



distributed ledger platform for capital markets

## WHITEPAPER

January 27th, 2018

This White Paper forms part of, and should be read together, with the Offering Memorandum, dated December 18, 2017 (as amended and supplemented from time to time, the "Memorandum"), including, without limitation, the important information included in the Memorandum under the headings "Risk Factors" and "Notice to Purchasers."

# Background

While blockchain technology has existed for over 9 years, the initial coin offering (ICO) phenomenon, which first achieved broad market attention in 2016 and 2017, introduced an entirely new model for capital formation. ICOs allow companies of any size to raise money directly from individual market participants through the global sale and distribution of digital tokens or coins (tokens). The majority of the tokens issued in ICOs are issued using Ethereum's "ERC-20" protocol, which allows for a streamlined token creation process. Token purchasers are able to directly purchase tokens utilizing Ether or other cryptocurrencies as well as fiat currency.

ICOs provide purchasers with a means to invest in companies while bypassing traditional financing methods and counterparties. Fiscal year 2017 yielded the creation of 235 ICOs and approximately \$3.7 billion in funding<sup>[1]</sup>, compared to the traditional U.S. IPO market, which yielded 160 initial public offerings and approximately \$36 billion<sup>[2]</sup>.

The increased access to capital for entrepreneurs that is provided by ICOs is exciting and praiseworthy. However, ICOs are still nascent and raise many issues that need to be resolved before blockchain-tradable security tokens may expand to reach their market potential. Recent increases in demand for liquidity in security tokens issued pursuant to ICOs have highlighted the lack of a credible, scalable security token trading platform that we believe is necessary to support widespread global acceptance of security tokens as a means of capital raising.

Additionally, the number of ICOs in the past year has raised significant challenges for potential investors. Inundated with a huge number of ICO opportunities, many investors do not have the necessary information nor sufficient time to vet the legitimacy of each ICO that emerges in the market. Whether future ICO funding comes from large institutional investors or retail investors, we believe that there is an urgent need for appropriate and coordinated global regulation of ICOs, a roll-out of reputable, enterprise-grade technology to support liquidity in security tokens, and general improvements to the cryptocurrency and digital securities ecosystems.

In fact, the recent explosion of ICOs has drawn close scrutiny from global securities regulators, including the U.S. Securities and Exchange Commission (SEC). In response to ICOs of purported "utility" tokens conducted without regard for U.S. securities laws, the SEC issued its "Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO" (the DAO Report) on July 25, 2017.

---

<sup>1</sup> Source: [www.coinschedule.com/stats.html](http://www.coinschedule.com/stats.html).

<sup>2</sup> Source: Renaissance Capital's 2017 Annual Review of the U.S. IPO Market dated December 15, 2017.

Among the key issues addressed in the DAO Report was whether tokens issued in ICOs constituted “securities” subject to U.S. federal and state securities laws. The SEC stated that “whether a particular opportunity involves the offer or sale of a security—regardless of the terminology or technology used in the transaction—depends on the facts and circumstances” of the particular transaction. In the DAO Report, the SEC applied the “Howey Test” articulated by the U.S. Supreme Court in SEC v. W.J. Howey Co., 328 U.S. 293 (1946). The Howey Test analysis turns on the presence of a few specific features: an investment of money in a common enterprise and with the expectation of profits that are expected to arise substantially from the efforts of a third party. In the DAO Report, the SEC applied the Howey Test and determined that the token under consideration was, in fact, a security, subject to the U.S. securities laws. Any token offered or sold in the United States or to U.S. investors that constitutes a security must be registered under the Securities Act of 1933, as amended (the Securities Act), or be offered and sold pursuant to an available exemption from such registration requirements.

The SEC’s recent actions and statements suggest that many tokens will be considered securities by the SEC. We believe that the SEC’s actions with respect to ICOs pave the way for regulatory bodies and governments globally to apply securities laws and regulations to the majority of ICOs. This would result in a regulatory framework for all aspects of an ICO and its issuer, including issuance requirements, disclosure requirements, secondary trading market requirements and the application of general compliance standards to security tokens.

tZERO understands that regulation in the crypto-world is inevitable and we are working to develop a scalable and stable securities token trading platform that, when operational, will be fully compliant with applicable legal and regulatory requirements.

The launch of tZERO’s own token is intended to capitalize tZERO to, among other things, develop a crypto-solution for security token liquidity that complies with applicable legal and regulatory requirements and to build the necessary infrastructure to support global adoption of this platform.<sup>[3]</sup> We believe that the tZERO trading platform, once operational, has the potential to democratize, expand and strengthen capital markets.

---

<sup>[3]</sup> See “Use of Proceeds” in the Memorandum for additional details regarding the use of proceeds of the tZERO token offering. In the event that tZERO raises less than \$250 million, tZERO’s management will allocate the net proceeds of the offering among the uses set forth in the Memorandum in its sole discretion.

# tZERO token

---

Pursuant to the Memorandum, tZERO has launched its own security token offering of the tZERO token (TZRO).

The tZERO token is the first preferred stock security token of which we are aware, and the tZERO token is being issued in accordance with applicable U.S. federal and state securities laws.<sup>[4]</sup>

The terms of the tZERO token are described in the Memorandum. See “Annex B: Terms and Conditions of the tZERO Preferred Equity Tokens” in the Memorandum for details regarding the terms of the tZERO tokens, including dividends under the tokens, which, subject to the limitations described in the Memorandum, will be based on tZERO’s consolidated adjusted gross revenue (i.e., revenue, net less Cost of Sales).

This whitepaper will delve into tZERO’s products, business models, technology platforms, team, and the company’s vision, including with respect to the development of the tZERO security token trading platform.

