polygon

Ethereum's Internet of Blockchains

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Challenge

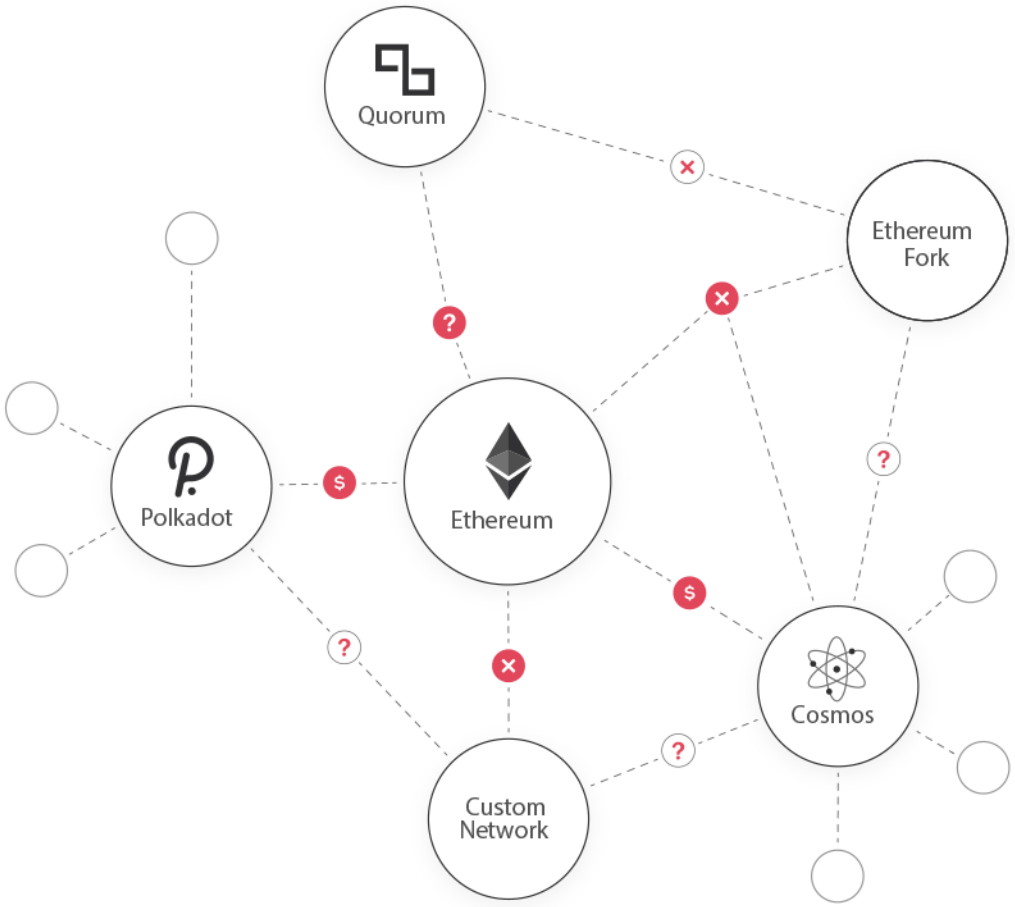
Ethereum is the blockchain development platform of choice, but it has limitations:

Low throughput

Poor User Experience (UX)
Gas, Delayed PoW finality

No Sovereignty
Shared throughput/clogging risk, tech stack notcustomizable, governance dependence

Many projects are exploring Ethereum-compatible blockchains as a way to mitigate these limitations while still leveraging Ethereum's thriving ecosystem. However, there is no specialized framework to build such blockchains nor a protocol to connect them. This introduces significant development challenges and causes ecosystem fragmentation.



