

Overview of Polygon

Scaling Ethereum for Mass Adoption

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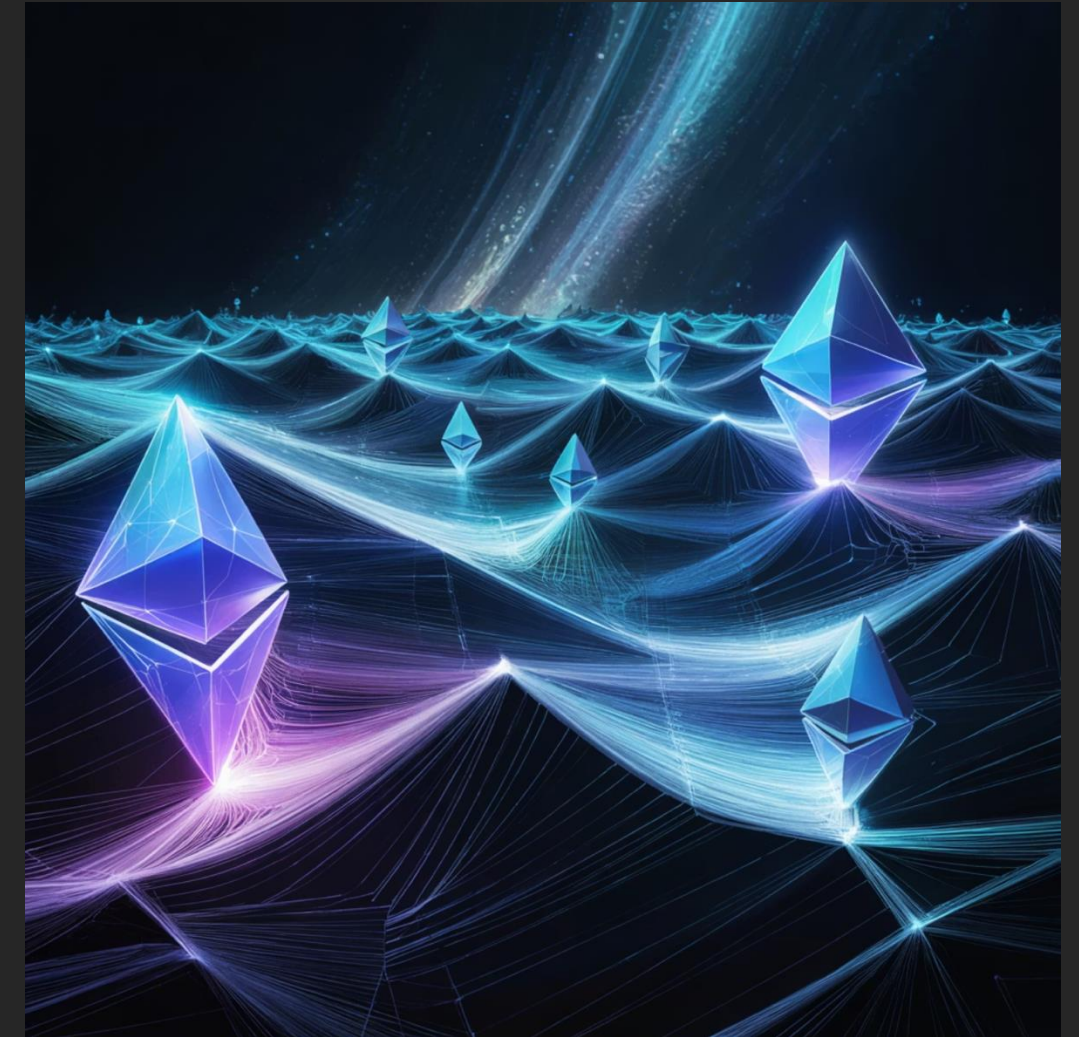
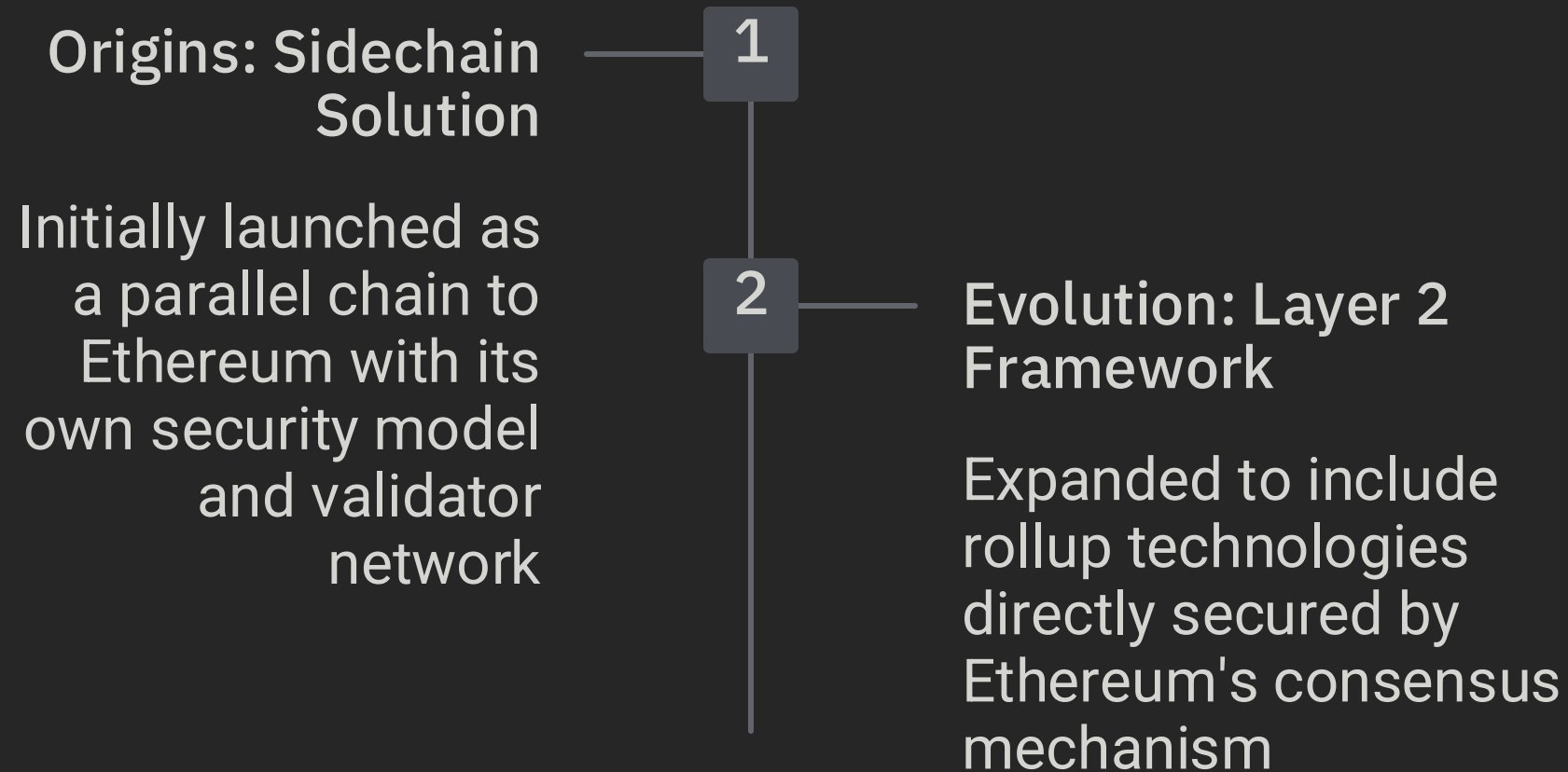


