

Horizen (ZEN)

Fundstrat Digital Assets Research

HORIZEN

- Web 3.0 next-generation crypto internet cloud tech platform
- Nodes and holders increase, highlighting ZEN support
- Building partnerships and a more secure ecosystem
- The platform prepares for public launch of sidechain scaling solution

Key Statistics

Token Price	\$102.54
Range (52W)	\$8.37/\$168.15
Market Cap	\$1.2B
Circulating Supply	11.8M
Volume (24H)	\$121.4M

Source: Coinbase (11/22/2021)

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Horizen Builds Toward Goal Of Secure, Private & Scalable Ecosystem

Horizen is a blockchain platform structured as a cross-chain network that provides infrastructure and tools to support the creation of third-party decentralized applications ("dApps") with elective privacy features. At the beginning of Q4 2020, we released our primer report [Horizen: Web 3.0 Platform Targeting Big Tech Super App Disruption](#), followed by an update note at the end of Q4 2020 [Horizen Update: ZEN Moving Higher As Halving Approaches](#). Since our last note's publication, Horizen has witnessed consistent growth in nodes deployed and a substantial increase in the number of wallets holding Horizen's native ZEN token. Horizen is now entering a new development phase as Zendoo, Horizen's sidechain solution, is launched on a public testnet and prepares for a mainnet launch.

- **Horizen's unique sidechain architecture aims to bridge scalability with privacy and security.** Horizen utilizes modular Proof-of-Stake (PoS) sidechains to institute custom sets of rules on top of a central, secure proof-of-work (PoW) public mainchain. The custom sidechains are interoperable and can transfer value without requiring verification from the public mainchain, thus introducing a unique element of privacy and scalability to the ecosystem. The public mainchain is a PoW blockchain that verifies that sidechains abide by their respective predetermined sets of rules and provides a standard token of value (ZEN) ([Slide 3](#)).
- **Zendoo is Horizen's next significant platform development.** Zendoo is a customizable sidechain protocol that allows dApp developers flexibility in building products. The scaling solution was recently moved into the production environment testnet, the last step before going fully public. Zendoo is expected to bring new products to the Horizen ecosystem ([Slide 6](#)). As a demonstration of its capabilities, Horizen launched zkAudit, the first application built on Zendoo, in partnership with crypto-lending firm Celsius.
- **Horizen's native token ZEN has realized positive price action since its most recent halving event in December 2020.** The Horizen halving event reduced the reward for mining or creating new blocks by 50%. This occurs every 840,000 blocks, or approximately every four years, meaning the next halving is targeted for December 2024. In addition to network-specific developments and industry tailwinds, such favorable supply dynamics have likely contributed to recent price increases ([Slide 9](#)).
- **Horizen continues to expand its node network.** Holders of ZEN can operate Secure Nodes and Super Nodes to ensure network security and earn a portion of the block rewards. Secure Nodes ensure security, privacy, and integrity of communication between nodes on the mainchain, and Super Nodes allow for sidechains and platform applications ([Slide 4](#)). Compared to other PoS blockchains, Horizen's hardware requirements for validators are among the least expensive, lowering the barrier to entry for node operators and encouraging decentralization ([Slide 5](#)). Since January 2020, the network has achieved a 19% increase in Super Nodes and a 30% increase in Secure Nodes ([Slide 10](#)).
- **Key partnerships support the expansion in critical business areas and provide a greater level of access to investors.** Recently, the ZEN token was listed on several top exchanges, including Binance, OKEx, Bithumb, Gate.io, and Coinbase ([Slide 10](#)). The world's largest digital asset manager, Grayscale, added its Horizen Trust (HZEN) to the OTCQX market, allowing investors to buy and sell freely-tradeable HZEN shares through investment accounts ([Slide 15](#)). Such liquidity avenues provide a new crop of investors access to the ZEN token. Horizen has also forged technical and R&D partnerships with entities that will enable unique applications and accrue value to the Horizen platform ([Slide 14](#)).
- **Key Risks:** Failure to achieve developer adoption upon public rollout of Zendoo, lack of lock-up period among staking entities may result in outsized price decrease in the face of any macro headwinds, inability to capture market share from existing layer 1 competitive landscape.

Bottom line: Horizen's platform is unique and offers developers a level of data privacy that most other smart contract platforms do not. The following months will serve as a critical litmus test for the Horizen ecosystem as the network readies itself to fully deploy its sidechain capabilities and start to welcome blockchain and dApp developers to the platform.



