Making Tokens Cross-Chain Scalable

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Problem statement

Fungible tokens drive Ethereum’s economy—accounting for up to 80% of all transactions on the network.

Interoperability and horizontal scaling are key pillars of Ethereum’s long-term improvement strategy, ensuring a more connected and scalable blockchain ecosystem.

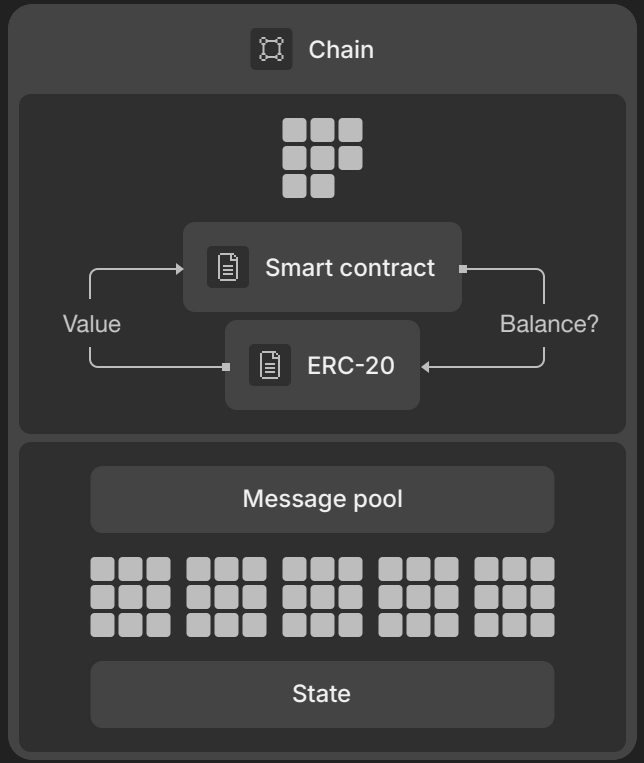
Scaling solutions lose effectiveness if the most computation-heavy on-chain logic remains a bottleneck.

What is ERC-20?

Smart contract

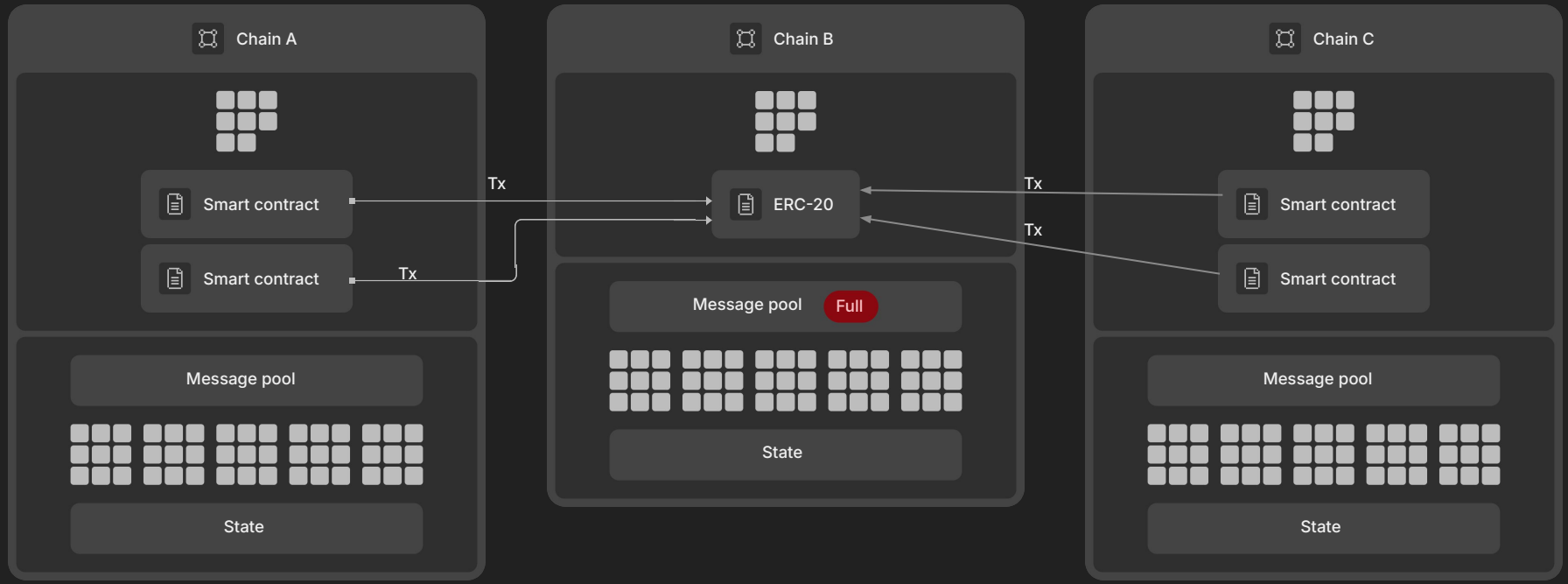
```
mapping(address → uint256) balances;

function transfer(address, uint256)(bool);
function balanceOf(address)(uint256);
function approve(address, uint256)(bool);

// Other standard ERC-20 functions:
transferFrom, allowance, totalSupply, etc..
```

