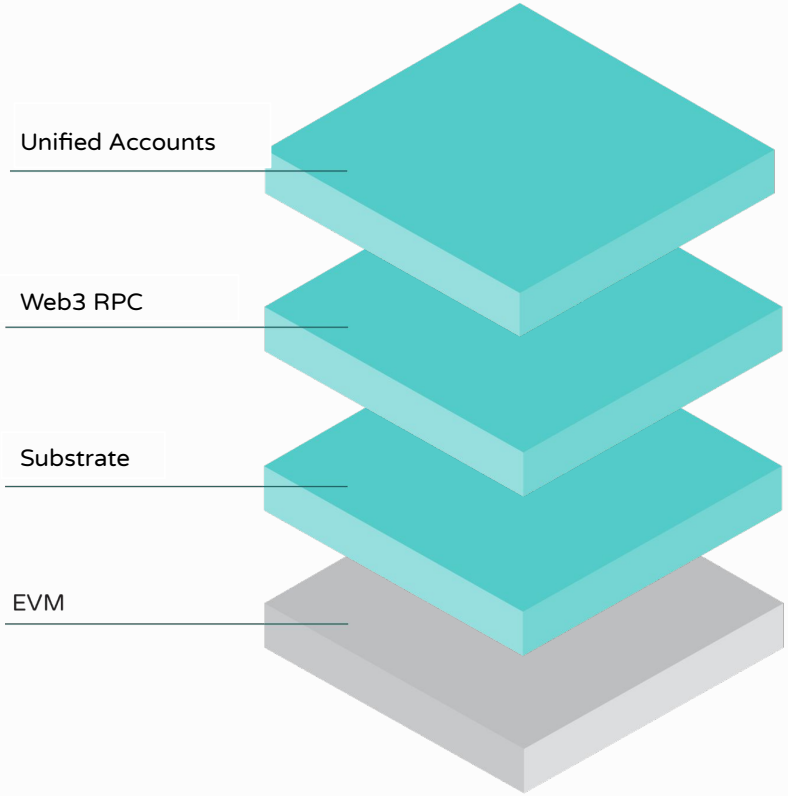
Web3 RPC Support

Seamless Eth JSON RPC integration



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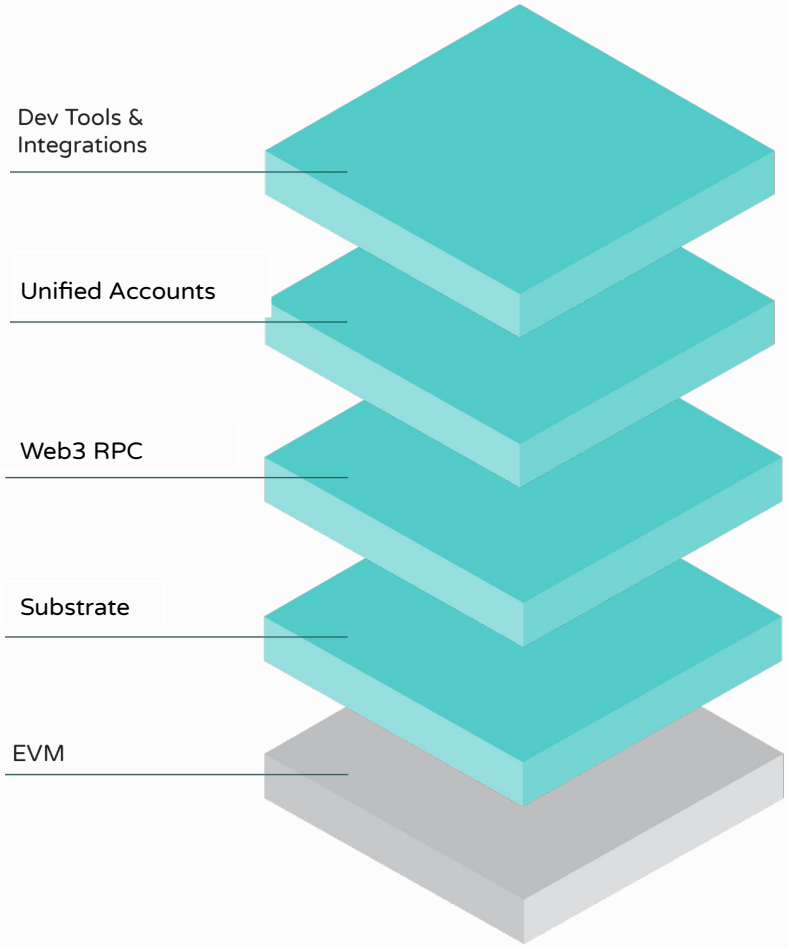
Ethereum-styled accounts