Fundamentals & Technical Updates

Performance & Community Growth

Recent Developments & Partnerships

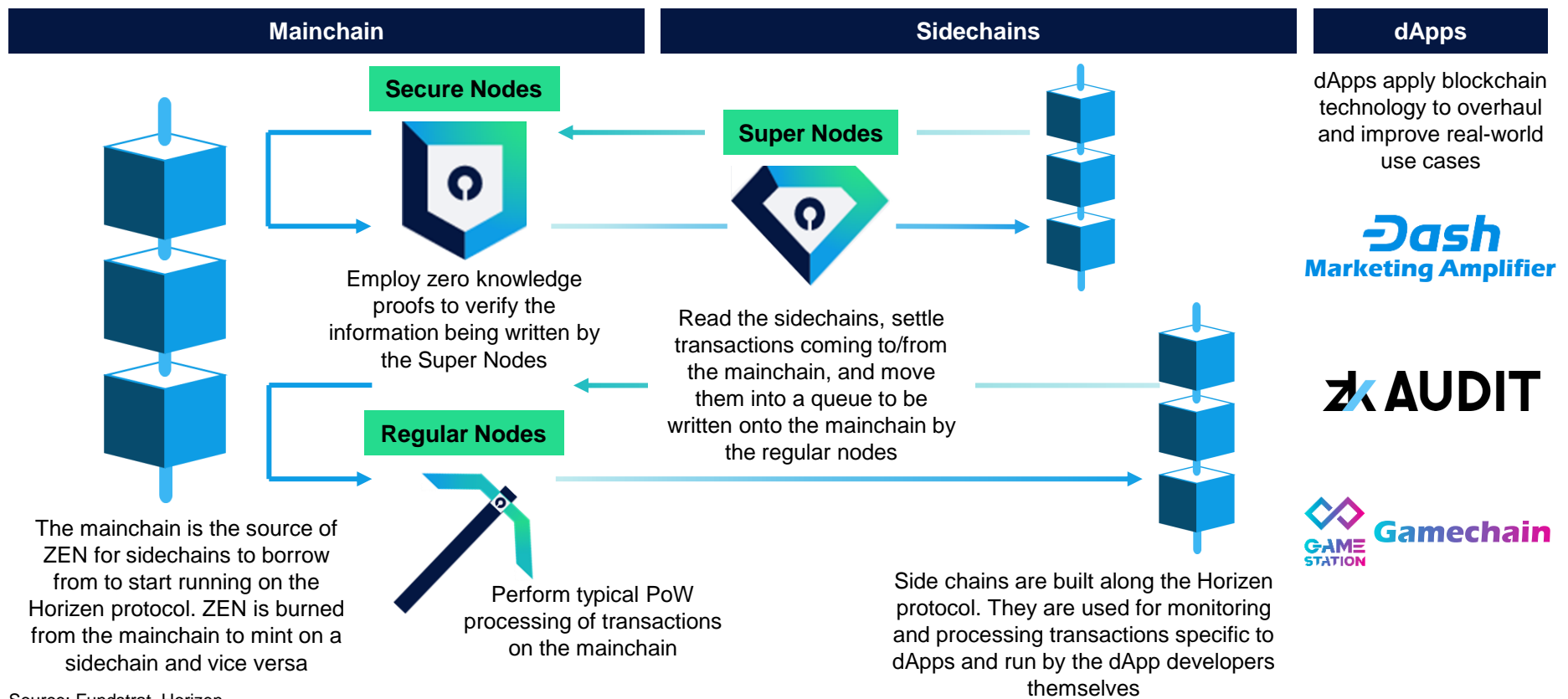


Horizen Is a Zero-Knowledge-Enabled Network of Blockchains

Sidechain architecture improves scalability while ensuring data privacy

- The Zendoo sidechain platform allows for the creation of modular Proof-of-Stake (PoS) sidechains that can institute a custom set of rules. These custom blockchains are interoperable and can transfer value without relying on third party validation. Horizen has one of the largest validator node networks of all distributed networks.
- The public mainchain is a Proof-of-Work (PoW) blockchain that verifies that sidechains are abiding by their respective predetermined sets of rules and provides the platform with a standard token of value in ZEN.
- Secure nodes ensure the security of the network via point-to-point encryption, and Super Nodes validate the sidechain platform to increase scalability.

Figure: The Horizen Infrastructure Model



Source: Fundstrat, Horizen

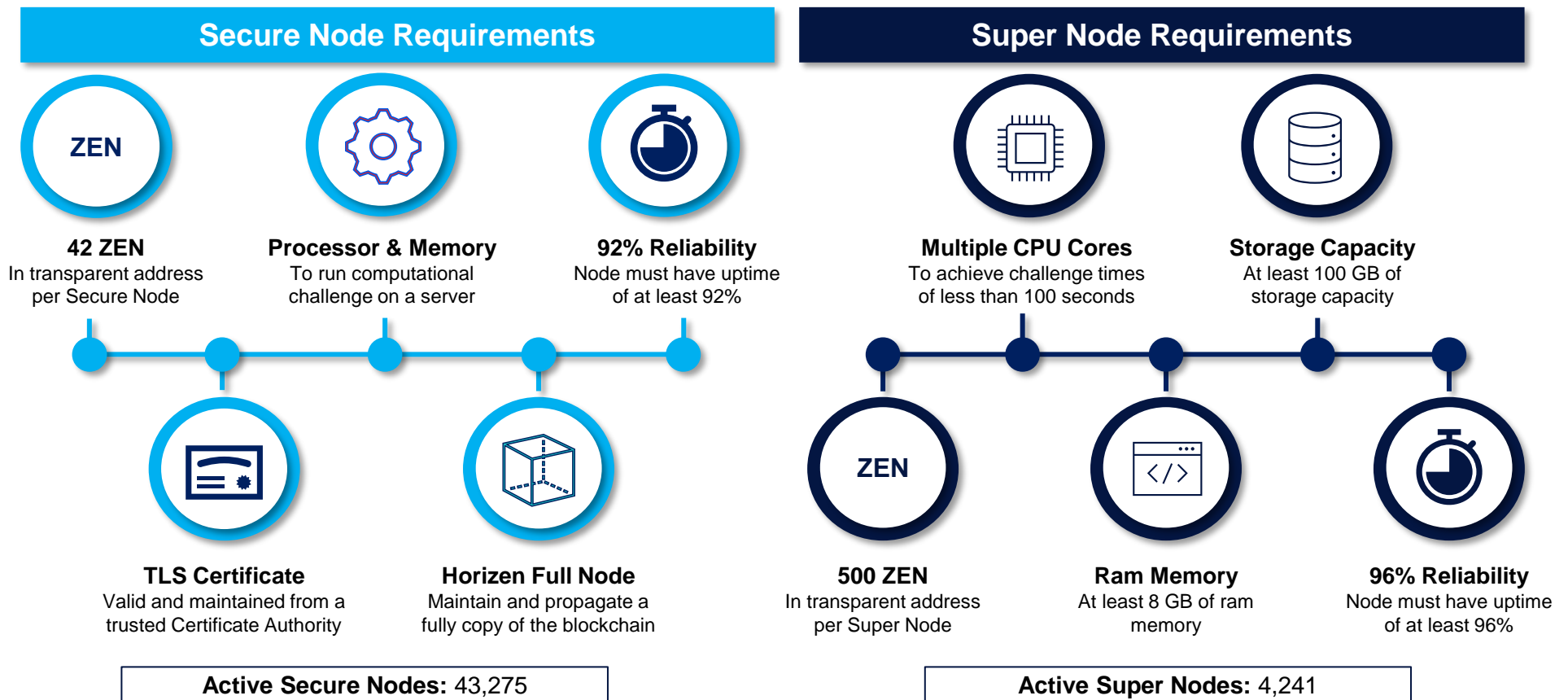


Horizen Features Multiple Types of Nodes

Secure nodes and Super Nodes support sidechain functionality

- Horizen’s platform is comprised of Secure Nodes and Super Nodes, forming the basis of a unique compensated blockchain network that provides developers with privacy-enhancing encryption and sidechain functionality (for application optimization and customization).
- Secure nodes ensure security, privacy, and integrity of communication between nodes on the mainchain, and Super Nodes allow for sidechains and platform applications. Horizen’s minimum requirements will likely converge towards those of individual nodes in traditional cloud servers just as less powerful PCs disrupted mainframes.

