

QUANTUM CAPITAL ADVISORS

INITIAL CRYPTO TOKEN OFFERING

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Introduction

The next crypto bull run will be driven by STOs. STOs will infuse the industry with new funding from not only large, institutional investors, but also from your average individual by giving them the legal peace-of-mind they need to invest. STOs will have far more applications than ICOs: any company can create a security token, whether it's blockchain-based or not, dramatically expanding the pool. And the value of a security token is more tangible and easily communicated to investors than a utility token, since it represents equity and profit-sharing.

One of the biggest complaints against STOs is that it currently blocks every day, non-accredited investor from participating. This will change though with new laws, brokers, and agencies. From a startup's perspective, STOs will be exponentially cheaper and easier than preparing for an IPO or fundraising from venture capital sources.

Traditional Venture Investing Will Decline

Startups will increasingly shift to crowdfunding over traditional, venture-based financing sources. Raising money from VCs is prohibitive for many early-stage firms, since it often requires being based in certain geographic regions, having founders from certain schools, having the right network, and having the time necessary to pitch day and night for months on end. Worse, entering into a relationship with a VC firm is like entering a marriage: some VC firms add tremendous value while others destroy the business.

At World AI Conference 2018 Jack Ma, the founder of Alibaba, announced a \$14 Billion investment in developing blockchain technologies, acknowledging that it had the potential to change most businesses around the world. Ma also mentioned that he wasn't sure what will happen to Bitcoin.

Another relevant factor is the creation of Ethereum, which created one of the best applications so far of the blockchain and the ability to create DAPPS on top of it. This allowed hundreds of new companies, including us, to grab the opportunity to change the world. And disrupt existing business models or create new ones that will reshape every economic activity for the next generation. As Sir Isaac Newton said, "If I have been able to see further it's because I am standing on the shoulders of giants." We too are standing on the shoulders of blockchain and smart contracts to disrupt the global investment market.

QUANTUM is the disruptive agent that will change forever the \$500 billion a year private equity and venture capital industry. We will rely on blockchain and smart contracts to be able to disrupt this market. A team of highly experienced investors and entrepreneurs, with over 100 years of combined experience, working towards a common goal.

Before blockchain and smart contracts and the JOBS ACT, the simple idea of allowing non-accredited investors to invest in the "Next Big Thing" was almost impossible. Now, as blockchain technology enables full transparency for every transaction, it allows us to be monitored and audited in every transaction we make, thus making us fulfill one of our core beliefs: that anyone should be allowed to invest in lucrative endeavors.

Smart contracts are the tool that assures to every single investor, token holder, foundation that our obligations will be met. And, without manual intervention from any human whatsoever.

What is Quantum Capital Advisors

Quantum Capital is a search fund. It is an investment vehicle, conceived by Stanford GSB Prof. Irv Grousbeck in 1984, through which investors support entrepreneurs' efforts to find, acquire, and operate a privately held company. Since conception, more than 300 search funds have been raised in over 20 countries. According to Stanford's most recent study¹, the asset class has produced an average aggregate pre-tax IRR of 33.7% and an ROI of 6.9x. Unlike traditional private equity, the entrepreneurs who raise the search fund ("the searchers") focus on acquiring one business and actively taking part in its management for the long term, often as CEO and/or CFO.

Over the next year, we will attempt to raise a \$50mm fund, hire three more investment professionals, and executed 16 operating company investments around the world for an anticipated total transaction value of \$350mm. Our investor base is comprised of current and former CEOs, institutional investors, and serial entrepreneurs from the United States and expect to bring onboard within year two a team from Europe.

We're dedicating most of our time to businesses in the \$2-10mm EBITDA range with margins over 15%. The ideal target generates recurring revenue from providing B2B services to a blue-chip client base. We're especially interested in industries growing faster than GDP with significant fragmentation and no dominant player. Quantum aims to build on the company's legacy, providing a transition for the seller of a family business who may be seeking his or her retirement, or perhaps simply a change of pace. We bring the operational expertise of a strategic buyer (from our investors' network of operational advisors and industry experts) and the financial sophistication of a private equity firm without the disadvantages of either for the seller and the company. We have the flexibility to accommodate the structure of the transaction to the needs of the seller, as well as the resources necessary to execute a rapid and strictly confidential acquisition process within 90-120 days.

The U.S. has the fastest growing major economy in North America with the lowest projected inflation and currency volatility. Although the country has private equity activity, almost all the major funds focus on acquiring companies with over \$10mm in EBITDA, leaving our target EBITDA range of \$2-10mm almost untouched. We estimate that there are roughly 4,000 family businesses in our target range, so the market also has more than enough depth.