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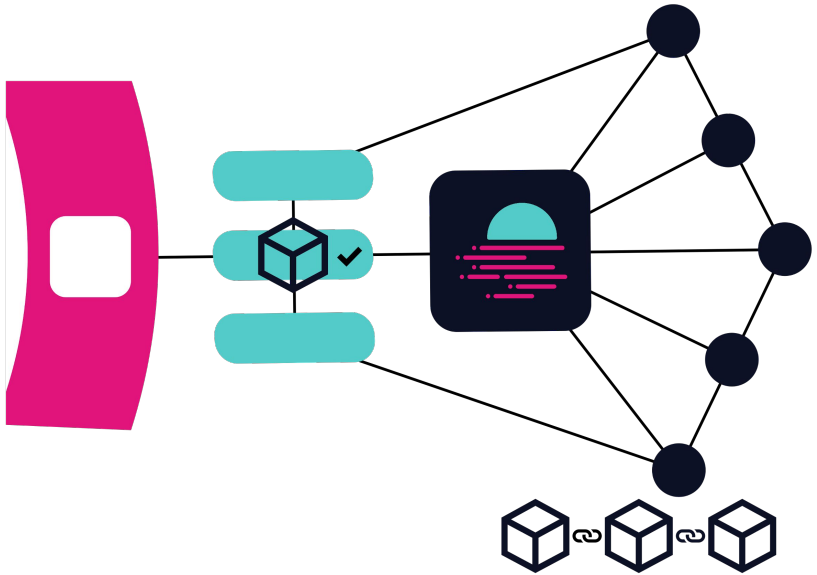
Dev Tools and Integrations
Ethereum Dev-like environment

Moonbeam Staking

Moonbeam Consensus (very briefly)

- Moonbeam uses a delegated PoS based hybrid consensus
- Parachain collators collect transactions and author blocks
- Nimbus filters the valid authors for each block from the active collator set
- The blocks are then submitted and finalized by the Polkadot relay chain



Moonbeam Staking Overview

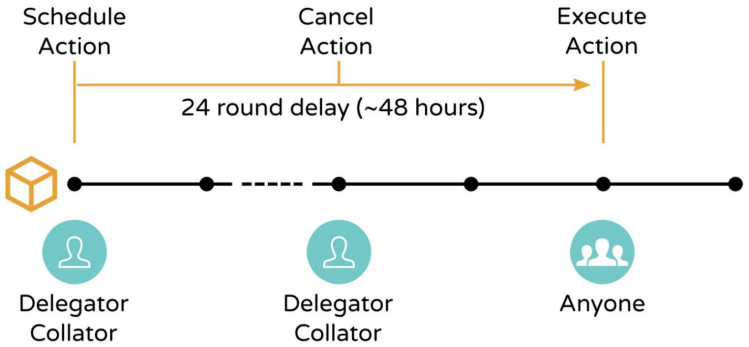
- Two main roles: collator candidates and delegators
- Collator candidates run a collator node and can receive delegations; delegators provide votes to collator candidates and do not run a node
- Membership in the collator active set is determined by:

```
Total Bonded = Self-bond + Total Delegation Amount
```

- The highest 64 collator candidates by total bond are in the active set
- Each collator candidate can have maximum of 300 effective delegations

Delegating and Revoking

- Creating a new delegation or bonding more to an existing delegation is instant
- But revoking delegation or bonding less is a two step process: *schedule action* and *execute action*
- One delegator can only have one revoke or bond less action scheduled at any given time



Moonbeam Precompiles

What's a precompile?