We believe that the discussion of tZERO’s existing businesses will help investors understand the source of existing revenues and potential sources of future revenue generation. We will also explain how we plan on utilizing a portion of the funds raised in this offering to leverage our existing technology to develop markets that are more transparent, efficient and liquid through use of technology, with a focus on blockchain technology.

tZero’s security token offering is vastly different from a traditional utility token ICO, which is typically characterized by 3 W’s – a website, whitepaper, and wallet address. Many of these traditional utility token ICOs have been launched by international foundations, which seek to rely on the utility of their token to avoid being deemed a security under relevant securities laws. In some cases, the participants in these utility token ICOs are considered “donors” and may not receive any rights along with their token.



<sup>4</sup> In offering the tZERO token, tZERO is relying upon exemptions from the registration requirements of the Securities Act—particularly, Rule 506(c) of Regulation D and Regulation S. See “Notice to Purchasers” in the Memorandum.

In addition, because of the onerous requirements of the U.S. securities laws, some issuers of such utility token ICOs exclude U.S. investors entirely. Also, larger institutional investors are not interested in unregulated, highly speculative investments. In many of these utility token ICOs, the issuers of a token assert that securities laws are inapplicable and do not employ any investor protections, including detailed disclosure. In this context, the proposed product is often outlined in a highly theoretical white paper without an existing core technology platform or user base. Against this backdrop, the current ICO market has experienced significant challenges recently, including regulatory hurdles and instances of fraud and abuse carried out to take advantage of strong investor appetite for ICOs. However, at the same time, a significant number of legitimate blockchain startups show tremendous potential and are committed to advancing the digital revolution while rewarding early supporters.

The technology utilized to conduct ICOs is obviously valuable, and the amount of capital raised in ICOs demonstrates that the demand for investing in blockchain technology is immense. We aim to satisfy investor demand with our tZERO security token offering, which we believe creates a model for blockchain innovators to replicate and raise funds.

The goal of the tZERO security token offering is to raise capital to support tZERO's business, which includes the future development of the tZERO security token and a security token trading system, the development of certain functional utility benefits that, while not a part of the terms of the tZERO security token, may be offered to holders of tZERO tokens, lobbying for important legal and regulatory changes, and general corporate purposes, including strategic transactions by tZERO and reducing tZERO's debt burden. For more information on the contemplated use of proceeds of the tZERO security token offering, see the section titled "Use of Proceeds" in the Memorandum.

As tZERO seeks to develop a security token trading system, we hope to provide entrepreneurs a regulated platform and structure for security tokens.

The tZERO security token offering seeks to improve upon the traditional utility token ICO model by addressing many shortcomings and regulatory concerns surrounding such ICOs. The tZERO token is intended to afford token holders the benefits of a traditional security (uncommon to the crypto community), while maintaining the flexibility to provide discretionary practical benefits (utility benefits) to holders of tZERO tokens (uncommon for traditional securities). Such practical benefits for token holders create an opportunity for companies to reduce customer acquisition costs and increase customer retention. While the ultimate goal for most investors is a return on their investment, we believe that many firms in the future will want to explore providing practical benefits to token holders. Issuing security tokens, with a utility function (whether inherent to the terms of the token or provided on a discretionary basis to token holders) could provide companies with numerous benefits such as effectively implementing rewards programs, managing shareholder voting, and assisting or managing customer/investor outreach in a more efficient, transparent, and verifiable manner.

Another benefit of a properly conducted security token offering is that rights are clearly disclosed and investors participate in accordance with SEC regulations designed for investor protection. In the case of the tZERO security token, investors are screened as “accredited investors” and all investors are subject to rigorous anti-money laundering (AML) and know-your-customer (KYC) verifications.

If tZERO is successful in developing a security token trading system that complies with all applicable securities laws and regulations, this will be ground-breaking in providing security token holders a liquidity platform to trade securities tokens in a regulated environment, subject to securities rules and regulations.

In general, we believe that security token offerings are characterized by 3 P's - the people, the product, and the plan. This whitepaper will outline our existing business operations, our plethora of proprietary technology, as well as key problems in the market that we are perfectly positioned to address and have already begun solving with our existing infrastructure and experienced team of innovators, entrepreneurs and technologists.

# The tZERO Team

The tZERO team is comprised of a dynamic mix of accomplished entrepreneurs, brokerage experts, and expert technologists. Below is a series of descriptions of key high-level team members, as well as some information pertaining to tZERO's technology and brokerage teams.



## **Patrick M. Byrne** CEO

In 1999, Patrick M. Byrne launched Overstock.com, and has grown it into the grand online retailer that it is today. Patrick was one of the first public figures to vocally espouse the massive potential of cryptocurrencies and blockchain technology. Patrick's first leap into the crypto-world occurred in 2014, when Overstock became the first major online retailer to accept bitcoin as payment for goods. In 2015, Byrne allocated some Overstock.com resources to acquire fintech entities, and used tZERO's trading platform to purchase a digital bond that cleared and settled on a blockchain. In 2016 Overstock made history by becoming the first company ever to issue shares of a public company on a blockchain, rather than through the facilities of NSCC and DTCC. Not only has Byrne established himself as a blockchain visionary, he has taken great strides towards implementing his revolutionary vision.



## **Joe Cammarata** PRESIDENT

Joe began his career at Datek, where he spearheaded the creation of an internal order crossing engine that evolved into the Island ECN. He then orchestrated and oversaw the incredible growth of Datek Online - which was sold to Ameritrade for \$1.4 billion. Joe later co-founded Sonic Trading and piloted the company as CEO to a successful acquisition in 2004 by the Bank of New York, where he served as Managing Director. In 2011, Joe purchased a defunct brokerage firm, which was resurrected as SpeedRoute. Under Cammarata's tutelage, the firm increased its business tenfold. He is currently the CEO of SpeedRoute, and President of tZERO. Joe's track record of innovating trading markets through the implementation of technology is second to none. His expertise will be vital to the growth of tZERO.



## Ralph Daiuto COO & General Counsel

Ralph Daiuto is an accomplished business leader and attorney with over two decades of experience in the securities industry. Daiuto has governed several broker-dealers and innovative technology companies where he managed their daily operation, including legal, compliance, and regulatory undertakings. Ralph is currently the COO and General Counsel of tZERO. He is admitted to practice law in the states of NY and NJ, as well as the U.S. District Courts in the Southern and Eastern Districts of NY and the District of NJ. Ralph's experience in navigating highly regulated industries while applying innovative technology will be key to the success of tZERO.