Solution

> Polygon - a protocol and a framework for building and connecting Ethereum-compatible blockchain networks

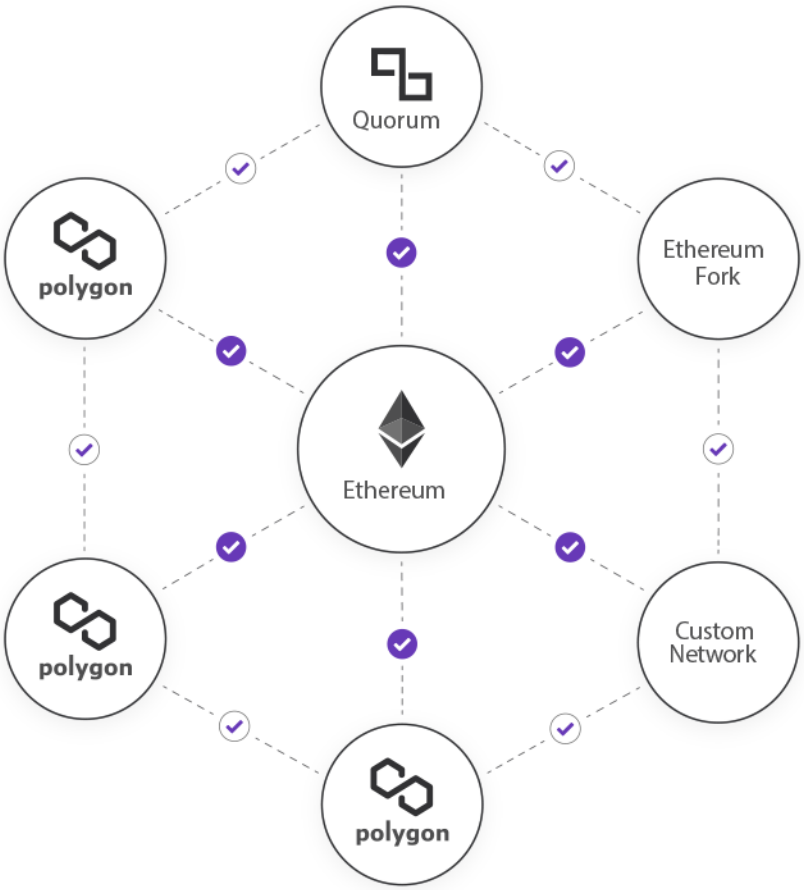
One-click deployment of preset blockchain networks

Growing set of modules for developing custom networks

Modular and optional **"security as a service"**

Interoperability protocol for exchanging arbitary messages with Ethereum and other blockchain networks

Adaptor modules for enabling interoperability for existing blockchain networks



Features

> Polygon combines the best of Ethereum and sovereign blockchains into an attractive feature set. Built by developers, for developers.

ETH Compatibility

Industry dominance, established tech stack, tools, languages, standards, enterprise adoption

Scalability

Dedicated blockchains, scalable consensus algorithms, custom Wasm execution environments

Security

Modular "security as a service", provided either by Ethereum or by a pool of professional validators

Sovereignty

Dedicated throughput/resources, fully customizable tech stack, sovereign governance

Interoperability

Native support for arbitrary message passing (tokens, contract calls etc), bridges to external systems