What makes our fund unique is that we will focus on Women and Minority businesses which are traditionally overlooked by private equity and venture capital. We will work to create a unique partnership with another firm that shares our ideas that will give us the flexibility to buy two separate businesses or unite the funds to buy one larger business. Our collaborative model allows us to combine our individual networks, which has already proven useful in obtaining warm introductions to business owners and industry experts. We will bring all potential deals to a collective investment committee meeting every Monday, which facilitates a robust discussion and forces us to better understand the companies we're analyzing. We're all direct, process-driven investors who don't take criticism personally, so we work well together.

¹ <https://www.gsb.stanford.edu/faculty-research/case-studies/2018-search-fund-study-selected-observations>

Description of the Market and the Problem

We believe that blockchain will enable a similar revolution in financial services. Just as Amazon shattered the dominance of large retailers with a platform that connected merchants and consumers directly, the blockchain makes possible a network where investors, companies and asset managers can transact directly and bypass the investment banking oligopoly. At Quantum Capital Advisors we aim to build this network, explain why it's necessary and how we can prove that it is possible.

What investment banking really is

Firms like Goldman Sachs and JPMorgan have many different lines of business, but they essentially fulfill a simple core function. **Investment banks intermediate the flow of capital between capital suppliers and capital utilizers**



Those who supply capital have different criteria for giving up their hard-earned capital. We can classify these criteria along dimensions, such as purpose (hedging vs speculation), duration (long vs short), and risk tolerance (conservative vs aggressive). To accommodate these different criteria, investment banks create **securities: legal agreements that govern the use of capital**. Securities restrict how capital can and cannot be utilized, as well as how investors will be compensated for the use of their capital.

For example, here are some securities classified by purpose and duration:

1. Long-term capital appreciation: stocks, bonds, funds
2. Short-term yield with liquidity: Treasury bills, repo agreements
3. Hedging: futures, swaps and other derivatives

Generally, investment banks earn fees from creating securities, facilitating their sale to investors, and operating a secondary marketplace afterwards. Since securities underpin the global financial system, these fees are extremely high. Goldman Sachs (with only 7% market share²) earned \$38 billion in revenues last year, more than Facebook.

² <https://www.statista.com/statistics/271008/global-market-share-of-investment-banks/>

By the end of 2018, the venture industry deployed \$130.9 billion in US-based startups, surpassing the all-time high in 2000 and illustrating the maturation of the VC ecosystem, according to the [PitchBook-NVCA Venture Monitor](#). The quarterly report is the authoritative source on venture capital activity in the US entrepreneurial ecosystem and is jointly produced by PitchBook and the National Venture Capital Association (NVCA), with support from Silicon Valley Bank, Perkins Coie and Solium.

With \$75.7 billion in VC dry powder, investors funneled capital into the startup ecosystem at a record pace in 2018, boosting deal sizes across the entire VC spectrum. Mega-deals continued to dominate the deal making environment, increasing in count by 91.3% over 2017. The strength of deal making over the last several years led to a strong exit market in 2018 with elevated exit sizes driving total value to \$122.0 billion. IPOs returned greater than 50% of exit value for the second straight year as IPOs and buyouts continued to scrape away at M&A's lead as a proportion of exit count and value. Similar to the record deal making environment, 2018 was also a banner year for venture fundraising as VCs raised over \$55.5 billion across 256 vehicles, the highest total capital raised recorded.

The venture ecosystem continued to slash records in 2018, further illustrating the maturation of the venture capital asset class, but also raising questions about the sustainability and health of these activity levels moving forward. Some GPs and LPs have already expressed concern that excess capital has led to inflated round sizes and valuations. In the event of any adjustments in the global economic or political backdrop, valuations may see a correction from their currently elevated levels, but private market investment activity will likely continue unabated. VCs will still have an immense trove of capital to invest.

It was an exceptional 2018 for the venture industry, with nearly 9,000 companies across the country receiving funding. The rise of first-time fund managers; the growing sizes of VC funds, investments, and valuations; and heightened activity from corporate and private equity investors are all important trends that continue to transform our ecosystem.

Investment Activity

The fourth quarter of 2018 saw \$41.8 billion invested across 2,072 deals, closing out the full year with 8,948 completed deals totaling \$130.9 billion, a new all-time high. The deal making frenzy was fueled by last year's robust fundraising environment, which allowed transaction sizes and valuations to rise across the entire venture investment cycle. Angel & seed and early stage deal making posted strong momentum in 2018, experiencing 15.0% and 22.9% increases in median deal size, respectively. Late stage deals continued to account for an outsized proportion of venture investment, making up 62.7% of total deal value. The number of mega-deals, or deals over \$100 million, soared to 199 representing an 91.3% YoY increase over already historic highs. Notable mega-deals closed in 2018 included Epic Games' \$1.3 billion round and Instacart's \$871.0 million Series F. Also driving investment in the late stage was Corporate and PE involvement, which became an important source of capital for larger rounds in 2018. Corporate Venture Capital (CVC's) were involved in 1,443 deals, while PE investors participated in 792 completed financings, representing near decade highs in terms of deal counts.