Interacting with ERC-20 Tokens

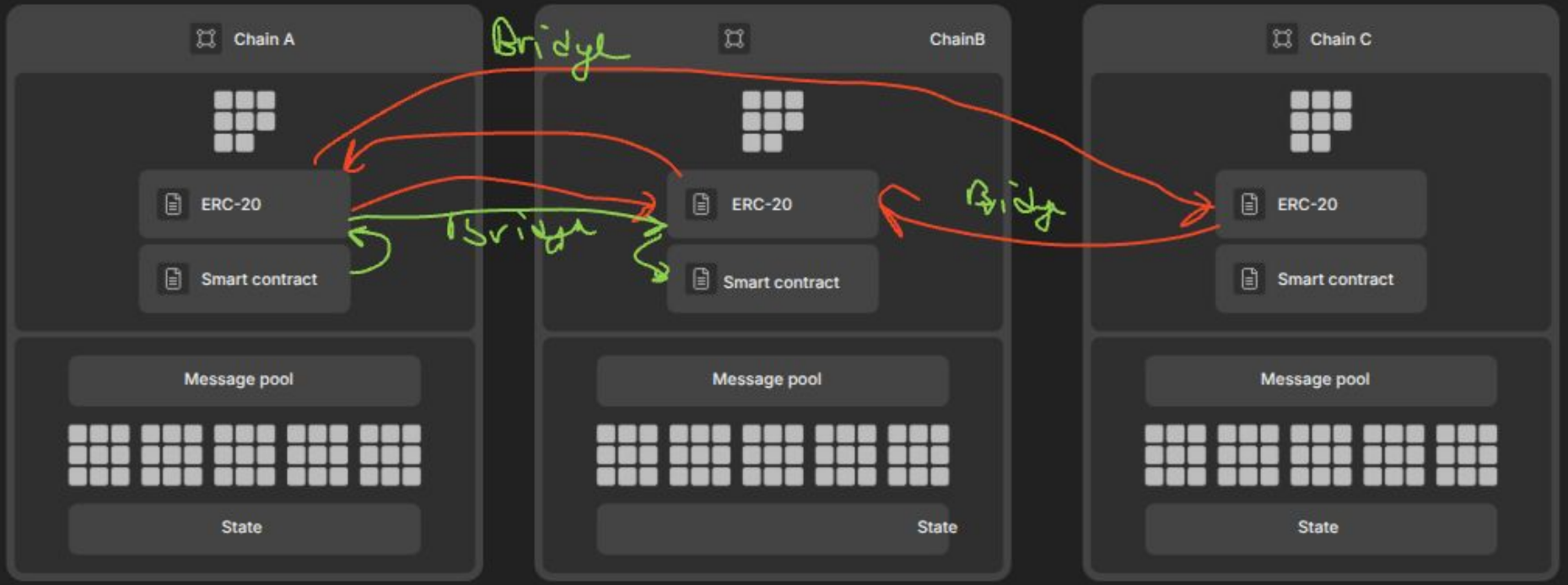


- ERC-20 is a centralized ledger for all balances.
- All interactions go through the ERC-20 contract.
- In Ethereum, interaction can be done synchronously.

ERC-20 in cross-chain (sync access)



ERC-20 in cross-chain (async access)



ERC-20 in cross-chain – challenges

- Failure handling (refunds/bounces).
- Complicated cross-chain synchronization.
- Double-spending, security vulnerabilities.
- Scalability yet not solved!