## John Gilchrist CIO

Industry veteran John Gilchrist ("Gilly") joined Herzog Heine and Geduld in 1987, where he was responsible for monitoring and growing trading, clearing, and operations systems. In a period when financial markets were rapidly transforming through the use of technology, Gilly was instrumental in upgrading Herzog's technology infrastructure while they ascended to the position of the largest NASDAQ market maker. After Herzog was acquired by Merrill Lynch, Gilly was responsible for Merrill's NASDAQ market making and DMA offerings. He has been employed by SpeedRoute since its inception in 2011. Gilly has been crucial in overseeing the various tZERO projects, ensuring that resources are properly managed, systems are designed for scalability, and technology rollouts are deployed without error.

## The Technology Team

---

The tZERO technology team is comprised of experts in blockchain development, network engineering, low-latency systems development, systems integration, and large-scale data processing. tZERO's blockchain development team is well-positioned to thrive and innovate, as the team has a major head start against competitors, having made significant breakthroughs in the blockchain space, such as the first ever SEC-registered offering of digital securities utilizing blockchain technology. Most of the SpeedRoute technology team has been working together for 20+ years, for several different fintech companies. The trading technology world from which they come demands high performing, scalable systems with 0 downtime, and frequent technology upgrades. The tZERO technology team is perfectly positioned to create meaningful changes in financial markets, through blockchain technology.

## The Brokerage Team

---

The brokerage team is composed of industry veterans who are experts in monitoring and reducing risk, working together with regulators, and understanding how financial markets operate. Since inception, tZERO has worked to ensure that our pursuits fall within regulatory guidelines. In addition to operations and compliance personnel, the brokerage team has a strong business development unit with significant brokerage experience and young talent working to expand the client base and product offerings. In total, there are currently 15 registered representatives holding the following licenses: 4, 7, 24, 27, 57, 62, 63, 66, and 99. The tZERO brokerage team will be indispensable as tZERO navigates the regulatory framework of U.S. capital markets.

# Our Story

At a point when the terms “Bitcoin” or “blockchain” had barely entered the national lexicon, Patrick Byrne had already decided to venture into the crypto-world. Overstock’s first step into the crypto-world consisted of officially accepting Bitcoin as payment for goods, becoming the first major retailer to do so. This newsworthy event familiarized its technology staff with handling cryptocurrency, giving the company a massive head start with the modern and complex technology.

While Dr. Byrne knew that Bitcoin was a remarkable product, he was captivated by the underlying technology of cryptocurrencies, the blockchain. He saw major room for improvement in the financial system by integrating blockchain technology into outdated financial technology. Major breakthroughs in technology often lead to the elimination of burdensome third-party intermediaries from transactions. Blockchain technology has the potential to perform this on a massive scale, allowing buyers and sellers to interact with one another directly, without a third party monitoring the transactions. Byrne knew that in order to pursue his ambitious vision of bringing blockchain to Wall Street, he should align himself with a technology-based firm that had a strong presence in financial markets. A fortuitous meeting with Joe Cammarata got the ball rolling for Overstock to acquire SpeedRoute and Pro Securities.

SpeedRoute is a FINRA-regulated agency brokerage firm that specializes in routing equity orders to U.S. market centers. Joe Cammarata founded the firm in 2011 by acquiring a failed brokerage firm and resurrecting it. SpeedRoute’s main functions include: providing connectivity to the dozens of US equity marketplaces and supplying customers with technology to reduce costs and improve execution quality. Between 2011 and 2015, SpeedRoute’s book of business grew tenfold as it focused on improving its technology and fostering deep, strategic relationships with its current customer base of 125+ brokers. SpeedRoute maintains integrated systems with all major U.S. order management systems. SpeedRoute maintains the integrations necessary to route equity orders to every U.S. equity exchange and dark pool. SpeedRoute’s vast network of front ends, and execution venues provides the perfect framework for integrating blockchain technology into financial markets. This is the primary reason that Overstock acquired SpeedRoute.

Pro Securities is a FINRA regulated broker dealer that was acquired by Joe Cammarata in 2010. Pro Securities operates an SEC-regulated Alternative Trading System. Pro Securities’ ATS remained non-operational for several years while SpeedRoute was being built out, in hopes that the two firms would eventually develop a synergistic relationship. Pro Securities’ ATS license and matching engine technology piqued the interest of Overstock, leading them to make an initial investment in Pro Securities in 2014.

In 2015, Overstock, Pro Securities, and SpeedRoute successfully collaborated on digital stock loan technology platform. After seeing the potential of these teams working together and what they could accomplish, Overstock, through tZERO, acquired Pro Securities and SpeedRoute through a series of transactions beginning in the third quarter of 2015 and ending in the first quarter of 2016.<sup>[5]</sup>

Today, Overstock indirectly owns 81.0% of tZERO and the remaining 19.0% of t0.com, Inc. is held by 27 other individual or entity shareholders, many of whom are employees or former employees of tZERO.

The tZERO team is comprised of highly successful entrepreneurs, experienced blockchain developers, a seasoned brokerage ensemble, and a bevy of fintech technologists, all ready to revolutionize capital markets through blockchain technology.

Since its formation by Overstock, the tZERO team has been fervently building new technology, while nurturing strategic partnerships, and proving itself to be an industry leader in the blockchain space. We believe that the focus placed on technology development during this period provides us with a tremendous competitive advantage moving forward.

Some of the products and ventures (both blockchain-related and otherwise) that have been established during this period include developing a Digital Locate Receipt suite of software, acquiring a majority interest and launching an overnight equity trading platform (Blue Ocean), entering a letter of intent with Siebert Financial to offer discount retail trading, and most notably, constructing a trading platform (an “ATS”) that was utilized in the first ever SEC-registered offering of digital securities utilizing blockchain technology—Overstock’s Blockchain Voting Series A Preferred Stock, which trades outside of the facilities of NSCC and DTCC and utilizes blockchain technology.

