

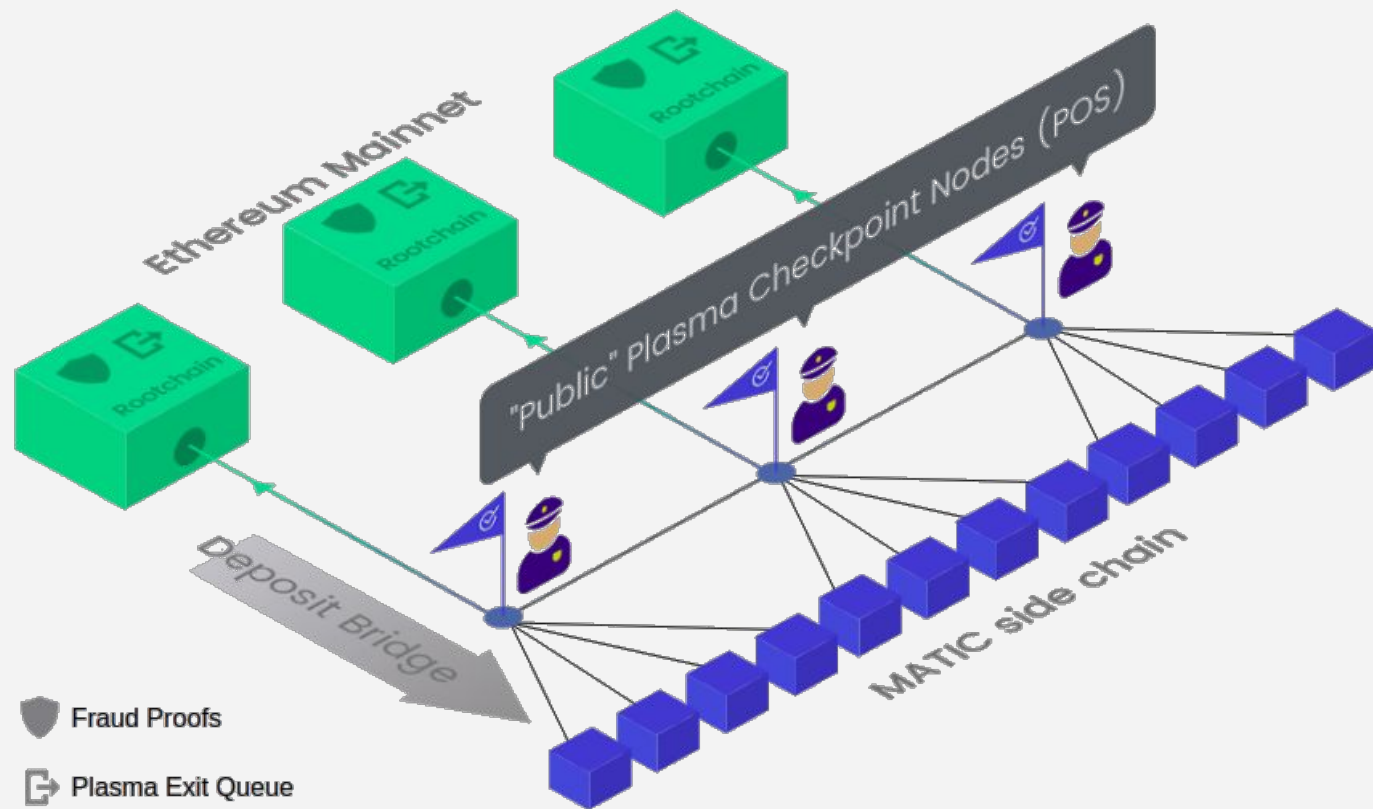
Building applications using fast Plasma asset swaps on Matic

Anurag Arjun

Co-founder & CPO @ Matic Network



Architecture





DApps on Matic



Decentraland



Chainbreakers



BetProtocol



CryptoControl



SpringRole



StacksCity



Marble.Card



Incorporating



DAI



ZygotERP



Nestree



Decentral
Games

Plasma

- Plasma allows for fast and cheap transactions on sidechains
- Added security of users being able to exit the Plasmachain safely if the sidechain ever goes down or there is a fraud reported
- Much stronger security compared to a general sidechain
- Liveness/data availability incentivized by Matic's PoS layer

Asset swaps on Plasma

- Plasma asset swaps feature released in Matic beta mainnet September release
- Can be used to create applications such as
 - Decentralised exchanges,
 - NFT marketplaces,
 - Asset swap widgets, etc.
- Faster swap transactions on Matic; finalized on Ethereum eventually
- Robust security
- This presentation will introduce you to the basic concepts of working with the Matic asset swaps feature.

