

Polkadot joins the Nasdaq Crypto Index™

June 2022

Nasdaq Index Research

The Nasdaq Crypto Index (NCI™) added Polkadot (DOT) as a new Index constituent when its quarterly reconstitution process became effective at the market close on June 1, 2022.

As one of the most widely held digital assets, it is no surprise that Polkadot is consistently within the Top 10 digital assets as measured by market capitalization (excluding stablecoins). The project has innovative plans to provide blockchain infrastructure that can meet the needs of almost any project—fortunately, the traction that has been demonstrated thus far seems to support such an ambitious goal.

Polkadot in Context

Many readers are already aware of the challenges associated with scaling a blockchain network. In short, traditional distributed systems theory acknowledges a tradeoff between three key, desirable properties in any permissionless, decentralized network: Security, Throughput, and Decentralization. While projects can design their infrastructures to emphasize one or two of these areas, it is assumed that such an emphasis will naturally limit the potential of the other(s). Polkadot is one of only a few heterogeneous blockchains in production that seek to turn this notion on its head.

Heterogeneous blockchains employ an asynchronous heterogeneous network model to facilitate horizontal scaling. This allows for application-specific “sub” blockchains to co-exist and interoperate with each other, as necessary. Each type of heterogeneous architecture may utilize a different approach when it comes to network security, but most have a similar vision: enable the same type of scale that we see in a traditional Web2 environment in a world where users custody their own assets and ultimately control value transfer operations themselves.

It is fascinating to think through the numerous types of blockchain technologies and structural tradeoffs that are involved in realizing such a vision—this article seeks to provide an overview of the Polkadot network, including an explanation of how the Network has tackled some of these challenges.

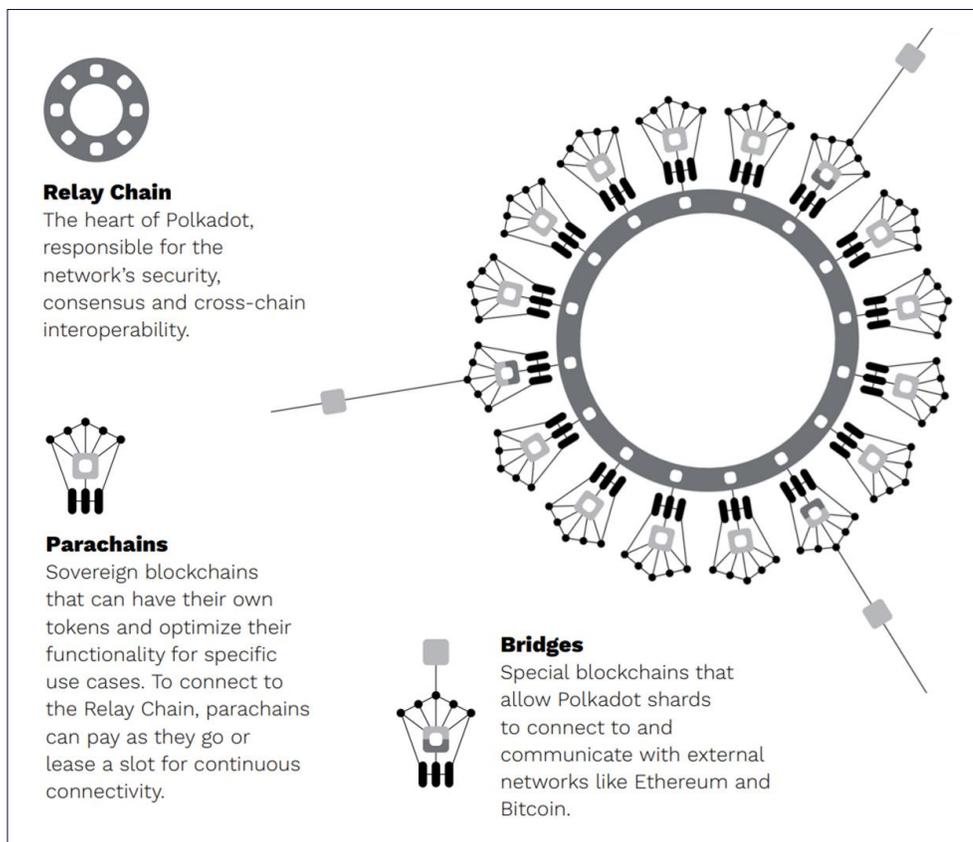
Network Architecture

Polkadot’s architecture resembles a hub-and-spoke design. A finite number of distinct blockchains, called Parachains, are integrated through a single Relay Chain that provides network security and that facilitates communication across each connected network. Bridges are special purpose blockchains that allow for integration with major external networks.