Exit Activity

The venture-backed exit market finished strong from a value perspective, surpassing \$120 billion for the first time since 2012. The increase in exit value and flat exit count (864) translated into higher average

exit sizes – a healthy sign LPs can expect substantial distributions back in the near-term. With 49 exits over \$500 million, 2018 saw a decade-high proportion of exits in that size range (5.7%). Despite the slight cooling of exit counts, the fourth quarter posted the highest exit value in 2018, with \$37.2 billion spread across 184 exits. Several outsized exits helped drive value, including the acquisition of Github by Microsoft for \$7.5 billion, Cisco's acquisition of Duo Security for \$2.35 billion, and Moderna Therapeutics' \$604 million IPO – the largest biotech IPO on record. In general, venture-backed IPOs had a strong showing in 2018, increasing in count (85) and making up more than 50% of exit value (\$63.6); however, recent public market volatility could dampen new listing activity as investors increase scrutiny on concrete fundamentals.

Fundraising Activity

To meet demand for larger deal sizes, venture fundraising reached an all-time high in 2018, with \$55.5 billion raised across 256 vehicles. The median fund size jumped 64% from 2017 values to \$82.0 million, further demonstrating the fundamental shift toward larger funds across all stages. By year-end, there were 11 funds raised with \$1 billion+ in commitments, up from just three funds last year and representing a decade high. Among the firms raising \$1 billion+ mega-funds were Tiger Global's \$3.75 billion fund, Bessemer Partners' \$1.85 billion fund and GGV's \$1.36 billion fund. Additionally, first-time fundraising was robust in 2018 with 52 vehicles securing \$5.3 billion in committed capital, a decade high for both amounts raised and fund count. In fact, there were 12 first-time funds sized between \$100 million and \$250 million, and four vehicles sized in the \$250 million to \$500 million echelon. The upswing in first-time fundraising can be attributed in part to the longstanding credibility of GPs leading spin-off firms.

Background

The exponential rise of computational power and storage capacities, along with ever-expanding access to knowledge, are some of the key driving forces of the Fourth Industrial Revolution, as identified by the latest Global Information Technology Report³ Blockchain technology is, perhaps, the single most exciting innovation with enormous implications for revolutionizing products and services, comparable to the invention of the Internet.

One of the immediate candidates for disruption by this technological advancement is the Financial Services industry, which, up to very recently, has been unhealthily rigid Financial technology (FinTech) companies have challenged the latent incumbents who rely on legacy systems, synonymous with high costs, sluggish onboarding processes, and inefficient customer service⁴ As FinTechs, now powered by blockchain technological capabilities, continue to pave the new road, it comes as no surprise that 88% of all existing players believe that they will lose revenue to creative innovators With \$40 billion in capital raised in less than four years, FinTech companies have gained substantial traction and a solid base of quality-seeking customers (Global FinTech Report, 2017, PWC) Providing a superior service, ease of use, and lower costs compared to the service provided by traditional financial institutions is what ensures that FinTech companies will continue to consolidate their market share at an expedited pace.

³_.The Global Information Technology Report 2016 Innovating in the Digital Economy, Silja Baller, World Economic Forum Soumitra Dutta, Cornell University Bruno Lanvin, INSEAD

⁴_.Global Fintech Report 2017, PWC

Apart from the ubiquitous functions of blockchain technology, such as the point-to-value transfers, there is one that, up until recently, has been hugely underappreciated – the digitization of assets. The blockchain immutably records the transfer of tokens or units of ownership on a distributed ledger and thus makes the process trustless and transparent. The digitization of assets (also known as tokenization) is doing the same to the securitization of the financial markets as what the advent of the email has done to the post office. While securitization converts an illiquid asset or group of assets into financial securities, tokenization allows for that security to be traded over a digital medium with unprecedented ease and cost efficiency.⁵ Tokens can either have intrinsic value themselves (like Bitcoin, Ethereum, or other utility tokens) or be the digital representation of physical or digital assets (IMF, 2017).