Later in this whitepaper, we will be going into these projects in more detail. tZERO’s story is a story of innovation, market disruption, and collaboration. We look forward to continuing that story.

---

<sup>5</sup> See Note 1 to tZERO’s unaudited consolidated financial statements included in the Memorandum for additional detail on the series of transactions pursuant to which Overstock acquired its interest in tZERO and its subsidiaries.

# Our Products

## Digital Locate Receipt (DLR) Software

tZERO has engineered a suite of licensable software that we believe will revolutionize the stock loan business. Currently, a great deal of stock loan transactions are performed using non-automated systems. We believe that this leads to massive pricing and allocation inefficiencies, combined with potential for the lending of stock that is not actually owned by, or accessible to, the lender. In this context, it is possible that some entities will nefariously over-lend stock, thus allowing naked short selling to occur. The lack of a digital record emboldens them to do so.

The DLR suite of software allows broker-dealer licensees with stock inventory (inventory providers) to both load and manage their inventory via a front end system; they can provide locates to their clients who wish to short-sell stock or loan the stock to their clients who wish to borrow the stock. The broker-dealer licensees who are looking to borrow stock (borrower) may also transact with inventory providers, where the borrower will pay the inventory provider to lend the borrower stock. For inventory providers with significant inventory or who contract with a significant inventory provider, their customers would have the ability to borrow by using a convenient, transparent, electronic market-based system. As borrowers purchase DLRs, the software decrements the remaining inventory, and an immutable trail of ownership can be maintained by writing such transactions to a proprietary or other blockchain.

The screenshot displays the tZERO DLR software interface, which is a web-based application with a dark-themed UI. The top navigation bar includes links for 'Logout' and a user account icon. The main content area is divided into several sections:

- New Order:** A panel on the left containing buttons for 'Buy' and 'Sell', and input fields for 'Bid' (\$0.0001 x 100), 'Ask' (\$0.0002 x 1,000), and 'Last' (\$0.0001 x 100). It also features an 'Identifier' field set to 'ZVZZT.DLR' and a 'Quantity' input field set to '0'. A note indicates 'Total available: 600'.
- Order History:** A table showing a single entry: 'ZVZZT.DLR' with QTY 200, \$/Share \$ 0.0006 / share, and Cost \$0.11.
- Open Orders:** A table showing a single entry: '1514312115069' with Side Buy, Status Filled, Symbol ZVZZT.DLR, Price \$0.0001, Avg \$ \$0.0001, QTY 100, Filled 100, and Time 11:16:12 AM, 12-26-17.
- Market Data:** A table showing current market prices for various symbols: A.DLR (\$0.0100 x 600), CNBKA.DLR (\$0.0100 x 1,200), GRPX.DLR (\$0.0100 x 200), ZBRA.DLR (\$0.0100 x 100), and ZVZZT.DLR (\$0.0001 x 100).
- Time & Sales:** A table showing a history of trades for 'A.DLR' with specific details like Price (\$0.0001), QTY (200), and Time (11:38:39 AM, 01-08-18).

The above image is a display of tZERO's front end implementation of tZERO's DLR software suite. The streamlined digital software provides licensees' customers with an intuitive, user-friendly experience allowing the trader or inventory provider to satisfy compliance requirements around short-selling in an automated, transparent, and efficient manner.

## SpeedRoute Execution Services

---

SpeedRoute is an electronic agency brokerage firm that executes U.S. equities for broker-dealer clients. SpeedRoute offers low latency, smart order routing solutions to access liquidity at every U.S. equity exchange and dozens of additional market centers. SpeedRoute's vast network of brokerage clients, expertise in routing orders to market centers, and regulatory prowess provide an incredible foundation that can be drawn upon as we seek to build out cryptocurrency and crypto-token technologies in a regulated setting.

## Blue Ocean

---

Blue Ocean is an overnight trading platform for U.S. equities. U.S. equities markets are non-operational between 8:00PM EST and 4:00AM EST. tZERO looks to address this market inefficiency by operating its ATS between these hours. This platform allows customers to manage overnight risk, and seek profitable trading opportunities. As the world becomes more connected than ever, it no longer makes sense to fragment equities markets' trading hours. Blue Ocean seeks to address this problem.

## Discounted Retail Trading through Siebert Financial

---

In December 2017, tZERO signed a letter of intent with Siebert Financial Corp. ("Siebert") to offer discounted online trading of U.S. equities to customers through the Muriel Siebert & Co. and Overstock relationship. Customers subscribing to the discount brokerage suite of products would be offered services, including smart order routing and execution services by Speedroute, and Clearing Services through StockCross Financial Services, Inc. ("StockCross"), an affiliate of Siebert. tZERO expects the transaction to close during the first quarter of 2018, subject to the execution of definitive documentation and customary closing conditions.

See "Recent Developments" in the Memorandum for important information about the Siebert Letter of Intent and certain equity investments that tZERO is pursuing.

## Robo Advising through tZERO Advisors

---

tZERO expects to launch robo-advisory services in 2018, through a partnership with an analytics firm that generates adaptive, dynamic portfolios. Automated portfolio management is a rapidly growing industry, and tZERO intends to offer these services at highly competitive pricing, using advanced allocation models, targeting Overstock's tremendous customer base.

tZERO will also explore the ability to include cryptocurrencies in portfolio allocation. In today's market, we believe that a well-diversified portfolio is incomplete if it does not include cryptocurrencies. We aim to offer investors an option to address this potential diversification gap.

## tZERO's Trading Platform and Planned Token Trading System

---

In 2016, Overstock conducted an SEC-registered rights offering, which included an opportunity to purchase Overstock's Blockchain Voting Series A Preferred Stock (OSTKP). OSTKP does not trade through the facilities of NSCC or DTCC, but rather trades utilizing a suite of software technologies referred to as the tZERO Issuance and Trading Platform (the "tZERO Platform"). OSTKP trades exclusively on the PRO Securities ATS, which utilizes the tZERO Platform and blockchain technology.