Outline

- What is Polygon?
- The Problem Polygon Solves
- Polygon's Scaling Technologies
- POL — The Utility Token
- Challenges and Future Vision
- Live Demo & Q&A

What is Polygon?

A Comprehensive Scaling Platform that makes Ethereum faster and more affordable



Polygon isn't one blockchain — it's a framework for Ethereum-compatible chains

The Problem Polygon Solves



Ethereum's Limited Throughput

Only ~15 transactions per second



Prohibitive Gas Fees

Transaction costs can spike to \$50+ during network congestion



Mass Adoption Barriers

Cannot support millions of users for DeFi, NFT, and gaming application

Ethereum prioritizes security over performance and follows a rollups-centric roadmap..

Polygon's Scaling Technologies

Polygon PoS
Sidechain solution with Bridge

Polygon Miden
ZK-STARK based rollup that
enable custom ZK Applications



Polygon zkEVM

Zero-knowledge rollup providing
Ethereum security with EVM
compatibility

Polygon CDK

Tool Kit to develop own custom
Layer 2 blockchains

Polygon Developer Documentation <https://docs.polygon.technology/>

Polygon PoS (Proof of Stake)



Validator Network

105 active validators using Delegated Proof of Stake consensus



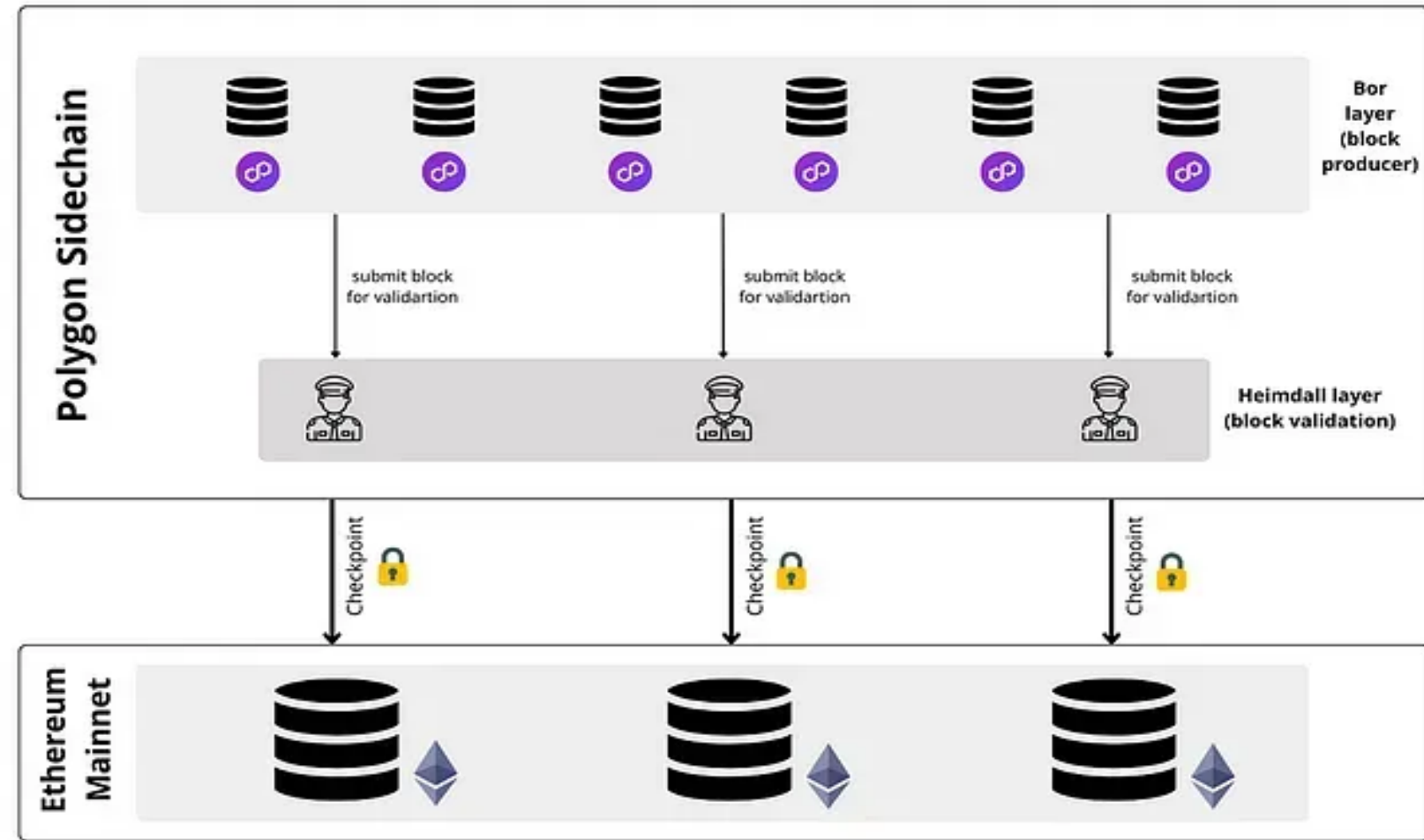
Heimdall Layer

Manages staking contracts and creates checkpoints that are committed to Ethereum



Bor Layer

Handles block production and transaction execution with full EVM compatibility



Polygon zkEVM



Sequencer

Collects user transactions, establishes order, and executes them on Layer 2



zkProver

Generates cryptographic zero-knowledge proof verifying the validity of all transactions in the batch