- A precompiled piece of code or smart contract
- Originally used by Ethereum, for commonly used encryption and hashing algorithms, such as SHA256, RIPEMD56, Keccak256, etc.
- A type of Substrate primitive, an important part of building cross-chain interactions and interacting with Substrate pallets

What precompiles does Moonbeam have?

- Parachain Staking
- Pallet Democracy
- XCM Transactor
- xTokens
- Author Mapping
- Assets-ERC-20
- Etc.
- For full list see: https://github.com/PureStake/moonbeam/tree/master/precompiles

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Workshop Resources

GitHub Repository

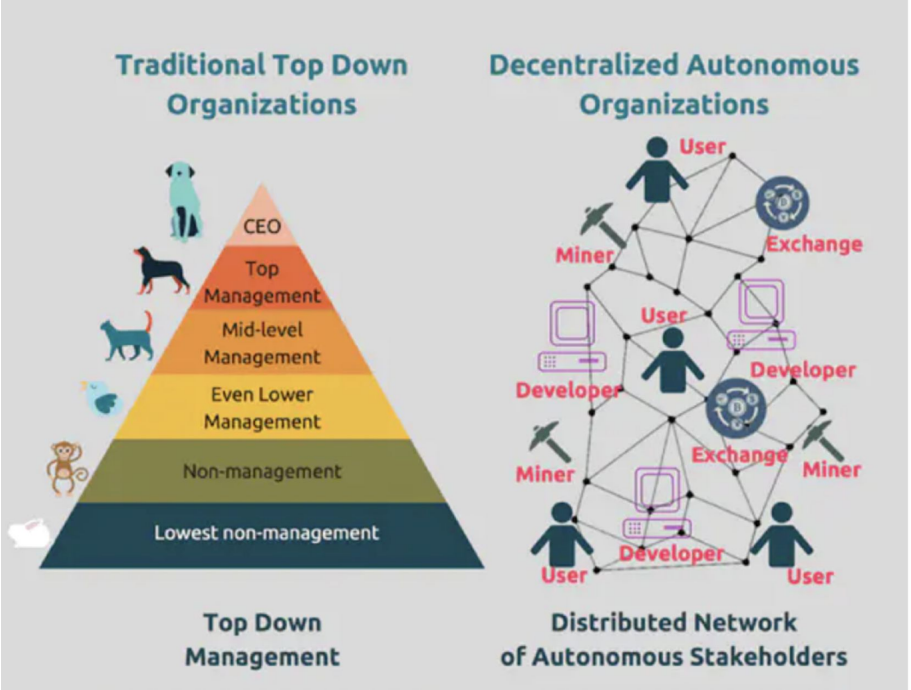
https://github.com/hyd628/delegation-dao-demo