While the offering of OSTKP served as a milestone for the issuance and trading of digital securities in a manner that utilized blockchain technology, the application of the tZERO Platform to trading of OSTKP is subject to limitations.<sup>[6]</sup>

The tZERO Platform was a massive undertaking and historic achievement that sets the stage for tZERO to develop a securities token platform.

tZERO intends to leverage its experience and expertise in developing and maintaining the tZERO Platform to develop a trading platform that is capable of trading security tokens (i.e., tokens or coins that are determined to be securities for purposes of U.S. securities laws). tZERO currently does not anticipate that the tZERO Platform will be deployed in connection with the contemplated token trading system in the same manner as it is currently deployed by the PRO Securities ATS.

Although tZERO has not yet developed the planned tZERO token trading system, the company is preparing the appropriate technological resources to achieve this goal. Nevertheless, a variety of technological, legal, and regulatory factors could impede the development, or ultimate functionality of the token trading system.<sup>[7]</sup>

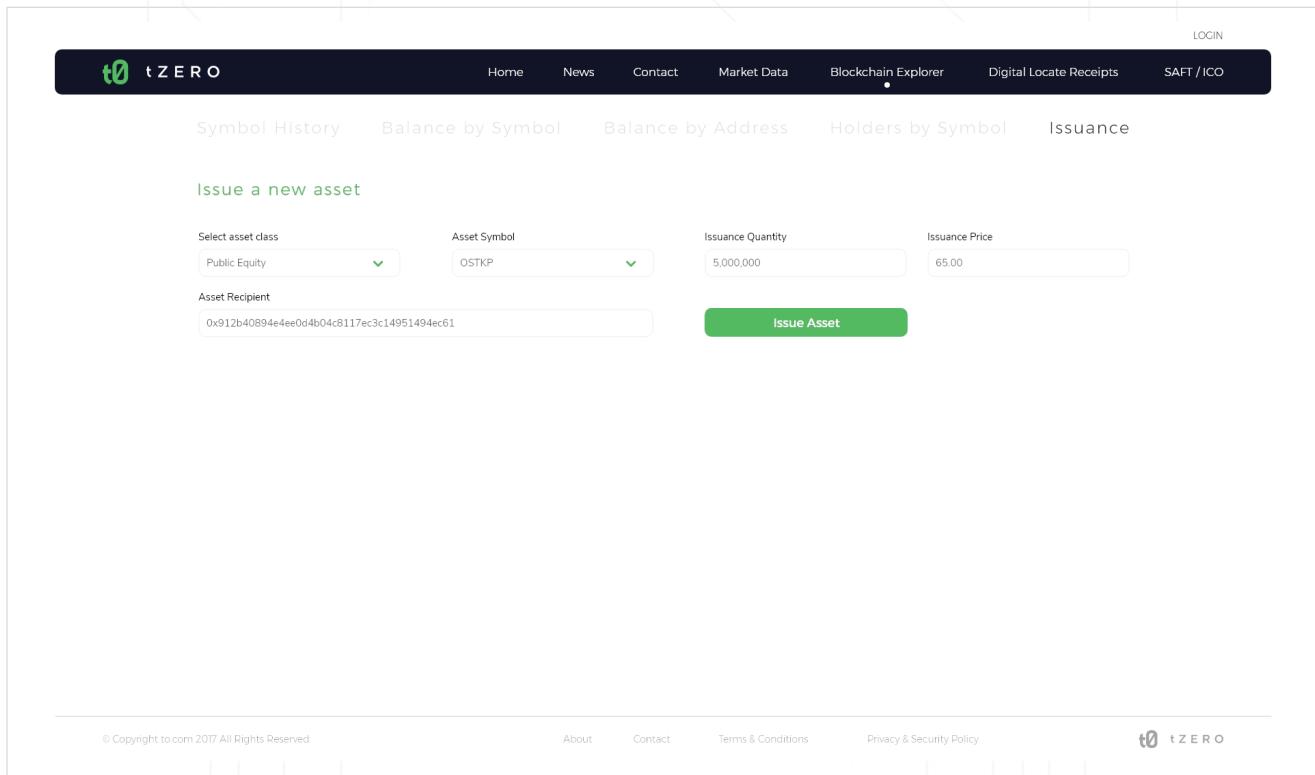
As a result of its activities to date, tZERO has been at the forefront of the effort to bring greater efficiency and transparency to capital markets through the integration of blockchain technology.

Below are images of some of the interfaces used and developed for the OSTKP rights offering.

---

<sup>6</sup> For example, these limitations include: (i) only U.S. investors are permitted to transact on the PRO Securities ATS and (ii) all holders of OSTKP are required to open an account with, and access the PRO Securities ATS through, a single U.S. broker-dealer selected by tZERO

<sup>7</sup> See "Risk Factors" in the Memorandum for important information about the risks related to tZERO's development of the contemplated security token trading system.



The screenshot shows the tZERO Issuance Interface. At the top, there is a navigation bar with links for Home, News, Contact, Market Data, Blockchain Explorer, Digital Locate Receipts, SAFT / ICO, and LOGIN. Below the navigation bar, there are several tabs: Symbol History, Balance by Symbol, Balance by Address, Holders by Symbol, and Issuance. The Issuance tab is active. A sub-section titled "Issue a new asset" is displayed, featuring a form with the following fields:

- Select asset class: Public Equity
- Asset Symbol: OSTKP
- Issuance Quantity: 5,000,000
- Issuance Price: 65.00
- Asset Recipient: 0x912b40894e4ee0d4b04c8117ec3c14951494ec61

A green "Issue Asset" button is located at the bottom right of the form. At the bottom of the page, there is a footer with links for About, Contact, Terms & Conditions, Privacy & Security Policy, and the tZERO logo.