Each Parachain built within Polkadot uses the protocol’s proprietary modular framework called Substrate, which allows developers to leverage individual components that suit their specific needs without needing to build common components from scratch. The Relay Chain was built using Substrate, however, Parachains can optionally be built from the bottom-up using developer-preferred tooling, without Substrate.

<https://polkadot.network/technology/>

Simplified Architecture



Adapted from [Polkadot's Litepaper](#); Accessed May 27, 2022

Key Actors

Validators stake (slashable) DOT tokens in order to guarantee their performance as the key providers of Relay Chain security. This is accomplished by validating proofs from Collators and by coordinating with other Validators.

Collators propose new Parachain-level blocks to Validators, including the production of proofs that can be verified.

Nominators select Validators that they consider trustworthy to help secure the Relay Chain, staking DOT tokens to demonstrate and "guarantee" their support.

Fishermen monitor network activities and report bad behavior to Validators. Collators and full Parachain nodes can fulfill this function.

Token Function and Economics

The DOT token has several critical functions within the Polkadot Network. These functions give the token a certain level of base utility that, should the Network continue to successful grow, implies ongoing demand for the token.

Fee Payment

Users sending messages across Parachains must pay DOT-denominated fees. Anyone transacting on the Relay Chain must also make payments in DOT to do so.

Compensation

The Polkadot Network rewards Validators with DOT to incentivize their contributions.

Performance Guarantees

Nominators and Validators must provide DOT-denominated bonds in order to guarantee their performance.