Figure: Node Requirements for the Horizen Network



Source: Fundstrat, Horizen

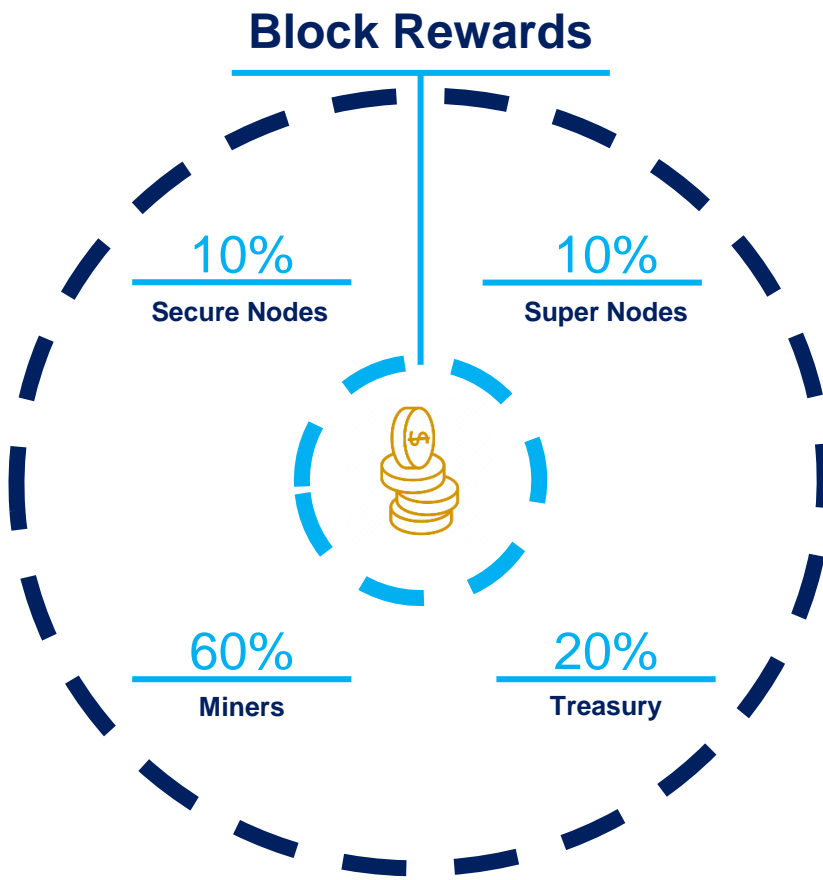


Horizen Creates a Self-Sustaining Economic Network

Hardware requirements for platform performance across chains

- The Horizen developers created incentives in the protocol that target all key stakeholders, network users and node operators. This structure allows holders of ZEN to operate either Secure Nodes or Super Nodes. This ZEN can be staked and allow holders to earn a portion of the block rewards.
- Compared to other PoS blockchains, Horizen’s hardware requirements for validators are among the least expensive

Figure: Distribution of ZEN Block Rewards & Validator Node Hardware Requirements Comparison to other Layer 1 protocols



Validator Node Hardware Requirements			
Blockchain	CPU Cores	RAM	Disk Space
Horizen	Super - 4 Secure - 1	8GB	100GB
Algorand	2	4GB	100GB
Avalanche	2	4GB	200GB
BSC	8	16GB	1,000GB
ETH 2.0	4	8GB	500GB
Polkadot	8	32GB	500GB
Solana	12	128GB	2,000GB

Source: Fundstrat, Horizen, Algorand, Avalanche, Binance, CoinDesk, Polkadot, Solana



Zendoo Moved to its Production Environment Testnet

The last milestone before the launch of Horizen's Zendoo Mainnet

- **Zendoo is Horizen's sidechain and scaling solution designed to facilitate complete decentralization and fully customizable sidechain protocols. The Zendoo sidechain platform enables businesses and developers to affordably and quickly create real-world blockchain applications on Horizen's fully distributed, secure, and privacy-preserving architecture.**
- **Zendoo extends the Horizen network from a cryptocurrency to a privacy-preserving platform that scales for commercial applications.**

Figure: Zendoo Overview and HackerOne's project on the Horizen platform

Scalability and Flexibility

Zendoo uses a modular protocol that emphasizes functionality over design. Any type of rule can be deployed as a sidechain with this framework – whether it's a blockchain or other type of data structure.



Easy Deployments

Zendoo comes with an SDK that includes all necessary components required for building a blockchain in a single toolbox. This allows developers to focus on the specific features of their blockchain instead of low-level tasks, making the deployment of a complete blockchain easier and faster.



Privacy and Auditability

Zendoo allows verification of sidechains by the mainchain, without knowing the internal structure of the sidechain. Zendoo SDK provides a set of tools that will enable the creation of auditable and privacy-preserving blockchain applications, a requirement for many real-world applications.



hackerone

- 32 incidents of hacks and fraud for a total value of \$3 billion have occurred year-to-date in 2021. Breaches of wallets and exchanges have been the most common type of attack.
- The biggest DeFi hack occurred in May 2021 when the PancakeBunny Protocol had a flash loan exploit that cost the platform \$45 million worth of digital assets.
- Horizen has partnered with the biggest hacker-powered community, HackerOne on a bug bounty program for Zendoo.
- The Horizen ecosystem continues to grow, adding new features and products. In order to continue growing and providing the highest level of security, Horizen's partnership with the largest hacker community ensures that the network is as safe as possible.
- The bounty program engages with some of the world's most experienced hackers to find and fix vulnerabilities in Zendoo and make the Horizen platform secure for users.
- The bounty offers up to \$10,000 in rewards for reporting vulnerabilities in the Horizen platform