The above image depicts the tZERO Issuance Interface developed for OSTKP. Subject to the legal and regulatory limitations of the tZERO Platform, this tool enables permissioned users to issue any supported asset class. The UI technology can be utilized to set applicable asset characteristics such as class, ticker symbol, issue quantity, issuance price, and destination address. tZERO has built an API to allow seamless integration to third party issuance platforms.

The screenshot displays the tZERO Lite Trader web-based trading front end. At the top, there are navigation links for 'Market Data', 'My Account', and 'Logout'. Below this, the 'Your Profile' section shows 'Positions Value' (\$653,680.00), 'Portfolio Value' (\$660,365.15), and 'Cash Balance' (\$6,685.15). A 'New Order' button is available. The 'Positions' section lists holdings for MSFI, OSTKP, and TSLA. The 'Order History' section shows recent trades, including a canceled sell order for OSTKP at \$25.00 and a rejected buy order for OSTKP at \$21.00.

Symbol	Change	QTY	Value	\$/share
MSFI	<span style="color: green;">▲ 0%</span>	1000	\$95,500.00	\$95.50/share
OSTKP	<span style="color: green;">▲ 59.44%</span>	21700	\$542,500.00	\$25.00/share
TSLA	<span style="color: green;">▲ 0%</span>	1000	\$15,680.00	\$15.68/share

Order ID	Type	Symbol	Price	Avg \$	QTY	Filled	Action
1515614812624	Sell	OSTKP	\$25.00	\$25.00	500	100	cancel
1515614948831	Buy	OSTKP	\$20.00	\$0.00	500	0	cancel

Order ID	Type	Status	Symbol	Price	Avg \$	QTY	Filled	Time
1515614910037	Buy	Canceled	OSTKP	\$18.00	\$0.00	500	0	1:08:53 PM, Jan 10th, 2018
1515614812624	Sell	Partial	OSTKP	\$25.00	\$25.00	500	100	1:07:49 PM, Jan 10th, 2018
1515614751417	Sell	Canceled	OSTKP	\$21.00	\$21.00	500	200	1:06:41 PM, Jan 10th, 2018
1515614745021	Buy	Rejected	OSTKP	\$21.00	\$0.00	500	0	1:05:45 PM, Jan 10th, 2018
1515614910037	Buy	Partial	OSTKP	\$20.00	\$20.00	500	100	1:04:38 PM, Jan 10th, 2018

The above image is a screenshot of our proprietary web-based trading front end, Lite Trader. The UI displays real-time market data for OSTKP trading on the tZERO ATS as well as traditional securities. From this interface, customers can place orders, as well as view their open orders, order history, cash balance, and positions. The Lite Trader front end integrates into existing market infrastructure via FIX and RESTful APIs.

The screenshot shows the tZERO Ledger Explorer interface. At the top, there is a navigation bar with links for Home, News, Contact, Market Data, Blockchain Explorer, Digital Locate Receipts, SAFT / ICO, and LOGIN. Below the navigation bar, there are tabs for Symbol History, Balance by Symbol, Balance by Address, Holders by Symbol, and Issuance. The Symbol History tab is selected.

Under the Symbol History tab, there is a search bar with the placeholder "Track the history of symbol" and a dropdown menu showing "OSTKP". To the right of the search bar are two date pickers: "Between start of a day (12:00 AM Eastern)" set to "December 5th 2017" and "At end of the day (midnight Eastern)" set to "December 6th 2017". A green "GO" button is located to the right of the date pickers.

The main content area displays a table of transaction history. The columns are: Timestamp, Type, Address, and Change. The table shows multiple entries for Feb 21st, 10:33:40, with various transaction types like Refunded Security, Done for day, Settled Currency, To Seller, Committed Security, Sell 100 OSTKP @ 17.00, and Sell 100 OSTKP @ 17.75. Each row includes a small green or red box indicating the change amount (e.g., +100 OSTKP, -100 OSTKP, -1,700.00 USD, +1,700.00 UDS).

At the bottom of the table, there is a link to "Download CSV". Below the table, there is a footer with links for About, Contact, Terms & Conditions, Privacy & Security Policy, and the tZERO logo.

The above image is of the tZERO Ledger Explorer. This tool provides a public view into the trading activity of OSTKP trading in tZERO's ATS. A user can submit queries through the Ledger Explorer that will provide transaction data, such as timestamps, transaction type, public address, and quantity. The Ledger Explorer presents a user-friendly interface to explore transactions stored on a blockchain.

# End to End Trading Ecosystem

tZERO's broad end-to-end capital markets ecosystem is truly remarkable, spanning both blockchain-related applications as well as traditional trading functions. This ecosystem is comprised of a web-based order entry system, a desktop order entry system, an order management system/order routing system, a regulated ATS with matching engine technology, and a clearing/settlement system with optional ledger agnostic blockchain functionality. These components are fully integrated with one another and fully operational in production. With respect to digital securities trading, OSTKP is currently trading utilizing tZERO's first generation trading platform.

These tools also have fully operational test environments for client usage, as well as a suite of risk management tools, including 15c3-5 risk checks. Our existing trading system can be reconfigured to trade existing or new asset classes. Below are some of the major components of our existing trading system:

## Front End Trading Systems

tZERO's web-based and desktop front end systems provide an order entry mechanism for traders. These systems were originally built to trade U.S. equities, and provide users with traditional and specialized order entry fields and order types. The web based platform is designed for less sophisticated, retail users, while the desktop system is reminiscent of a professional trader's front-end trading system.

## Risk Management Technology

SpeedRoute's risk management tools are 15c-3-5 compliant. Stable risk management technology is vital to launching and operating new trading platforms. There are over 50 unique and enforceable risk management rules built into the system including:

- Buying power checks
- Preventing naked short sales
- Verifying long positions prior to allowing long sales
- Stop All Orders
- Maximum notional amount and maximum share size/order

## Monitoring Tools

Keeping track of the issues that could arise during trading hours can be a daunting task. We have built many monitoring tools to keep our support staff apprised of any trading complications that occur. These monitoring tools provide both visual and audio cues, as well as email alerts. Those different systems monitor:

- Connectivity statuses of clients, front ends, vendors, and execution venues.
- Notional trading amounts for clients and exchanges. This includes notional amounts of trades that have been executed, or could be executed.
- Rejection messages from execution venues.
- Unexpected order latency.