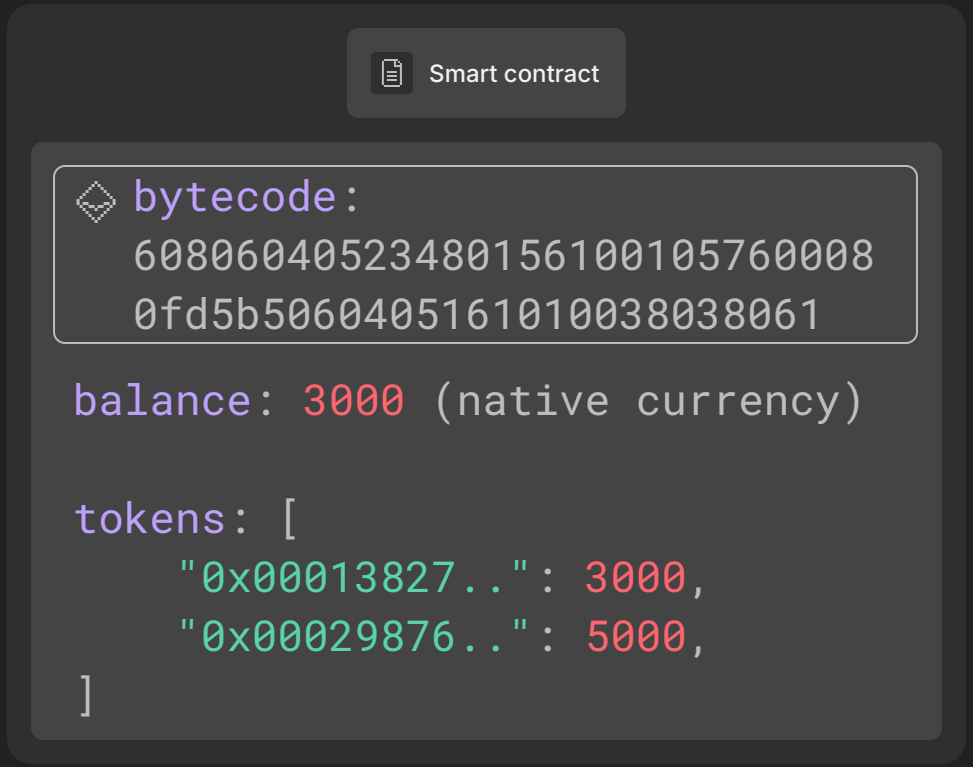
Enshrined tokens

(Think of them like cash)

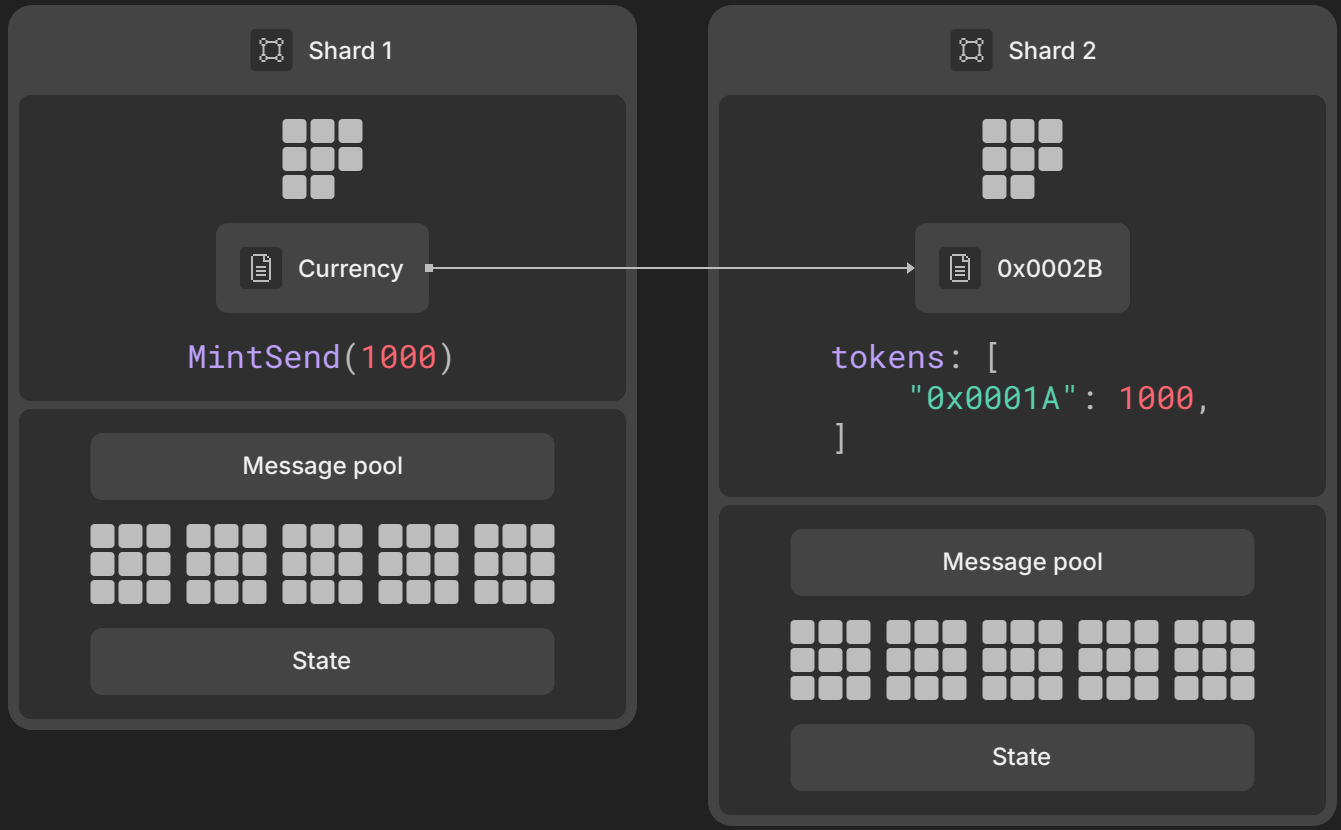
- Any contract can be an owner of exactly 1 currency
- Currency ID is the contract address, ensuring uniqueness
- Only the contract owner can mint, burn. Anyone can fetch total supply
- Any other contract can receive and send any token it holds
- Tokens can be sent alongside any message (sync/async)