Source: Fundstrat, Horizen, Business Insider

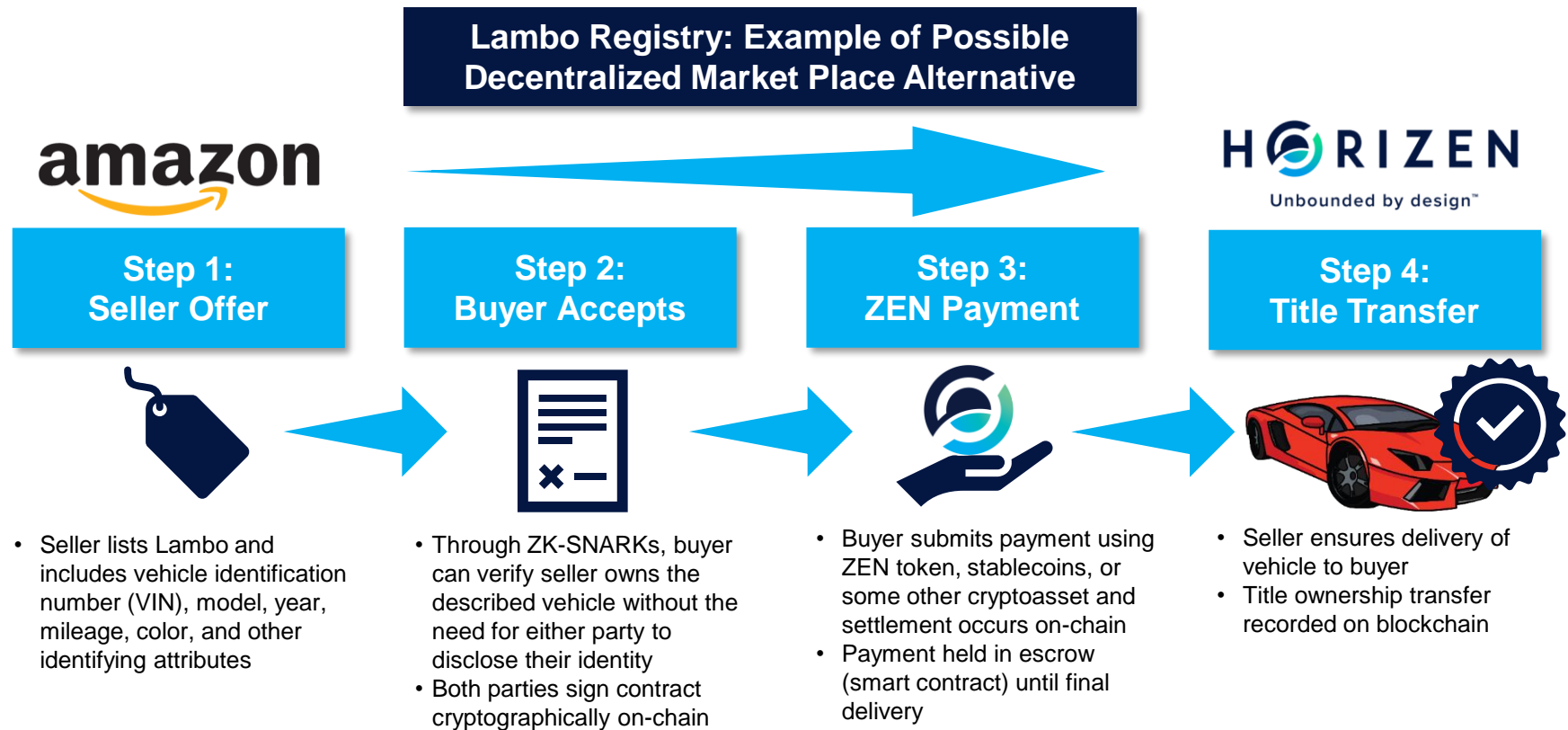


Horizen Zendoo Offers Unbounded Flexibility for Developers

Bringing decentralization to real-life applications on Horizen

- Horizen’s Zendoo sidechain SDK allows developers unbounded flexibility. The Lambo Registry dApp is the first example of the customization capability of the SDK. The purpose of the dApp is to demonstrate the boundless possibilities of the SDK to enable developers to build based on their expertise. Since software is a product of human thought, it has an unbounded design space for code creativity, and it is expected that new and more intricate applications will emerge.
- On the dApp, users can store vehicle identifying information such as VIN, make and model, year produced, color, etc. Users can prove vehicle ownership without disclosing their identity and can buy and sell vehicles using ZEN.

Figure: Demo dApp Built Using the Zendoo SDK



Source: Fundstrat, Horizen



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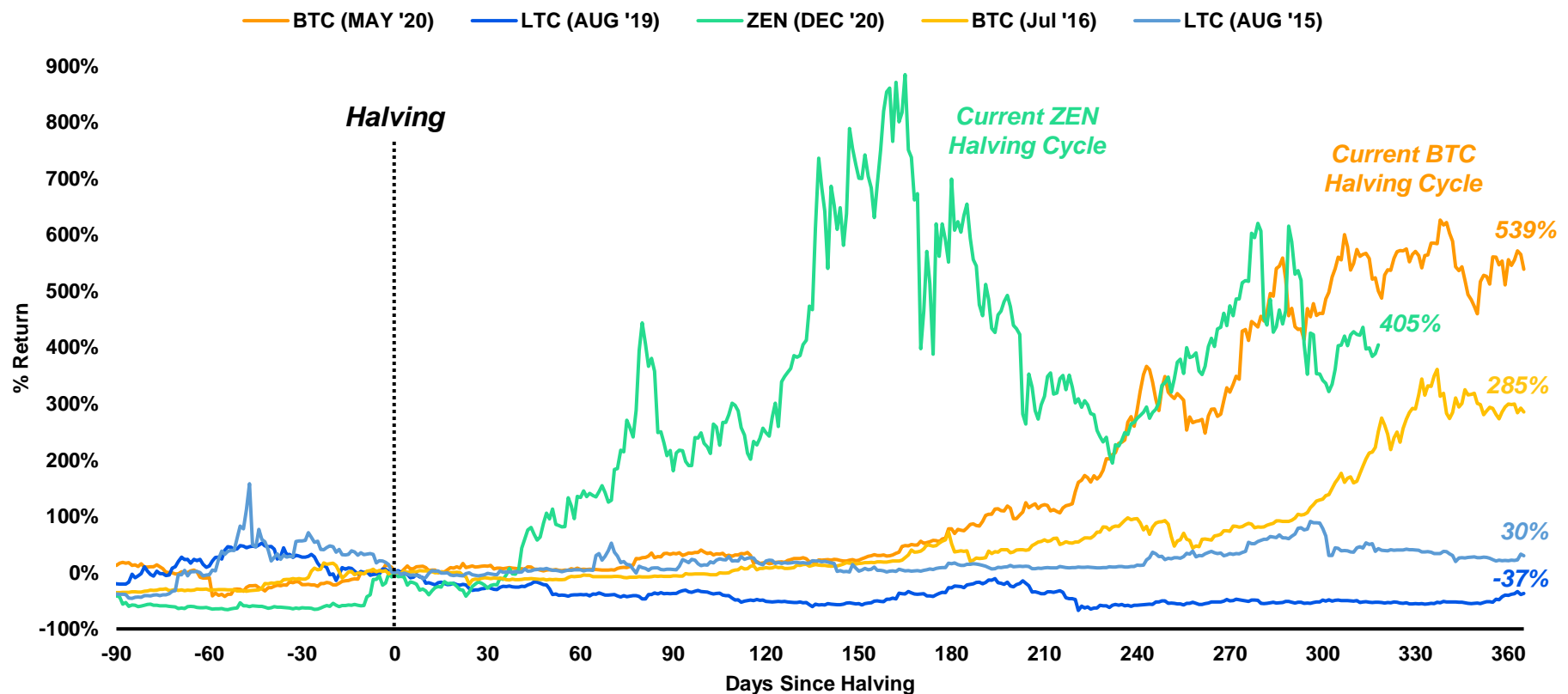