## Order Management System (OMS)

tZERO's Order Management System is the backbone of SpeedRoute's core business. The system currently receives equity orders from over 25 third party front end systems, and intelligently routes those orders to various market centers. The capacity of the OMS is truly amazing; it has consistently processed tens of millions of orders on a daily basis with near 100% uptime for the last 7 years. The OMS is a perfect starting point for building a crypto-routing tool.

## Smart Order Router (SOR)

tZERO's SOR was built to aid brokerage customers in navigating the complex, fragmented U.S. equity market system. The router is fully customizable based on client preferences and order instructions. Below are some key features of the SOR:

- Dynamic order routing preference based on current market prices, proprietary heat map technology, and historical trends so that orders are sent to the best market at the time.
- Numerous safeguards to minimize client impact when market center(s) are having issues processing orders. This includes an automated process of diverting orders from venues experiencing outages, the ability to implement immediate manual configuration changes, and programmatically leveraging redundant connectivity options.
- Customized order types that can split up an order and simultaneously route to different market centers, re-route orders when new passive orders appear on an exchange, rest orders at markets for specific periods of time, implement synthetic stop loss orders, conditional order routing, and much more.

tZERO's SOR can create customized solutions based off of clients' specifications, or can provide an out-of-the-box solution to improve a client's execution performance. In the U.S. equities space, SORs became a necessity as more and more exchanges, dark pools, and other execution venues emerged. There is already a need for stable, trusted, and high performing SORs for cryptocurrency markets, and that need will grow as more exchanges surface. tZERO is well-situated to pursue this.

## Matching Engine

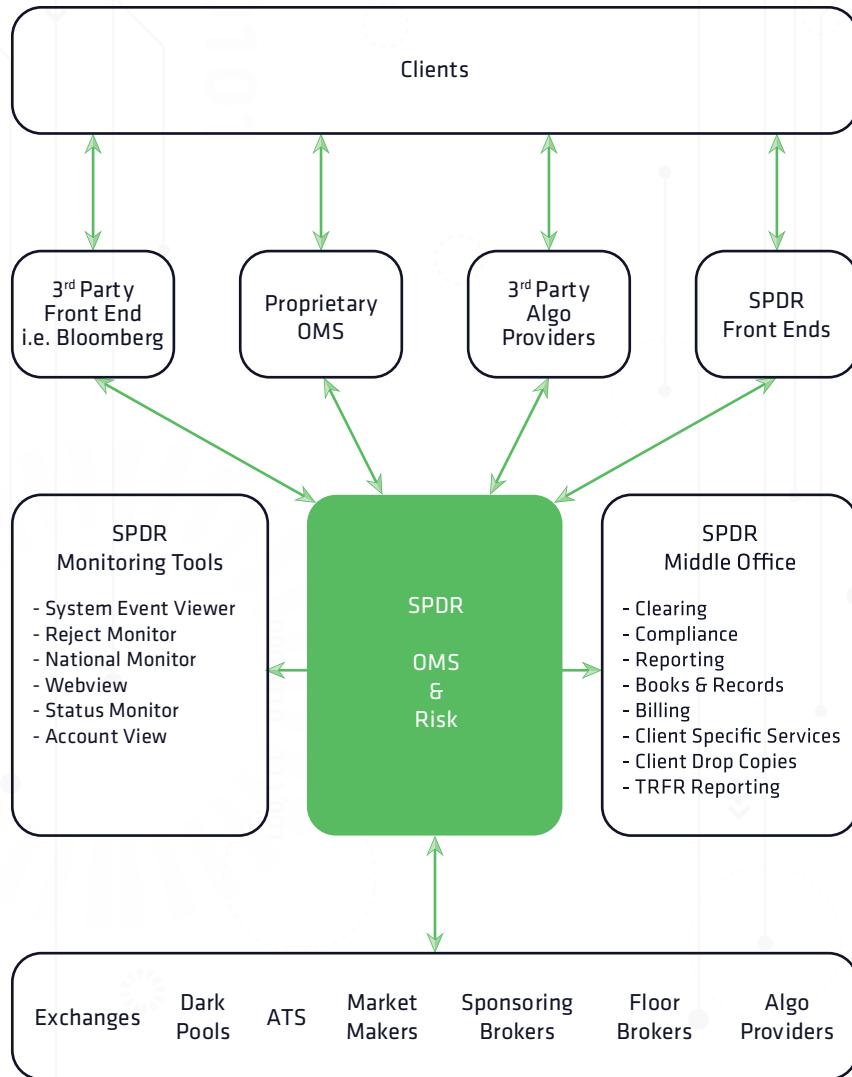
A matching engine is the underlying technology used by exchanges and ATSs to pair off buyers and sellers. tZERO has built a highly configurable matching engine that can provide exchange technology with the optional functionality to anchor trades to a blockchain.

---

The pieces of technology that make up tZERO's capital markets ecosystem are of utmost importance to tZERO's business lines. In addition, tZERO licenses out these technologies to various companies so that they can offer our trading technologies to their clients. Some clients are using these tools to distribute and allocate shares of privately held companies to their clients. By introducing market based trading to emerging asset classes, tZERO is seeking to transform capital markets by making them more transparent, liquid, and accessible.

# SpeedRoute Architecture

SpeedRoute's core technology system is designed to meet the low latency, high throughput demands that are the result of Regulation NMS and High Frequency Trading. The SpeedRoute CORE and client applications are written in C++ and compiled to run on Windows X64 2008-2012 Server. Applications can run in either 32 or 64-bit Windows environments. SpeedRoute components are modular to facilitate the ability to modify components to fit various workflows and implementation.