User Experience

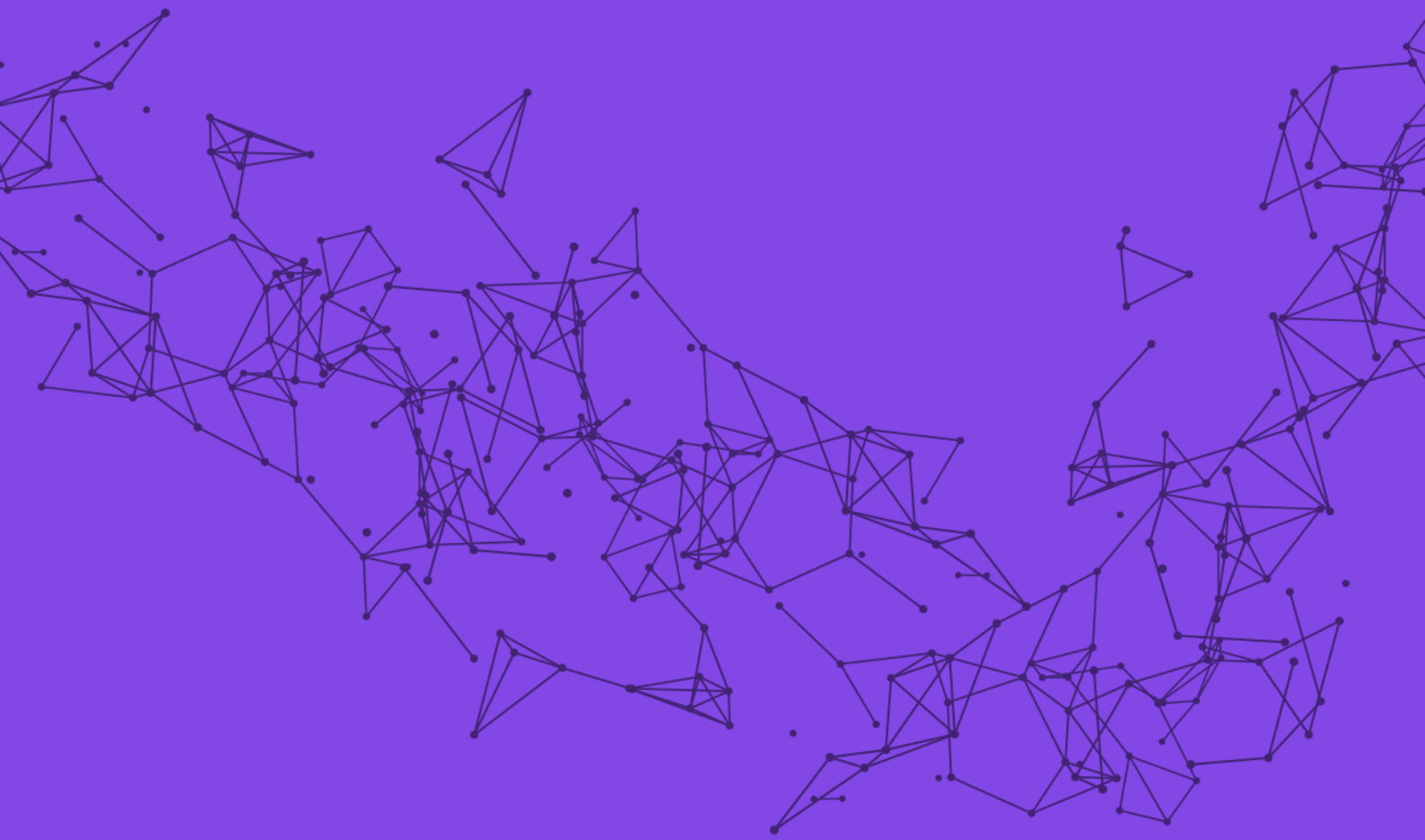
Comparable to Web2, “zero-gas” transactions, instant (deterministic) transaction finality

Developer Experience

Equivalent to Ethereum, no protocol level knowledge required, no token deposits, fees or permissions

Modularity

High customizability, extensibility and upgradeability, short time-to-market, community collaboration