In the USA, the Depository Trust & Clearing Corporation (DTCC) keeps centralized digital representation custody of more than \$37 trillion worth of shares, and it is not improbable that a substantial amount of these assets will find their way onto the blockchain via tokenization. Modern investment portfolios consist of shares, bonds, commodity futures, and other securities, but unlike in previous decades when most of these instruments had a physical form, rarely are assets physically delivered to their owners today. Ownership rights are handled through central governing authorities such as the DTCC and others. As the popularity of decentralized distribution of information and distributed ledger applications pervades the general public, people will demand tokenization and decentralized recordkeeping and trading processes. Initiatives to tokenize hard assets into the blockchain are already taking place. In March 2017, Natixis, IBM, and Trafigura introduced the first blockchain solution for the U.S. crude oil market,⁶ and it is only a matter of time before other asset classes are tokenized, tradable, and transferable in a much more efficient manner. Recent industry research shows that the market capitalization of many tokenized traditional assets, such as equities, debt, commodities, and real-estate will surpass \$4 trillion by 2025.⁷ The tokenization of real-world assets is expected to further attract investors by reducing transaction fees, improving transparency with regards to ownership rights, and ensuring higher liquidity⁸ and ease of transferability.

The fact that the overall market capitalization of cryptocurrencies has grown from \$15 billion in January 2017 to over \$527 billion⁹ in January 2018 makes a strong case for the intrinsic value of this asset class. Although interest in cryptocurrencies continues to rise, their proliferation into the real economy is yet to come. One of the main reasons for the limited acceptance of cryptocurrencies as a direct means of payment can be attributed to the lack of existing technological infrastructure and regulations in most jurisdictions around the world (IMF, 2017). Extracting the value of cryptocurrencies still requires the owners to convert them to fiat currencies in exchanges or in p2p transactions. The conversion process entails various exchange fees, withdrawal fees and capital gain taxes, which ultimately render the entire process slow, time-consuming, and cost-ineffective.

By setting this introduction to the major technological trends and challenges that accompany any disruption efforts of the financial industry, this white paper aims to describe in detail the procedure of

⁵ [Digital assets and the tokenization of commodities](#)

⁶ [Natixis, IBM and Trafigura introduce first-ever Blockchain solution for U.S. crude oil market](#)

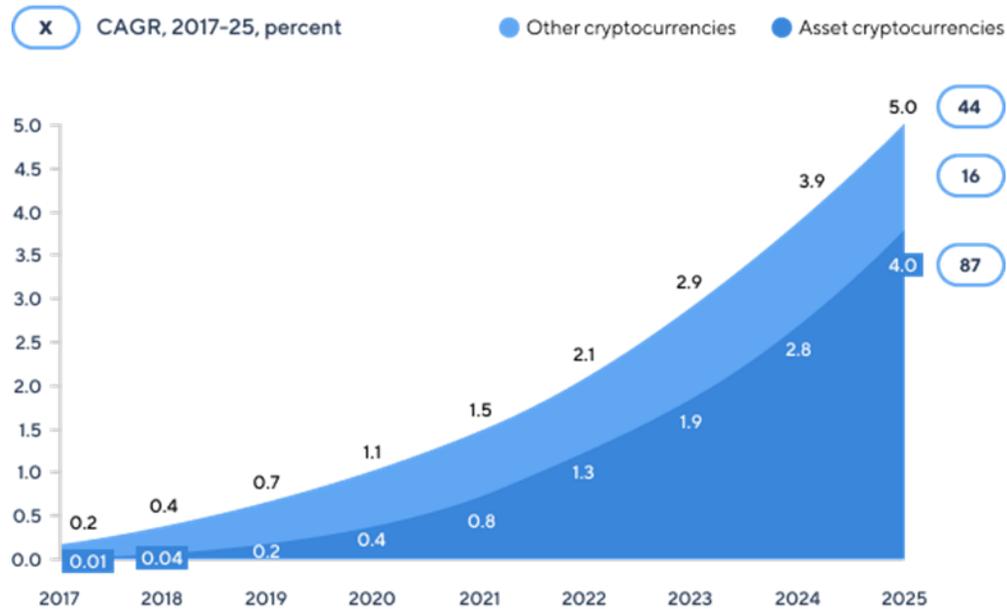
⁷ [.5 trillion capitalization of cryptocurrencies by 2025](#)

⁸ [.How Tokenization Is Putting Real-World Assets on Blockchains](#)

⁹ [.Bitcoin's Market capitalisation: 30.1.2018 - Coinmarketcap.com](#)

unlocking the value of digital assets within the current economic paradigm. Building on the potential of the blockchain, Quantum will provide the world's first investment fund for non-accredited investors.