Flow

- Buy/sell order created off-chain
- Signed by users to signal intent
- Tokens (ERC20/ERC721) have additional `transferWithSig` method
- Signed orders passed to `executeOrder` function in asset swap contract
- Contract verifies signatures
- If successful, execute atomic swap in single transaction
- Partial finality on Matic: ~1s, Full finality reached on Ethereum checkpoint: ~5 mins

`transferWithSig` primitive

- Can't use `approve` to contract as in Ethereum
- Difficult to prove clear ownership of funds in Plasma for contracts
- Account-to-account swaps are provable, secure and fast
- `transferWithSig` function added to token contracts
- Both ERC20 and ERC721 are supported
- Transfer after signature verification

```
function transferWithSig(bytes calldata sig, uint256 amount, bytes32 data,  
uint256 expiration, address to)
```

Get started

Asset swaps on Matic: <https://docs.matic.network/swap-assets/>

Other links:

Intro: <https://medium.com/matic-network/what-is-matic-network-466a2c493ae1>

Docs: <https://docs.matic.network>

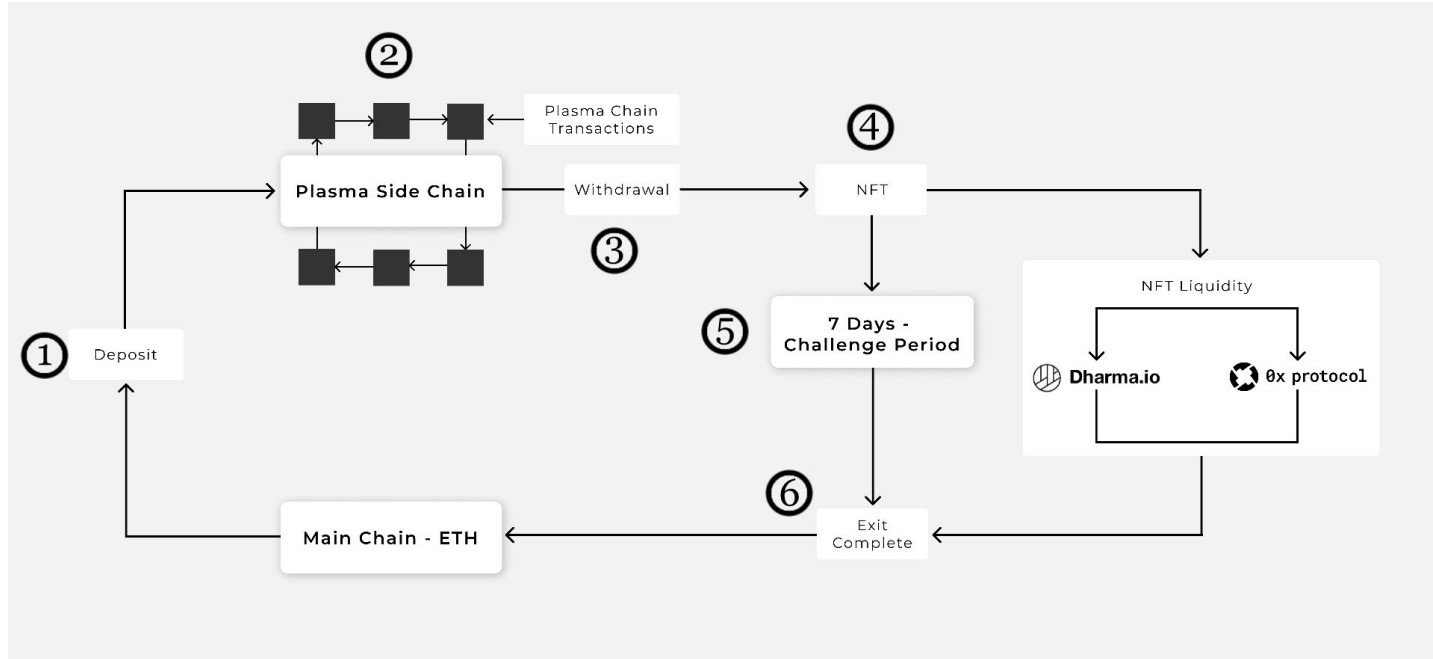
Quick start: <https://docs.matic.network/2-min-guide-to-matic/>

Deploy smart contracts on Matic:

<https://docs.matic.network/deploy-contracts-remix/>

Move assets b/w Ethereum & Matic: <https://docs.matic.network/matic-js-tutorial/>

Moving funds between Ethereum <> Matic



<https://docs.matic.network/matic-js-tutorial/>

Future Work

- Partial fills
- Front-running
- Porting liquidity from Ethereum to Matic
- Bridge abstraction
- One-click flow
- Meta-transactions

Thank you!

Anurag Arjun

Co-founder & CPO, Matic Network

anurag@matic.network

[https://twitter.com/ anuragarjun](https://twitter.com/anuragarjun)