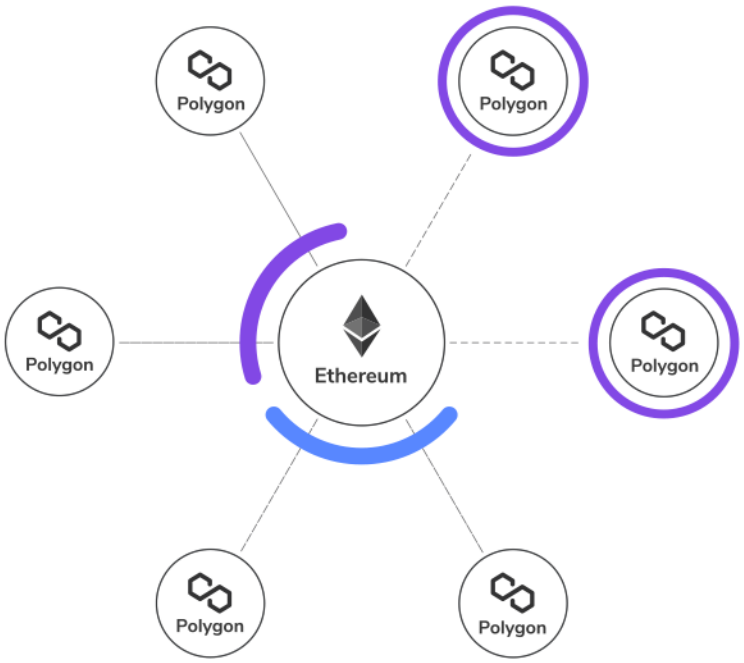
Technology

Foundation for the
internet of value and people

Technology

> Polygon provides the core components and tools to join the new, borderless economy and society.

With Polygon, any project can have it's dedicated, optimized instance of Ethereum which combines the best features of stand-alone blockchains (sovereignty, scalability, and flexibility) and Ethereum (security, interoperability and developer experience). Additionally, these blockchains are compatible with all the existing Ethereum tools (Metamask, MyCrypto, Remix, etc), and can exchange messages among themselves and with Ethereum.



Framework

One-click deployment of preset Ethereum-compatible blockchains.

Growing set of modules (pluggable consensus, staking, governance, EVM/Ewasm, execution environments, disput resolvers etc.) for developers who want to build their custom blockchains.

Protocol

Arbitrary message passing between any two participating Polygon chains, as well as between any Polygon chain and Ethereum.

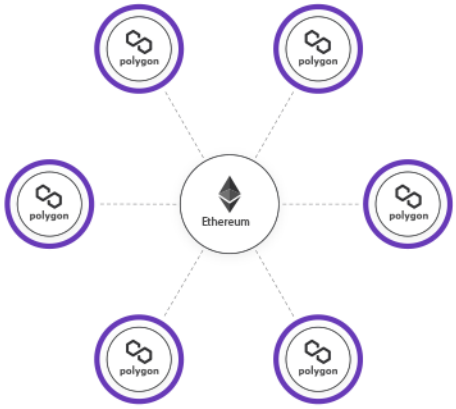
"Security as a service" (non-mandatory, modular security services, provided either by Ethereum directly or by a dedicated set of validators)

Polygon chains

> Polygon supports two major types of Ethereum-compatible blockchain networks: stand-alone networks and networks that leverage “security as a service”

Stand-alone chains

Fully sovereign Ethereum-compatible blockchain networks. These networks are fully in charge of their own security, i.e. have their own pool of validators. Stand-alone chains offer the highest level of independence and flexibility, with the tradeoff of sometimes challenging validator pool establishing.