Total market cap of cryptocurrencies, 2017-2025, \$ tn



Source: LAT Crypto Research estimates

Description of the product and how its going to solve the problem

The token created and offered by Quantum will be the QTM token and will be an ERC20 protocol standard coin. ERC20 was chosen to ensure the upmost compatibility to form, and quickly execute partnerships with both exchanges, and other companies down the road as this project continues to seek out ways to offer value added features to its users and the community as a whole. It has been designed with 18 decimal places to comply with the encouraged but not compulsory standard for ERC20 tokens.

The QTM token creation will be hard capped at 250 million coins, this amount of coins reflects strategic calculations to support, first and foremost, the ideal scale of the trading platform where it performs optimally in respect to volume of managed assets. This ensures that the scale of managed capital always remains within the optimal ratio relative to overall market cap to continue producing quoted returns to users. The number of tokens also included calculations to achieve the dispersal to what we consider an ideal sized user base, allowing for the coins to be traded at exchanges and kept in circulation with an initial value that would promote widespread and adoption of the token. The low cost of entry along with the size offering is intended to first drive large user base implementation while also maintaining initial and expanding demand for the token.

Tokens: how many, why, how, when, and so on

Quantum will issue 250M QTM tokens, with a target price of \$1USD. This price point was chosen so that the fund can be as inclusive as possible. There will be 125M QTM tokens offered during the CTO with 125M tokens set aside for various reasons as outlined below. The Quantum Token (QTM) will be offered on the Ethereum blockchain as an ERC-20 token. We are anticipating an initial offering date of August

15, 2019, pending SEC approval. The offering will be conducted utilizing SEC Regulation A. There will be no soft cap, but we will have a hard cap limit of \$50M USD. Immediately following a successful raise Quantum will use a best efforts approach to list the Quantum Token, with the identifier “QTM” on major crypto exchanges.

What we like about Reg A. First, Reg A can be used in a direct public offering, which allows a venture to offer an investment opportunity to their whole community and not limit investors to only the wealthiest in their networks. Companies can also advertise and market their offering to have the greatest potential reach. Securities in a Reg A offering can be offered publicly, using general solicitation and advertising. Securities sold in a Regulation A offering are not considered “restricted securities” for purposes of aftermarket resales. “Restricted securities” are securities issued in private offerings that must be held by purchasers for a certain period of time before they may be resold.



The sale of the 125M tokens will be offered in the following stages:

(Pre-CTO) 5M Tokens offered with 80% discount attached

(Pre-Sale 1) 20M Tokens offered during a 15-day window with a 60% discount

(Pre-Sale 2) 20M Tokens offered during a 15-day window with a 50% discount

(Pre-Sale 3) 20M Tokens offered during a 15-day window with a 40% discount

(Crowd Sale) 60M Tokens offered with a 30% discount, until hard cap is reached.

The remaining 125M tokens are to be set-aside in the following manner:

Reserves – 50M Tokens (20% of total supply)

Equity Investors / Team – 37.5M Tokens (15% of total supply)

Advisors / Legal – 25M Tokens (10% of total supply)

Bounty Program – 12.5M Tokens (5% of total supply)

How the raised funds are going to be used

In 2017, only about 2 percent of the \$85 billion raised in VC backing went to female-founded startups based in the U.S., according to data from research firm PitchBook. Women are also raising smaller rounds than men -- averages of \$5 million and \$12 million, respectively. Last year, the largest VC deal cut by a team of female founders was Moda Operandi's \$165 million Series G, contrasting starkly with the largest round of their male counterparts: WeWork's Series G at \$3 billion.

When it comes to black women founders, VC statistics are even bleaker. Black women raised only 0.0006 percent of the \$424.7 billion in total tech venture funding raised since 2009, according to a study by digitalundivided, an organization, incubator and accelerator aiming to advance equity in tech and entrepreneurship. For black women who raised less than \$1 million in 2017, the average funding raised was \$42,000. Compare that to the average seed round for all startups in 2016: \$1.14 million.

Another key issue: Just 1 percent of all women-owned businesses use VC funding, according to a new report from EY and the Women's Presidents Organization. "If there aren't more who get it, fewer will seek it," says Lisa Schiffman, global lead of EY Entrepreneurial Winning Women, a national competition and executive education program for women entrepreneurs. That idea doesn't just affect today's entrepreneurs: It could propagate in future generations of women. "If they don't see that it's possible, then they're not going to go in that direction... [it] can place artificial limits on what they can accomplish," says Schiffman.

Real equality may require an overhaul of the VC model as it stands today, introducing new options for looking at solid investments. Another recent report by J. Thelander Consulting showed that male VC investment professionals outnumber their female counterparts five to one. Quantum will be the Change Engine for the traditional VC model.