StakingInterface.sol

What We Are Building Today

Delegation DAO Requirements

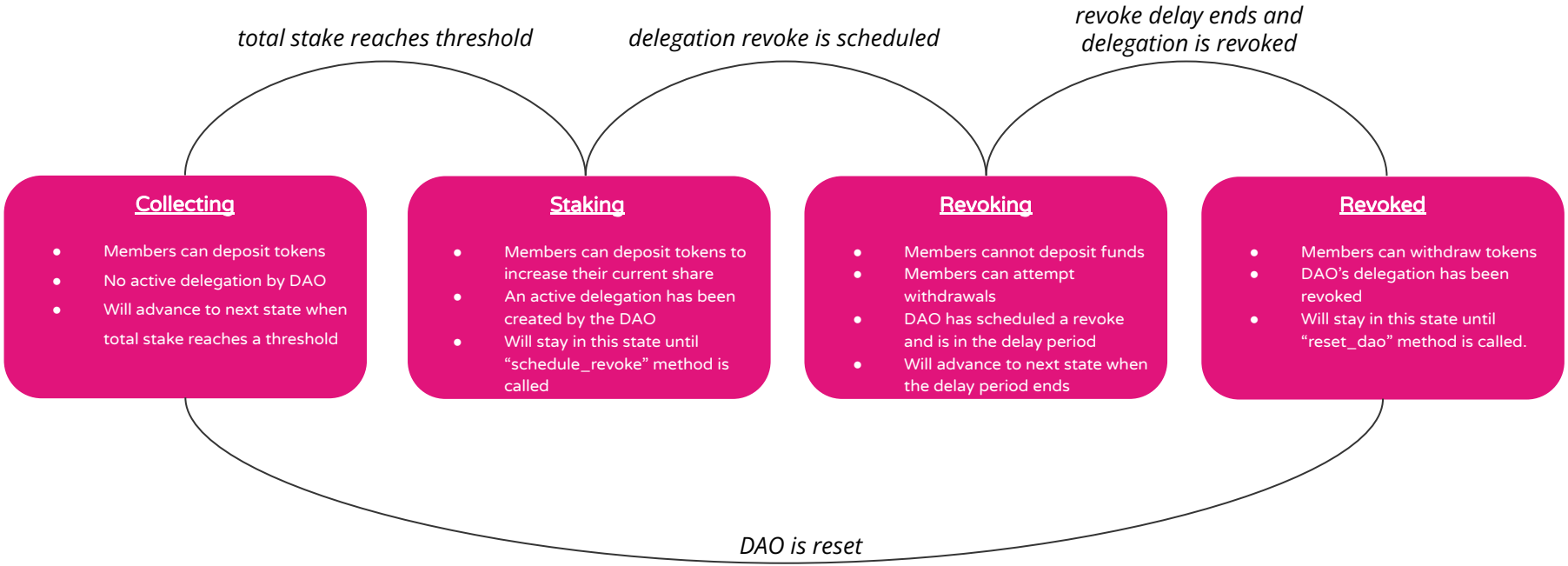
- A member of Delegation DAO can deposit their tokens to the DAO smart contract
- The DAO will delegate the total staking pool to a pre-selected collator candidate node
- Members can withdraw their stake from the DAO and receive the proportional amount of staking rewards from the pool



Why stake through a DAO?

- Members might not have the required minimum stake; currently this is set to 50 GLMR on Moonbeam
- Members might not be in the top 300 effective delegations for a given collator candidate if staking individually
- A staking DAO can implement automated staking strategies that return higher rewards than staking individually
- A similar contract be used to create a DAO based collator candidate, where the DAO's total staking pool can be used to reach the active collator set

A State Based DAO Design



DelegationDAO.sol

Scaffold-ETH

- https://github.com/scaffold-eth/scaffold-eth
- Compilation of commonly used ETH dev tools
- Includes: Hardhat, ethers.js, The Graph, and a React UI
- Fully open source and compatible with Moonbeam

Contract Deployment and Verification

Creating a Simple UI and Testing

How to Get in Touch

Website: moonbeam.network

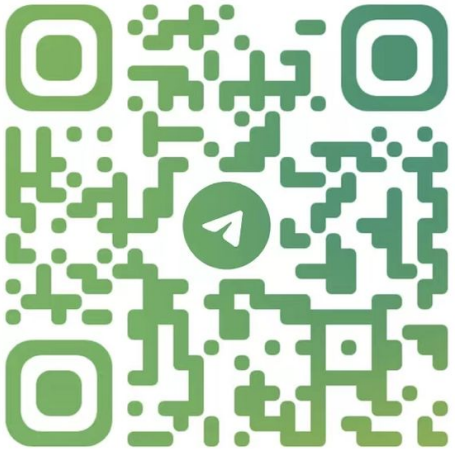
Discord: https://discord.gg/PfpUATX

Developer Docs: docs.moonbeam.network

Github Repos:

- https://github.com/purestake
- https://github.com/purestake/moonbeam
- https://github.com/paritytech/frontier

Speaker:



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