- Enterprise networks
- Established projects with strong communities

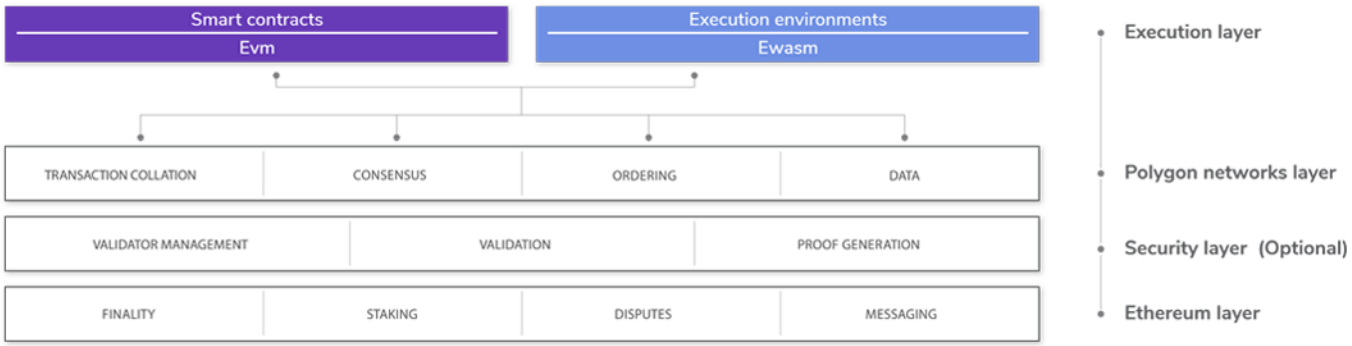
Secured chains

Blockchain networks that use “security as a service” instead of establishing their own validator pool. The service can be provided either by Ethereum directly (via fraud proofs or validity proofs) or by a pool of professional validators (similar to Polkadot’s “shared security”). Secured chains offer high level of security, with the tradeoff of sacrificing a portion of independence and flexibility.

- Startups
- Security-focused projects

Architecture

Polygon architecture consists of four abstract, composable layers:



01 - Optional

Ethereum layer

Polygon chains can use Ethereum, the most secure programmable blockchain in the world, to host and execute any mission-critical component of their logic. This layer is implemented as a set of Ethereum smart contracts, in charge of functions like:

- Finality/checkpointing
- Staking
- Dispute Resolving
- Messaging between ETH and Polygon chains

02 - Optional

Security layer

A specialized, non-mandatory layer providing "validators as a service" - a set of validators that can periodically check validity of any Polygon chain fora fee. This layer is normally implemented as a meta blockchain that runs in parallel to Ethereum, in charge of functions like:

- Validator Management
  registration/deregistration, rewards, shuffling etc
- Polygon Chains Validation

Security layer is fully abstract and can have multiple instances, implemented by different entities and with different characteristics. It can also be implemented directly on Ethereum, in which case the Ethereum miners perform the validation.

Architecture

03 - Mandatory

Polygon Networks Layer

A constellation of sovereign blockchain networks. Each of the networks serves its respective community, maintaining functions like:

- Transaction Collation
- Local Consensus
- Block Production

04 - Mandatory

Execution layer

This layer interprets and executes transactions that are agreed upon and included in Polygon networks' blockchains. It consists of two sublayers:

- **Execution environment**
  pluggable virtual machine implementation
- **Execution logic**
  state transition function of a specific Polygon network, normally written as Ethereum smart contracts

Positioning

> Brief comparison with the most notable alternatives suggests that Polygon offers the most attractive set of features.