Quantum anticipates investing 100% of funds raised into various businesses it and its investing partners have identified as having huge potential for explosive growth and the ability to disrupt their target markets. Quantum will focus primarily on existing companies with a proven track record of income that are seeking outside investments for growth. While we will invest in traditional White-Male led companies, we expect to invest a sizable amount of the fund in Women and Minority led business that have been traditionally left out from Venture rounds.

Why Seek Investment Using Blockchain?

ICO's and token trading on cryptocurrency exchanges proved there is an unmet global demand for small-scale investments and trading. Crowd funding is also a feasible alternative to other forms of fundraising that is more inclusive of groups typically left out of early stage investments. Last but not least, tokenization is an effective method of managing a massive number of investors in a cost-efficient way.

The value promise of security tokens is to combine the scalability advantages of token sales with the investor protection of regulated securities.

Who Can Benefit from the Quantum Token Sale?

There are numerous benefits for investing in the QTM token sale. A few out laid out below:

1. Those seeking stable high payout investments with minimal maintenance / residual revenue generation.
2. Those who want to combine the benefits of trading with the benefits of holding (HODL) a coin that increases in value.
3. Those that want the benefits of a heavily diversified cryptocurrency portfolio with the low maintenance of a single coin.
4. Those who want protection from the current air of volatility surrounding crypto currency exchanges and the coins themselves.
5. Those who want to invest in the booming crypto market, but do not have:
 - a. Large investable capital: there are a number of issues preventing the entrance of investors with low initial capital from taking place in the market such as the \$25k USD minimum often required to day trade, the \$10k limit proposed for many crypto exchanges, up to the private advisor whose clients must typically invest a minimum of \$1MM.
 - b. Basic trading knowledge: while a majority of the population would like to earn additional income, they don't have a basic understanding of trading in general, and even fewer the particulars of the Cryptocurrency markets. Without at least a basic understanding, the odds are heavily against being able to earn profit or even break even.
 - c. Advanced trading knowledge: even with advanced TA, charting and trading strategy training, the traditional success rate for those entering the field of day trading varies based on source, but is agreed to be under a 5% success rate. This is not because profit cannot be generated from trading, but often caused by human factors that QTM will be immune to.
 - d. Time to constantly monitor markets: unlike traditional commodities and assets, the cryptocurrency market trades around the clock and around the globe.
 - e. A risk threshold for trading or even holding; risk has always been a key determining factor in all investment and trading plans. The risk of trading any assets near top of the spectrum like cryptocurrencies.
 - f. Those who do have advanced trading skills, time, and capital and wants to hedge their crypto investment portfolio with a low maintenance and safe asset.
 - g. Those who want to invest by hodling, but wants to also add a steady earning revenue stream to their portfolio.
 - h. Those who want to maintain their privacy in investments.
 - i. Those who do not wish to partake in robo investing.
 - j. Those who want to setup investments for the benefit of another, such as a first start investment for their children.
6. ICOs and token trading on cryptocurrency exchanges proved:
 - a. Global expenditure on blockchain is expected to grow at a CAGR of 73.2% to reach almost \$12 billion in 2022. The US is expected to generate the largest blockchain investments and contribute over 36% of worldwide spending, with Western Europe constituting the next largest region for blockchain spending, followed by China and Asia Pacific.

- b. Efficiencies and cost-effectiveness offered by blockchain will drive the rapid adoption of the technology. Blockchain will continue to be most widely used for the transfer of value. Growth is also expected to be fueled by lower total cost of ownership, rising demand for simplified business processes, speed of transactions and transparency.
- c. The worldwide blockchain market size is expected to grow from around \$210 million in 2016 to reach approximately \$2.3 billion in 2021, representing a CAGR of 61.5%. The blockchain market is expected to expand to \$20 billion by 2024. The high adoption of smart contracts is expected to create opportunities for the growth of this market.

Market and Industry Information

This whitepaper includes market and industry information and forecasts that have been obtained from internal surveys, reports and studies, where appropriate, as well as market research, publicly available information and industry publications. Such surveys, reports, studies, market research, publicly available information and publications generally state that the information that they contain has been obtained from sources believed to be reliable, but there can be no assurance as to the accuracy or completeness of such included information. QUANTUM has not conducted any independent review of the information extracted from third party sources, verified the accuracy or completeness of such information or ascertained the underlying economic assumptions relied upon therein.

Consequently, any entities of QUANTUM and officers and employees thereof do not make any representation or warranty as to the accuracy or completeness of such information and shall not be obliged to provide any updates on the same.

Why investment banking is broken

If you asked investment bankers if their industry was facing imminent wholesale disruption, most would probably say no. But large retailers in the late nineties would have said the same thing. That's because from the inside, it's hard to see the two big problems with investment banking, and how the blockchain might solve them:

1. Securities still depend on humans; and
2. Market participants are forced to trust one another

Securities still depend on humans

Recall that a security is just a legal agreement that governs the use of capital. Agreements such as prospectuses and partnership agreements spell out in painstaking detail all the rules and logic associated with the security, like how the capital can be used, when investors owe or are owed money, and how each payment should be calculated.