Aggregator

Bundles transactions with their proof and submits to Ethereum



Verifier

Smart contract on Ethereum that efficiently validates the ZK proof

Performance Comparison

Ethereum vs. Polygon Solutions

Feature	Ethereum	Polygon PoS	Polygon zkEVM
Speed (TPS)	Slow (~15 TPS)	Fast (~7,000 TPS)	Moderate (~40–50 TPS currently)
Fees	Expensive (\$0.1–\$50)	Very cheap (<\$0.01)	Low (~\$0.01–\$0.10)
Transaction Finality	~1–5 minutes	~1–2 seconds	~30–60 seconds
Validators	~1,000,000 (decentralized PoS)	~100 validators (limited PoS set)	No validators (uses sequencer + zkProver + Ethereum verifier)

Block Explorers: [Ethereum](#) | [Polygon PoS](#) | [Polygon zkEVM](#)

POL: Polygon's Utility Token

- MATIC powers Polygon PoS for gas, staking, and rewards.
- POL is the upgraded token for all Polygon chains under Polygon 2.0

Token Functionality



Transaction Fees

Used to pay for operations across Polygon networks



Staking

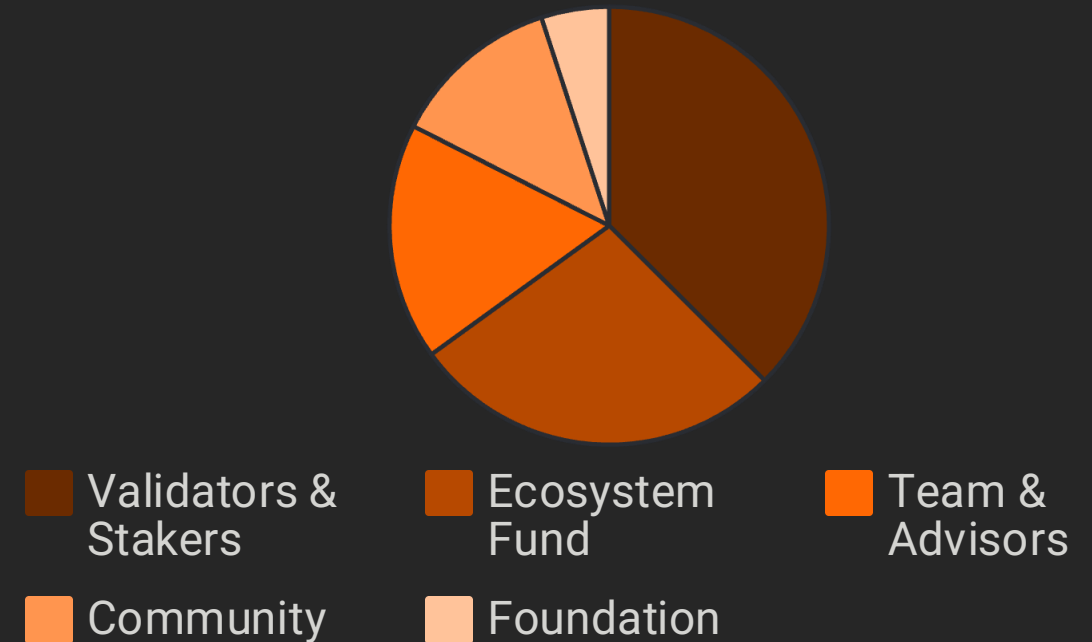
Validators stake POL to participate in consensus



Governance

Token holders vote on protocol upgrades and changes

Token Distribution



Challenges and Limitations

Security Trade-offs

PoS sidechain relies on a relatively centralized validator set (105 validators)

Intense Competition

zkEVM faces competition from more established Optimistic Rollups like Base, Arbitrum and Optimism <https://l2beat.com/>

Complexity for Users

Navigating different Polygon solutions and bridging assets can be confusing for new users.

Technical Constraints

ZK-proof generation remains computationally intensive and expensive

Polygon 2.0 Vision

Polygon aims to evolve from a single PoS chain into a fully ZK-secured, interoperable network.



Unlimited Scalability

Customizable Layer 2 chains tailored to specific application requirements

Ethereum-Grade Security

Shared zero-knowledge proof system ensuring L1-equivalent security guarantees

Bridgeless Integration

Native cross-chain messaging and asset movement without vulnerable bridges

Ecosystem Synergy

Unified validator set across the network

Live Demo

What We'll Demonstrate Today

- Set up Digital wallets
- Add Polygon testnets
- Bridge assets

Resources

- Polygon Bridge <https://bridge.polygon.technology>
- MetaMask Wallet <https://metamask.io>
- StakePool Faucet <http://faucet.stakepool.dev.b>
- Uniswap <https://app.uniswap.org/>

<https://chainlist.org/>



Q/A



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