Accounts are token holders

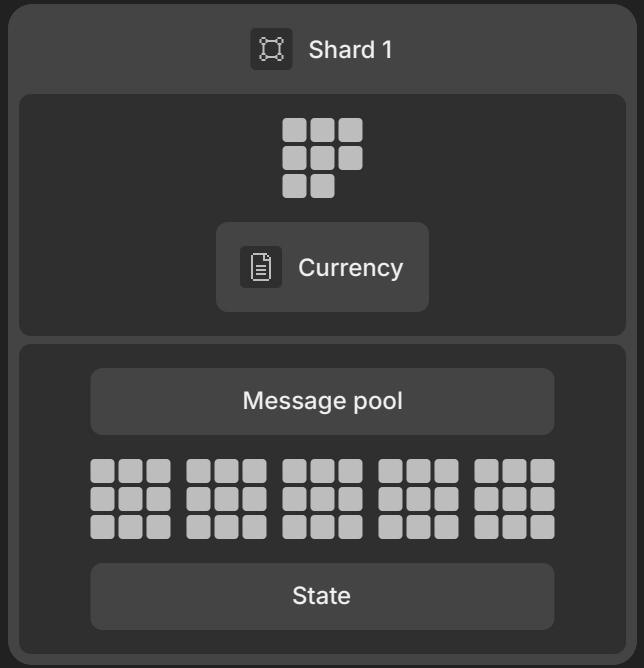
No EOA accounts,
only smart-contracts!