But since the financial world no longer runs on paper contracts, the rules and logic contained in these legal agreements must be transcribed into code. Since these agreements may be hundreds of pages long, getting this right is a painful, laborious process. Each major market participant maintains large teams of people called **back office** whose primary function is to ensure that the capital flows comply with the logic and rules contained in each security's legal agreements.

Despite the resources poured into getting this right, mistakes abound, from billion-dollar fat finger errors¹⁰ to willful manipulation¹¹ that goes unnoticed because rules are not properly enforced. Even today, one of the most lucrative strategies for hedge funds and trading desks is identifying mis-priced securities due to calculation errors or payment delays.

Market participants are forced to trust one another

For simple, standardized securities such as stocks and government bonds, trusted intermediaries such as exchanges and clearing houses ensure transaction accuracy and idempotency. Yet for more complex securities such as funds, asset-backed securities, and derivatives, no such trusted infrastructure exists.

Instead, each market participant needs to either build their own back office to verify and process security transactions or trust the work of others. The large investment banks have invested billions into building the back-office teams and systems for many different types of securities, just like how the large retailers built chains of big-box stores that stock many different items. In both finance pre-blockchain and retail pre-Internet, it's far easier to transact with large players instead of with smaller firms who don't have their breadth.

Yet despite their massive back offices, even the largest investment bank still needs to trust the work of others. In the mid-aughts, Citigroup and JPMorgan created derivatives backed by hundreds of mortgage-backed securities. Each mortgage-backed security was itself backed by thousands of mortgage loans. It would have been impossible to verify that all of these underlying securities were being accurately represented and processed, so we had to rely on the statements provided by intermediaries such as accountants and auditors.

This reliance on third-party information can have massive negative consequences: KPMG, along with the other auditors of the Madoff feeder funds, did very little to ensure investors weren't being ripped off. Observers say it's likely that all the accounting firms did was check the statements that Madoff himself produced. In the 64-page document, a feeder fund, sent to all its potential investors is the statement "Valuation provided by the counter party affiliate [Madoff] will not be subject to independent review." — [TIME, The Madoff Fraud](#)

Investment banking is broken because there is no **single source of truth** for securities.

Securities as blockchain-based smart contracts

Due to two recent innovations from the cryptocurrency world, we already have the technology to create a single source of truth for securities. They are defined below:

1. Blockchain: a public database where many different nodes have a copy of it, which allows for accuracy to be verified through consensus of all the nodes.
2. Smart contract: a computer program stored on a blockchain that holds the rules and logic associated with a transaction.

¹⁰ <https://www.zerohedge.com/news/2015-10-19/deutsche-bank-junior-trader-mistakenly-paid-hedge-fund-6-billion-fat-finger-error>

¹¹ <https://www.cfr.org/background/understanding-libor-scandal>

Recall that securities are simply just legal agreements. For the foreseeable future, this legal backbone remains necessary in order to comply with jurisdiction-specific regulations and to handle scenarios that require qualitative judgment.

But a blockchain-based smart contract is a superior way of encoding the rules and logic for securities. Rather than maintaining redundant back offices that transcribe the words contained in a security's legal agreements into code or trusting someone else's numbers, market participants can simply check and verify a single, immutable smart contract.

What the next generation of securities will look like

In the future, we believe that securities will continue to serve their core function: governing the flows of capital between suppliers and utilizers. Yet by using a blockchain-based smart contract as the single source of truth upon which all participants can depend, a security will no longer require intermediaries like an administrator, auditor, and the investment bank's back office to function properly. Blockchain will provide :

1. *Transparency*: Since the blockchain's public ledger contains a history of all transactions that can't be changed, it serves as a traceable audit trail that all market participants agree to and accept. This makes existing third-party verification systems such as accountants and auditors redundant.
2. *Efficiency*: Rather than traditional transfer systems such as ACH and wire transfer that may require confirmation and verification by many different intermediaries, blockchain-based payments are instantaneous, publicly confirmed, and virtually free.
3. *Accuracy*: Calculations codified into a smart contract can be automated and enforce pre-existing requirements. This prevents human errors like overpayments, missed payments, and fat finger mistakes.