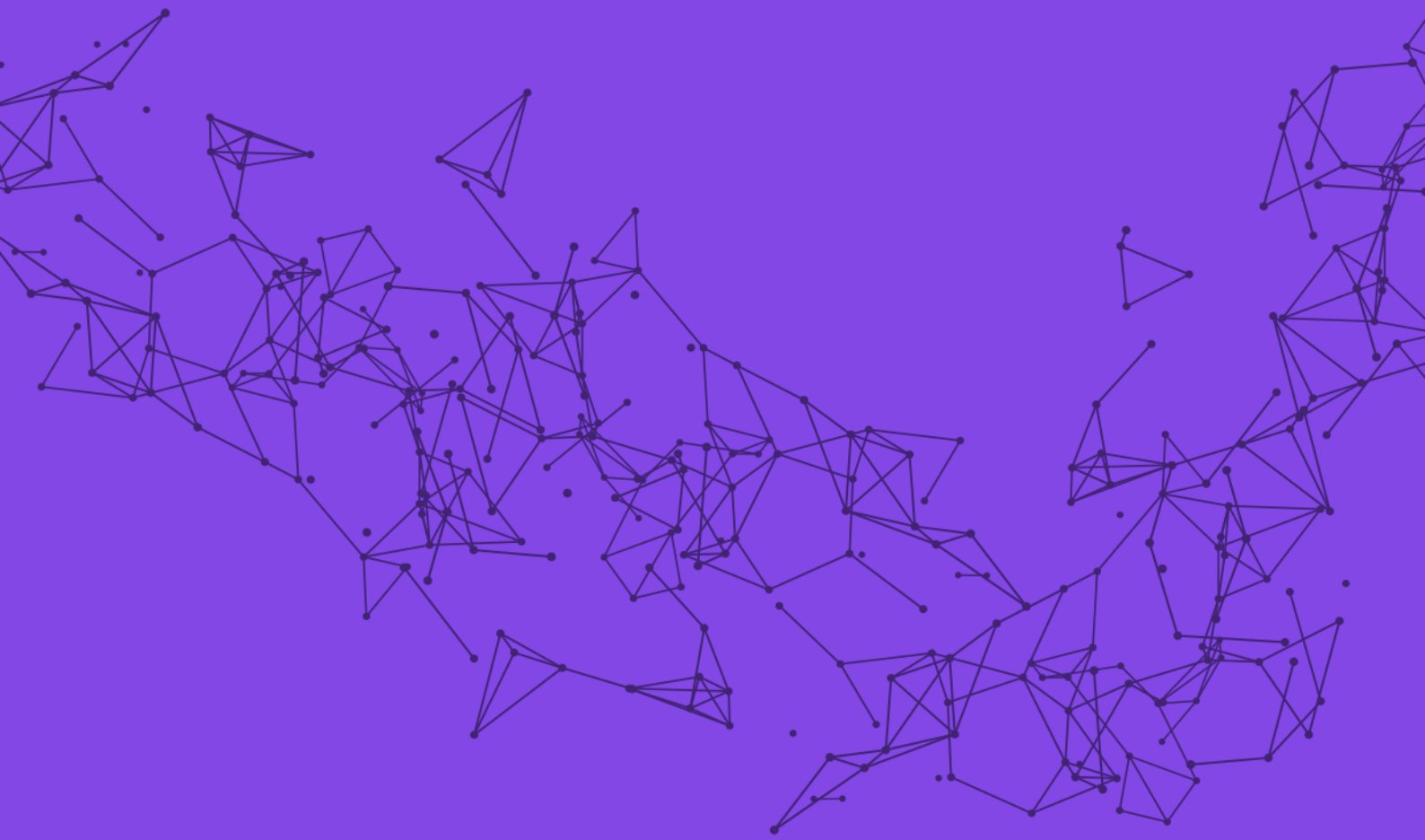
	Sidechains	Sharding	Quorum	Cosmos	Polkadot	Polygon
Ethereum Compatibility	● ⚠	● ⚠	●	● ⚠		●
Scalability	●	● ⚠	●	●	● ⚠	●
Security		●			●	●
Sovereignty	●		●	●	● ⚠	●
Interoperability		●		● ⚠	●	●
User Experience	●		●	●	●	●
Developer Experience		● ⚠				●