Horizen Price Has Performed Well Since Halving

1-Year post halving crypto performance has averaged 204%

- The Horizen halving event reduced mining rewards by 50%. This occurs every 840,000 blocks, or approximately every 4 years, meaning the next halving is targeted for December 2024.
- While reduced ZEN issuance via mining rewards has negatively impacted supply, new partnerships and use cases have positively impacted demand leading to strong price appreciation for the token.
- A continuation of the broader crypto bull market should also positively influence the token price as small cap digital assets generally experience higher beta returns as capital rotates into smaller caps from large caps.

Figure: Halving Event Price Performance



Source: Fundstrat, CoinMetrics

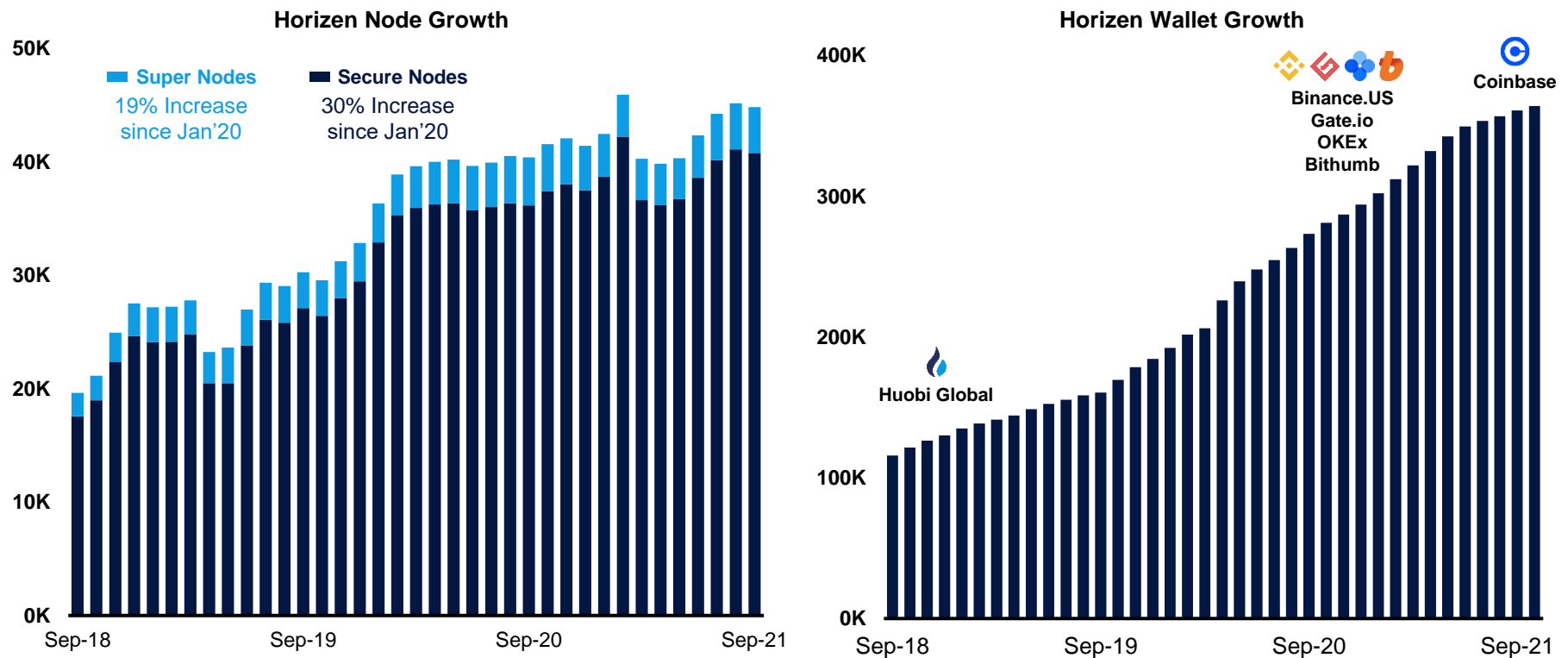


Nodes and Wallets Demonstrate Consistent Growth

Recent exchange listings appear to have benefited token price

- The disproportionate growth in Secure Nodes over Super Nodes indicates that most interest is in ZEN on the mainchain as opposed to sidechain dApp development.
- The newest exchange listings have provided users responsible for ~20% of global crypto exchange volume with access to Horizen. ZEN was listed on Coinbase and Coinbase Pro, which comprise 7% of global centralized exchange volume, in September 2021.
- The price of ZEN jumped 22% the day it was listed on Coinbase. It will be important to observe how sustainable this growth is moving forward, and whether the listing will lead to wallet and development growth.