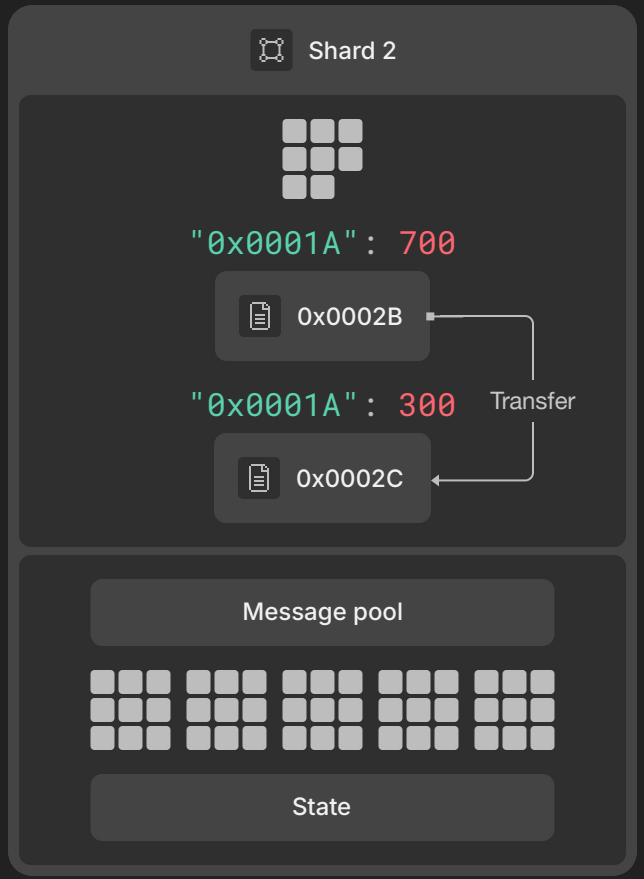


Enshrined Tokens



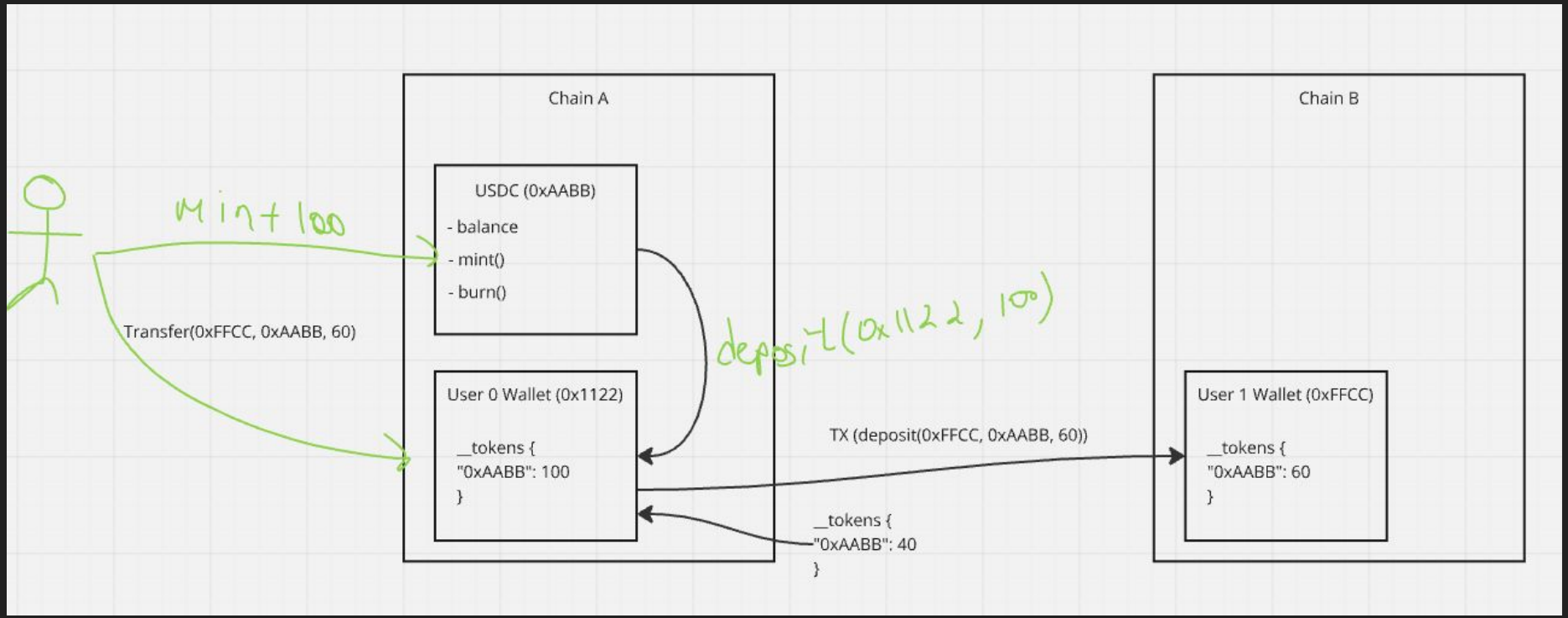
Enshrined Tokens





Mint & Deposit

Deposit is the precompile protocol function
Refunds and revert easy as the assets are attached to transactions/messages



Cons & Pros

+ Account abstraction friendly.
+ Direct transfers.
+ No multiple contracts.
+ No bottleneck contract.
+ Easy refunds and error handlings.
- Extra protocol logic.
- Hard ERC-20 compatibility.

Thank you for your attention!

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Devnet Launch