The above image displays SpeedRoute's core architecture. SpeedRoute receives orders from numerous sources, and intelligently directs to various destinations. The OMS feeds data into our advanced monitoring tools and our middle office reporting tools. This architecture has been developed over the past 10 years. Our infrastructure is modular and customizable. It has already been repurposed for securities lending, private company shares, and can be leveraged for many new asset classes.

# Data Center

All technology is domiciled in Equinix NY4, which is utilized by many of the U.S. equity exchanges, banks, and brokerage firms. Within NY4, we rent a private, secure cage that houses our 5 dedicated racks with the following specifications:

- Certifications- SSAE16 SOC-1 Type II ; SOC-2 Type II ; ISO 27001
- Power Redundancy- N+1
- Cooling Redundancy- N+2

## Proprietary Network

### Resiliency

The Production network at Equinix/NY4 is based on a 6-member switch stack comprised of Cisco Catalyst 3750G switching platforms acting as a single virtual switch. Failure of any single device results in that device effectively being bypassed while the remaining stack members continue to forward traffic. Distribution of systems comprising a single OMS cluster across multiple switching platforms reduces impact of loss of a single stack member.

### Redundancy

All of our environments at Equinix/NY4 are protected by nodes of stateful packet inspection firewalls provisioned as High-Availability clusters. Hardware failure of the Primary or Active firewall appliance results in Secondary or Backup appliances assuming control of all traffic forwarding and packet inspection duties seamlessly with no impact to established sessions. In addition, rule-bases are based on very restrictive access control providing a highly secure overall trading environment.

### Stability

All hardware components comprising our networking environment have been selected as “best of breed” products. All switching platforms are based on Cisco Catalyst platforms while security nodes are either Cisco ASA 5500 security bundles or SonicWALL NSA series appliances. Devices have been provisioned leveraging such options as EtherChannel, Stateful Failover, Stateful High Availability, Virtual MAC and STP Portfast to maximize resiliency and uptime.

### High Speed Local Connectivity

Access within Equinix/NY4 via Gigabit Ethernet cross-connects offers inexpensive high speed local connectivity options to both execution venues and clients.

# Use of Proceeds

Below is a layout of tZERO's expectations for use of proceeds from our tZERO security token capital raise<sup>[8]</sup>:

- The future development of the tZERO tokens and the contemplated security token trading system, which includes augmenting tZERO technology, infrastructure and personnel.
- Strategic transactions, including key equity investments described in the Memorandum.
- Development of discretionary practical benefits (utility benefits) that may be made available to holders of tZERO token holders.
- Other general corporate purposes, which include the repayment of amounts payable to Overstock, and may also include capital expenditures, acquisitions, other debt repayments, cybersecurity upgrades, global expansion of products and services and short-term investments, among other things.
- Lobbying law makers and regulatory authorities for the purpose of bringing about changes to laws and regulations related to blockchain technologies, particularly in regards to securities tokens.

<sup>8</sup> See "Use of Proceeds" in the Memorandum for additional details regarding the use of proceeds of the tZERO token offering. In the event that tZERO raises less than \$250 million, tZERO's management will allocate the net proceeds of the offering among the uses set forth in the Memorandum in its sole discretion.

# Vision

tZERO's vision is to strengthen capital markets through the use of technology, with a primary focus on blockchain technology.

The Capital Markets connect entrepreneurial businesses seeking to raise capital with investors seeking investments that will provide a return on their investment. Modern capital markets form a system that is integral to society. As a result, strengthening capital markets contributes to a variety of societal goods, including wealth formation, job creation, and the freedom to pursue entrepreneurial dreams.

tZERO intends to strengthen capital markets by increasing transparency, providing a liquidity framework to markets that may at times operate inefficiently, and reducing reliance on costly intermediaries.

tZERO seeks to bring enterprise-grade technology to burgeoning crypto capital markets and aims to integrate blockchain technology into traditional capital markets functions, where useful or needed. In addition to operating and growing our current businesses, with 15 new broker-dealer clients added this past quarter, we have been forming strategic relationships with subject matter experts across multiple verticals to leverage our existing technology stack and expertise to make markets more efficient for investors, issuers, and market participants.

As the fintech and blockchain industries inevitably intertwine, the businesses that are highly adaptable, forward-thinking, and experienced will emerge as dominant forces. As demonstrated throughout this paper, tZERO meets all of these criteria and more. Our battle tested technology stack also sets us apart from other parties in our space, many of whom only have an outline of goals as their sole piece of Intellectual Property. Our huge investments in developing a regulatory strategy has laid the foundation for our vision to become reality. tZERO plans to change the world. We hope that you join us.

# Additional Documents

We have included supplemental documents to provide much more detailed information regarding tZERO's products, technology, and infrastructure. Below is a list of those supplemental documents with some descriptions. These documents will be available on the tZERO website.

## SpeedRoute CORE System Software Architecture Document

This document provides a detailed description of the technology used by SpeedRoute to receive, handle, and process customer orders. We have included the version from August of 2015 as we are not disclosing various recent enhancements.

## SpeedRoute FIX Spec

This document provides certification instructions to clients and/or third-party front-end providers so that they can send orders to SpeedRoute. The granular instructions provide unambiguous direction, in a clear and concise manner.

## Blue Ocean Information Guide

This document describes certain salient information regarding Blue Ocean.

## DLR FIX Spec

This is the document that provides certification instructions to broker-dealer licensees and/or their third-party front-end providers so that they may implement the DLR software. This is one example of how we've leveraged our existing infrastructure for a unique and disruptive asset class.

# Contributors

## Lead Contributors

Max Melmed and Jason Heckler

## Contributors

Tom McSherry, Zack Wilezol, John Gilchrist, Rob Colucci, Ralph Daiuto, Rob Christensen, James Ambrose, Dohi Ang, Steve Bailey, and Anne T. Getz



CONTACT US

[www.tzero.com](http://www.tzero.com)  
[info@tzero.com](mailto:info@tzero.com)