Figure: Horizen Node and Wallet Metrics



Source: Fundstrat, Horizen, CoinMarketCap, https://metrics.zencash.com/blockchain_metrics.csv

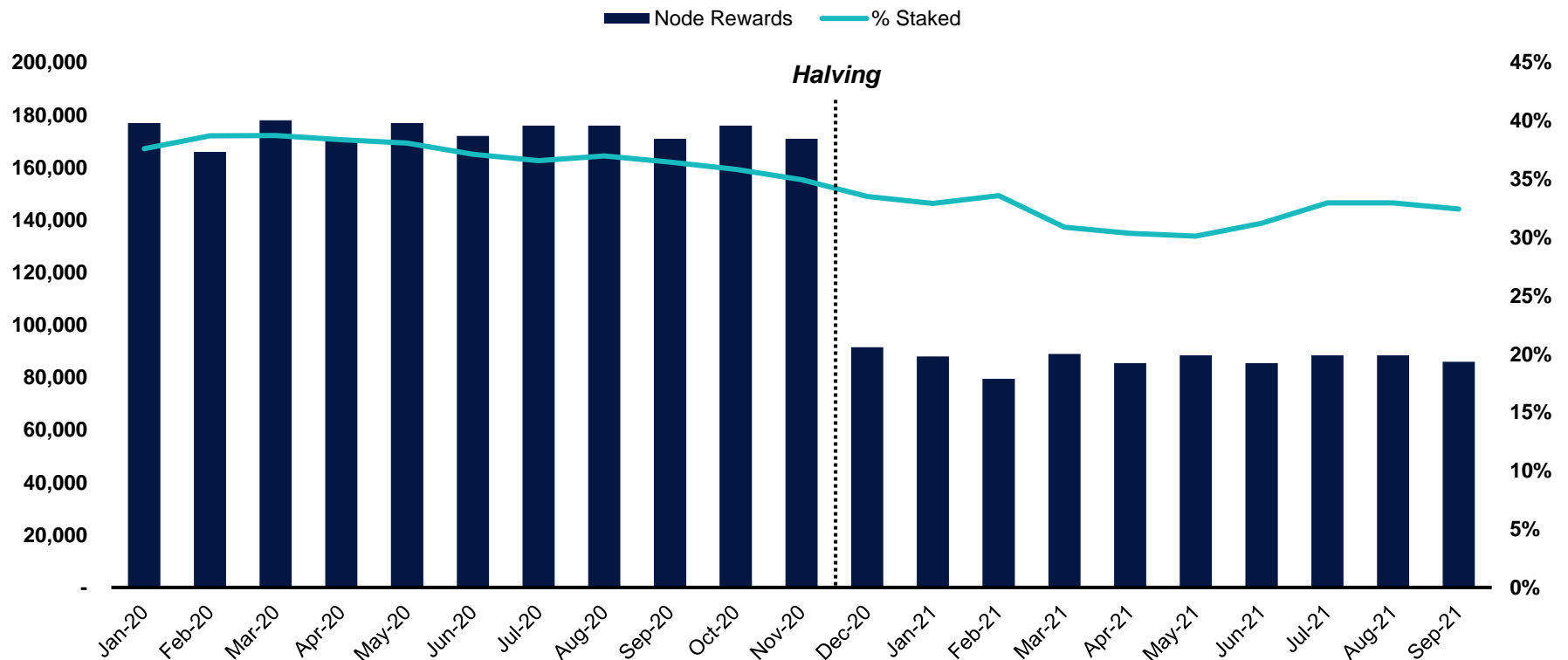


Nodes Continue to Stake ZEN While Securing the Network

Despite the halving, nodes remain committed to the network

- As the number of miners and node operators increases, network speeds are enhanced, security is boosted and flexibility to provide scalability in the network rises, benefiting the ZEN ecosystem and all participants involved.
- More miners validate transactions to earn ZEN token rewards, while the Secure Node and Super Node operators stake ZEN to earn interest. The percentage of staked tokens has remained relatively stable since the beginning of 2020.
- While rewards we're cut in half in December 2020, the token's price has increased substantially (as noted previously) providing further incentive for node operators to stake ZEN.

Figure: Total Monthly Rewards from Staking to Secure and Super Nodes and % of Circulating ZEN Supply that is Staked



Source: Fundstrat, Horizen, https://metrics.zencash.com/blockchain_metrics.csv



Horizen Makes Key Team Hires

Expansion in critical business areas to support community growth

- Horizen has made 15 hires primarily across Product, Engineering, and Business Development functions in YTD Q3 2021. These hires will support the growth of Horizen’s community across multiple channels.

Figure: Select Team Member Additions and Breakdown

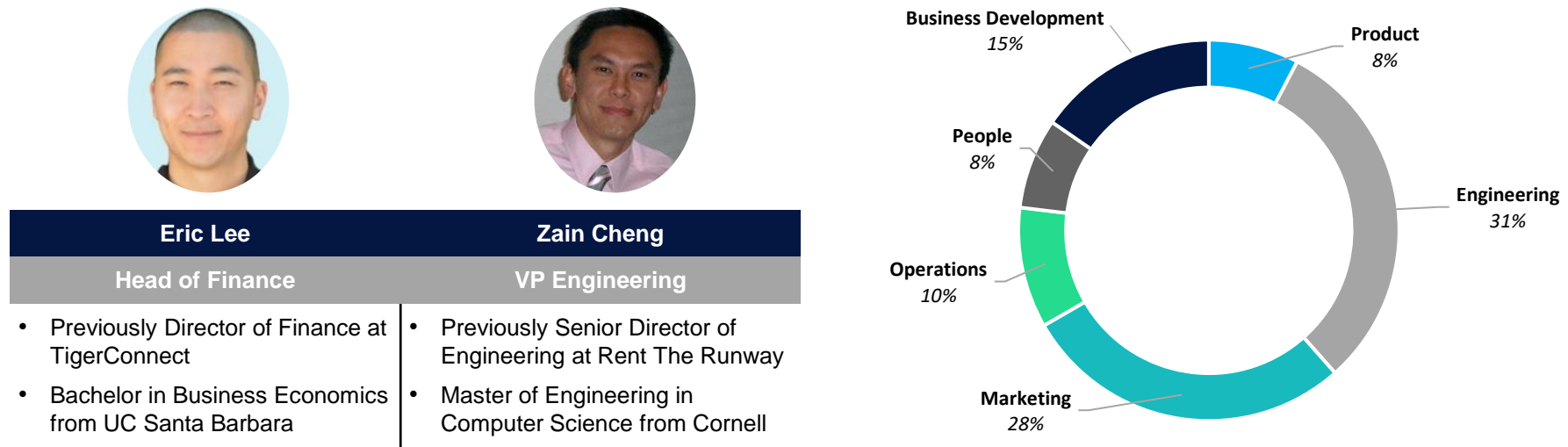
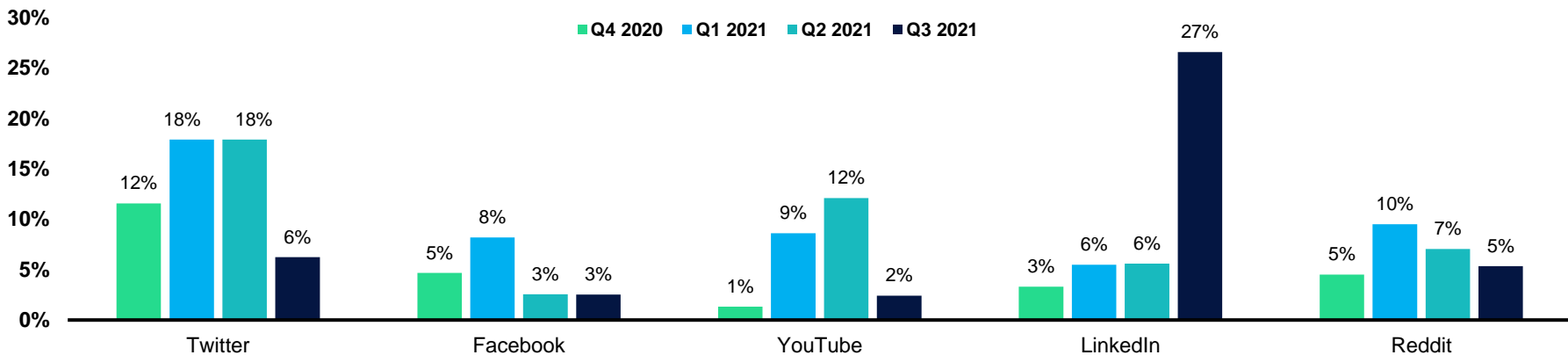