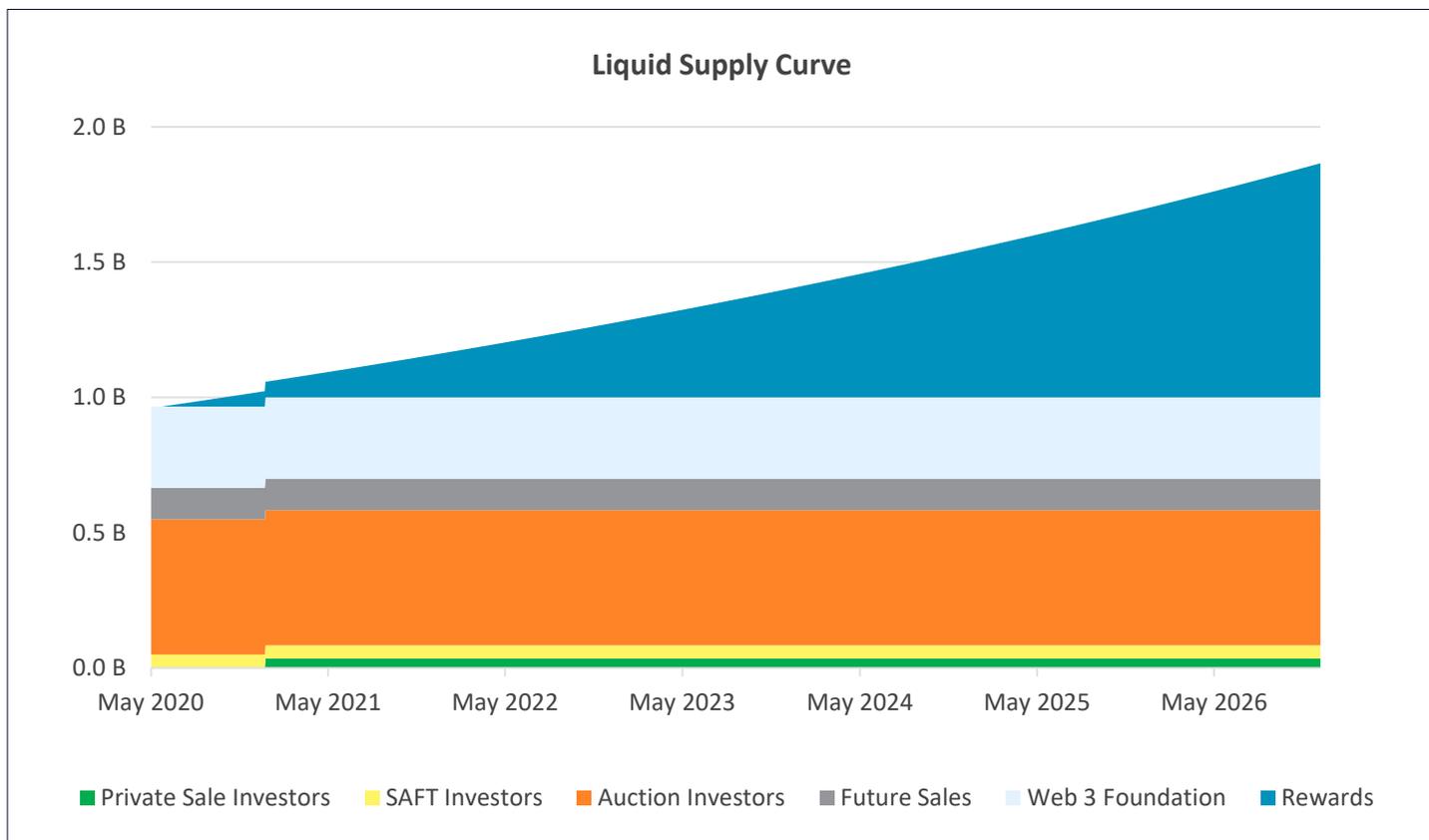
Parachain Auctions and Lease Payments

There are a finite number of Parachains that can ever exist on Polkadot. As a result, prospective Parachains are required to bid on slots via an auction process. Once won, Parachains must make ongoing payments to the protocol in DOT to lease these positions.

Governance

DOT tokens are also used to facilitate on-chain voting processes.

Liquid Supply Curve



Data per Messari.io; Accessed May 27, 2022

Token Emissions

Polkadot does not have any maximum supply specified, and instead emits emissions dynamically. The above chart illustrates the projected supply of DOT tokens over time.

Governance

Polkadot benefits from a thoughtful and comprehensive on-chain governance system. Token holders are empowered with significant authority to enact changes to the protocol via the submission of proposals and by participation in referendums. The system is comprised of three separate tiers: 1) the Community at large (i.e., DOT stakers); 2) a thirteen-member Council of elected officials with privileged voting status; and 3) a three-member Technical Committee.

While Polkadot's governance features many interesting mechanisms, its adaptive quorum biasing methodology is particularly notable. Instead of utilizing a simple and static quota (or minimum vote requirement), the number of votes required for a referendum to pass is a function of the level of voter turnout. If 100% of token holders participate, a 50% majority is required; if only 25% of token holders participate, a 66% supermajority is required. This is one of several thoughtful elements of Polkadot's governance system that should help the protocol continue to adapt to changes in the Polkadot ecosystem and the blockchain landscape, more broadly.

<https://polkadot.network/blog/polkadot-governance/>

Governance Process

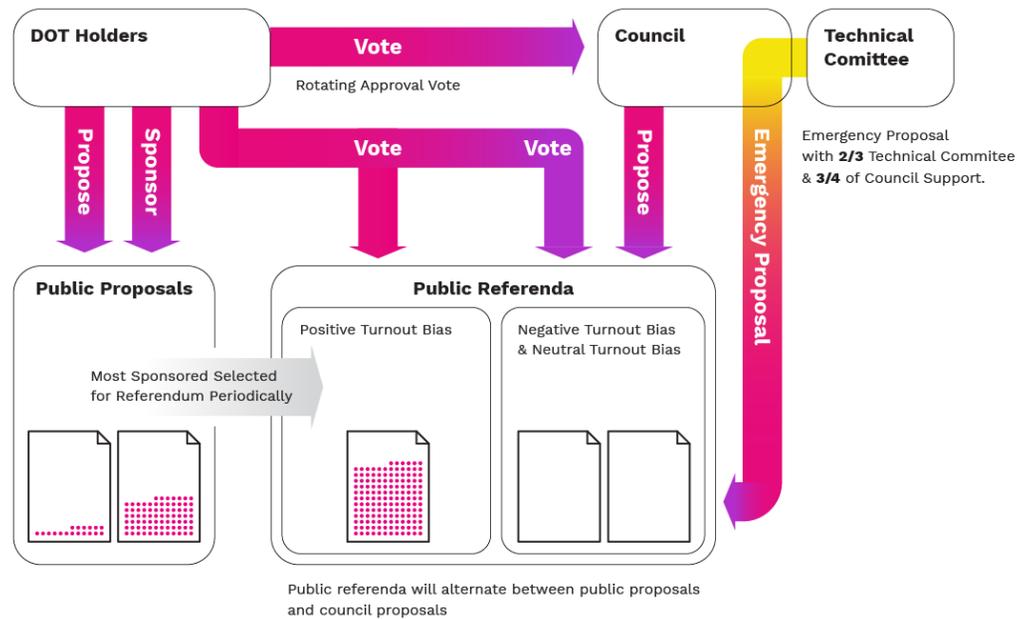


Image from [Polkadot's digital article](#); Accessed May 27, 2022

For more information, please visit <https://indexes.nasdaqomx.com/Index/Overview/NCI>.

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