⚠ Conditional / Limited

Get started with Polygon

Or read the whitepaper to learn more

Get started | Whitepaper



About

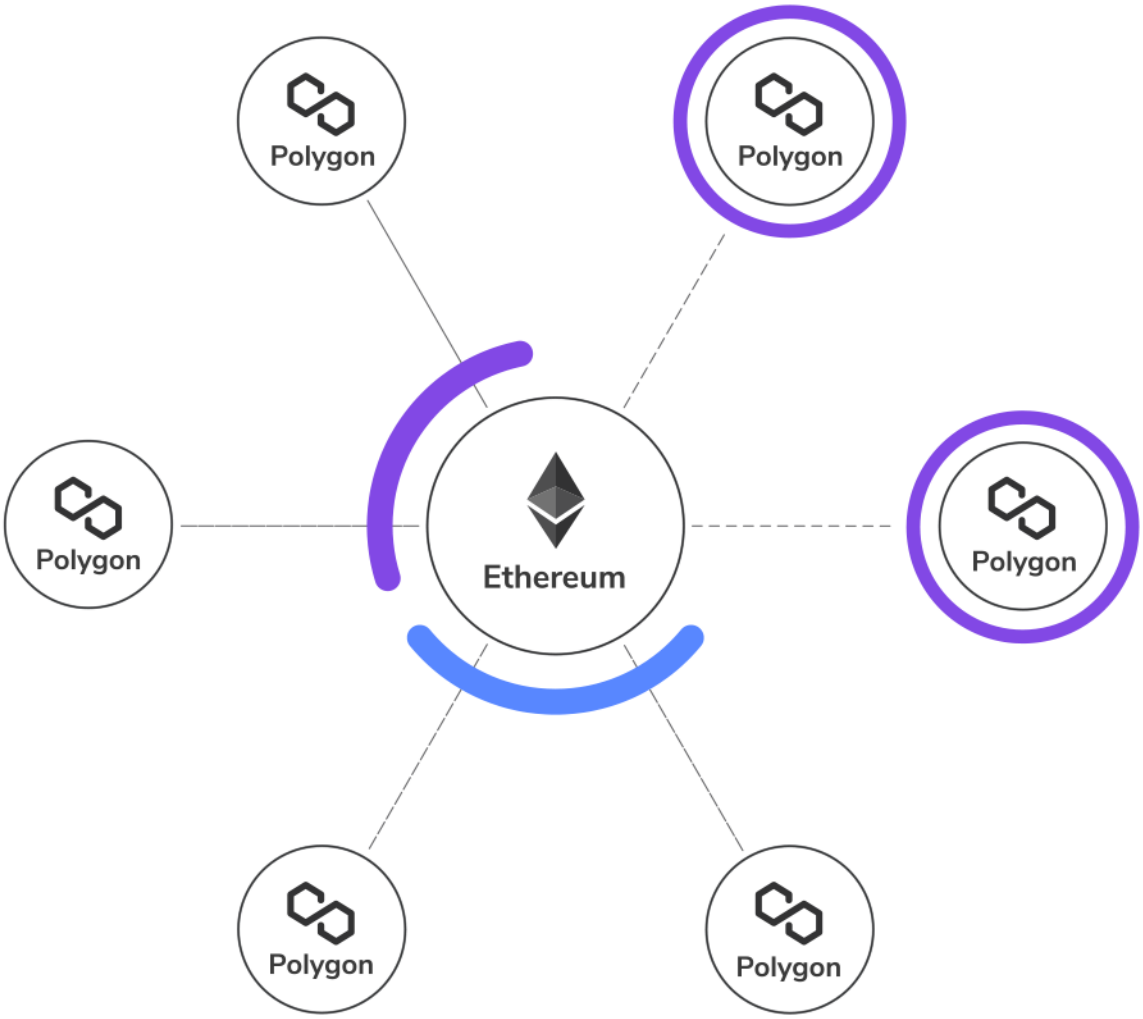
Who we are and
why we're doing this

Our vision

> We envision an open, borderless world.

A world in which people and machines collaborate and exchange value globally and freely, without gatekeepers or intermediaries. A world in which communities thrive, unconstrained by artificial borders and archaic regulations.

We will strive to empower everyone to effortlessly join this new, better world.



Team

> Polygon is an open source project built by decentralized team of contributors from all over the world.

We don't believe in traditional companies, hierarchy and management.
Anyone is welcome to contribute code, ideas or anything else that can help make our vision a reality!

Team

Jaynti Kanani
Co-Founder

Anurag Arjun
Co-Founder

Sandeep Nailwal
Co-Founder

Mihailo Bjelic
Co-Founder

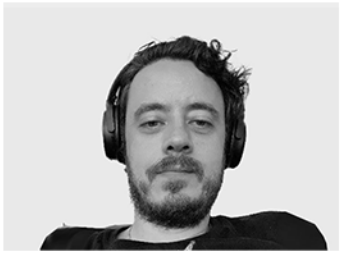
Advisors

Anthony Sassano
EthHub

Pete Kim
Coinbase

Ryan Sean Adams
Bankless

Hudson Jameson
Ethereum Foundation



John Lilic
Ex ConsenSys

Become a contributor

Or see open positions for core contributors

Contribute

Open positions

Find out more

Official website

polygon.technology

Whitepaper

github.com/maticnetwork/whitepaper

Twitter

@maticnetwork

Discord

discord.com/invite/XvpHAxZ

Telegram

t.me/maticnetwork