Figure: Community Growth by Channel



Source: Fundstrat, Horizen



Fundamentals & Technical Updates

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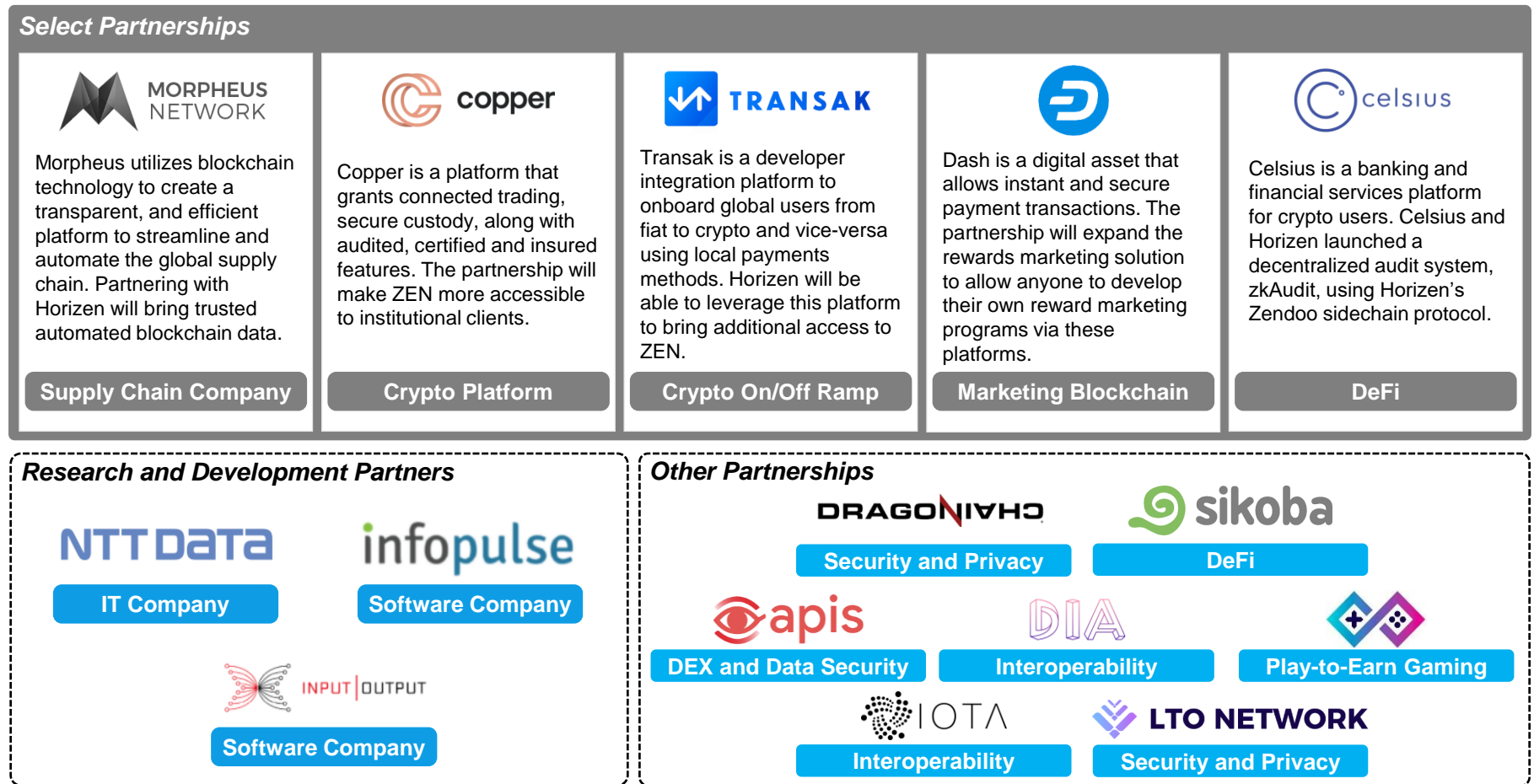


Horizen Expands Partnerships to Enable New Offerings

Both technical and R&D partnerships accrue value to the platform

- Horizen continues to expand partnerships across supply chain and digital asset platforms to make ZEN more accessible to institutional and retail investors and to taking advantage of the Decentralized Finance (DeFi) space. Additionally, Horizen has built strong partnerships with global research and development partners that have a long history of building successful software solutions for businesses and governments worldwide.

Figure: Horizen Partnerships



Source: Fundstrat, Horizen



Investors Can Now Purchase ZEN Through Brokerage Accounts

Grayscale Horizen Trust (HZEN) now available on OTCQX Market

- HZEN was listed on OTCQX on October 19, 2021, with 6,838,000 Shares outstanding of Grayscale Horizen Trust, and each share representing ownership of 0.09231138 ZEN. Investors will be able to buy and sell freely-tradable HZEN shares through their investment accounts in the same manner as they would other unregistered securities.
- Grayscale products are distributed by Genesis Global Trading, Inc. (Member FINRA/SIPC, MSRB Registered).

Figure: Horizen Trust (HZEN) Trading on OTCQX Market

Grayscale By the Numbers and What HZEN Means for Investors

\$55.1B

Grayscale AUM

As of 11/01/21

\$54.8M

HZEN AUM

As of 11/01/21



Enables investors to gain exposure to the price movement of the trust's underlying assets through an investment vehicle, avoiding the challenges of buying, storing, and safekeeping the tokens directly.

76.2%

Multi-Product

Investor inflows as of 8/31/21
36.6% of investors invested across multiple products

\$5.4M

Net Inflows

Net inflows since HZEN listed on OTCQX



Allocating funds across different asset classes – from stocks to bonds to digital currencies – allows investors to diversify their investments. In turn, this can help investors lower their risk and generate higher returns.

73.4%

Coverage

Grayscale's products cover over 70% of the digital asset market

15.1%

Premium

HZEN shares are currently trading at a 15% premium to NAV due to high demand



Grayscale is IRA-Eligible, an experienced sponsor and manager with audited financials. Easy to access, simplified taxes, and federally compliant. The closest instrument to holding the underlying asset and getting exposure.

Source: Fundstrat, Horizen, Grayscale

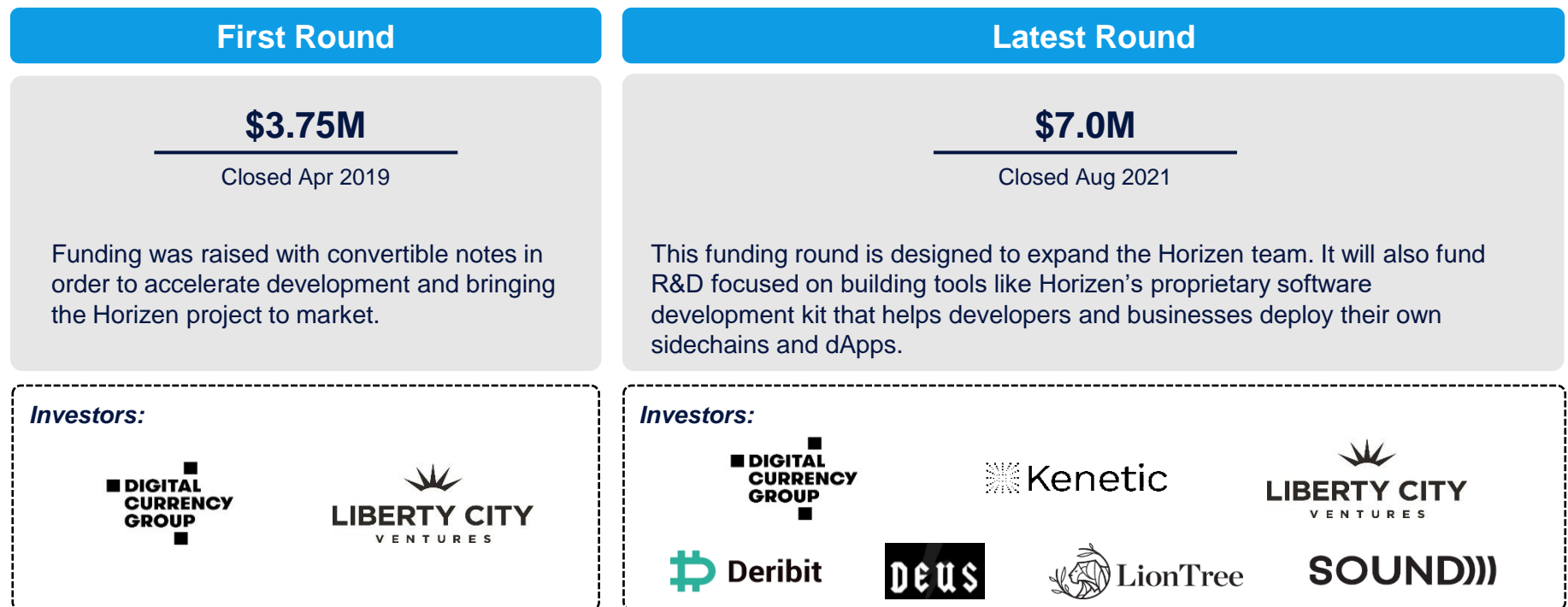


Reputable Venture Capital Firms Support Horizen’s Vision

Horizen Labs recently closed a \$7 million seed round from investors

- Horizen Labs closed a \$7 million seed round on August 10, 2021 led by Kinetic Capital, Digital Currency Group and Liberty City Ventures. Other investors include Sound Ventures, Deribit, Artist Capital, Deus, and LionTree.
- Horizen’s second round of funding will go towards supporting the development of tooling needed for developers and businesses to deploy their own sidechains and decentralized applications.
- According to team leads, Horizen Labs is expecting “to double or triple” the workforce through expanding operations in New York, Milan, and Ukraine.

Figure: Horizen’s Capital Raises



Source: Fundstrat, Horizen Labs, CoinDesk, Dove Metrics



Connecting Developers and Improving Horizen Network

HDE is a key tool for the development of the Horizen Ecosystem

- The Horizen Developer Environment (HDE) is a platform launched in Q2 2020 aimed at helping open-source contributors improve the Horizen blockchain system. It simplifies the contribution process by gathering open GitHub issues, bugs, and other tasks across repositories in one place.
- The HDE lists all open tasks with necessary information to curate and outline the steps necessary to complete the task. It also provides developers the opportunity to team up with others in order to produce collaborative, high-quality improvements to the Horizen platform.

Figure: Horizen Developer Environment Overview



Horizen Developer Environment

- HDE is a platform that uses bounties to incentivize developers to contribute to the Horizen ecosystem through tasks such as project usability innovation and non-technical public outreach.

13

Live Tasks



\$6.7K

Live Bounties



\$12.0K

Paid Bounties



- Open-source projects have the unique opportunity to benefit the project and the contributors. The HDE is designed to make it easy for contributors to work on the Horizen ecosystem by layering an intuitive user interface over the GitHub pages with all the necessary source code, and then rewards quality contributions with bounties.

Source: Fundstrat, Horizen



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