Proving that it can work

Investment banking is an industry with high barriers to entry and switching costs. Incumbents are averse to change and move slowly, as I found out the hard way with a client for my last startup. As a showcase, we decided to build a fund that implements a machine learning-based trend-following strategy on a portfolio of investments. In addition, the fund would use a blockchain-based smart contract to replace the traditional back office and other third-party intermediaries. We chose this direction in order to:

1. Solve an immediate need for crypto investors: maintaining long-term upside while minimizing downside volatility
2. Demonstrate how the blockchain can eliminate middlemen and provide greater transparency, efficiency and liquidity for investors

In addition, we have based our firms' smart contracts on Coin Alpha's already proven ERC20 token.

Recent analysis of Initial Coin Offerings (ICO's) has found that the average ICO investor sees returns of 82 percent (82%), according to a report¹² published by the Boston College Carroll School of Management. The 54-page report, titled "Digital Tulips? Returns to investors in Initial Coin Offerings," found evidence of "significant ICO underpricing" after analyzing a dataset of over 4,000 planned and realized ICOs. The ICOs studied raised a combined total of \$12bln, almost all of them since January 2017.

¹² https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3182169

Average returns from the initial token sale price to the first day's listed market price on a crypto exchange were found to be a staggering 179 percent, with investors' holding periods averaging just 16 days. In cases where the issuers failed to list their token on an exchange within 60 days, the researchers imputed large (-100 percent) negative returns to these tokens, yet still found that the representative investor "nearly doubled" their investment in such cases. Including these results into the overall asset class data, the average token investment returns were found to be 82 percent.

Overall, the report showed that crypto-tokens "continue to generate abnormal positive average returns," with those investors who held their tokens for longer periods of 180 days seeing the highest returns, between 150 percent and 430 percent. The researchers concluded that:

"While our results could be an indication of bubbles, they are also consistent with high compensation for risk for investing in unproven pre-revenue platforms through unregulated offerings. Nonetheless, prominent members of the crypto sphere continue to advocate the need for ICOs, which offer a convenient means of generating support for emerging projects. Recently South Korea revealed it would lift its ban on domestic ICOs, which has been in place since September 2017.

What's Next?

Given the structural advantages that blockchain-based securities have over legacy securities, we are confident that the market will eventually adopt them. When that happens, the legacy infrastructure maintained by today's leading investment banks will no longer be a competitive advantage, but instead a hindrance to change. Rather than being forced to go through large investment banks, suppliers and utilizers of capital can transact directly by entering into blockchain-based smart contracts. A platform will still be necessary to match market participants, provide standardized protocols for different types of securities, and facilitate trade execution. However, it will look much more like a technology company than a legacy investment bank. This future platform will be a **decentralized investment bank**.

Motivation

The goal of this project is to utilize distributed ledger technology to reduce the need for middlemen involved in fund administration such as custodians, accountants, auditors for traditional asset management. The resulting efficiency gains can then be passed to investors as lower fees and faster processing. In addition, the project uses the Ethereum blockchain and standardized token infrastructure to promote transparency and liquidity for investors.

The status quo

Creating a hedge fund is expensive and complex. A fund manager first needs to incorporate a new company or partnership. In order to sell to non-U.S. investors, the manager then creates one or more entities domiciled in an off-shore jurisdiction like the Cayman Islands or Bermuda. This allows for a master-feeder structure. For each fund entity, lawyers draft large, mostly-boilerplate legal documents to define the rules of the fund. A custodian bank holds the fund assets, while an administrator processes investor subscription, investor redemptions, and net asset value calculations. Accountants and auditors verify that the transactions processed accurately.

Why it matters

This complexity produces many harmful externalities, both obvious and non-obvious. Clearly, all the parties need to be compensated, which is why a hedge funds require \$50k-\$100k in setup costs and \$25k-\$50k in ongoing annual administration costs. This makes it prohibitively expensive for new fund managers, even if they just want to build an auditable track record using their own capital. For established funds, administration costs are ultimately paid by investors in the form of the 2% annual management fee.

Yet potentially more harmful is that the presence of many different entities and the third parties decreases transparency and increases fraud risk. The history of hedge funds is littered with infamous Ponzi schemes like Bernie Madoff, who was able to con sophisticated investors and auditors for many years because hedge funds are not transparent.

A New Paradigm

Summary

A Blockchain protocol for tokenized hedge funds. Some projects have also aimed to disrupt the existing system and bypass regulation as opposed to innovating on compliance and regulatory fronts to improve the effectiveness of anti-money laundering. We believe that collaborating and innovating within the financial sector, including regulators and experts across a variety of industries, is the only way to ensure that a sustainable, secure, and trusted framework underpins this new system. And this approach can deliver a giant leap forward toward a lower-cost, more accessible, and more connected global financial system.

This open-source protocol enables asset managers to create a blockchain-based vehicle that manages capital contributed by external investors. The protocol utilizes the blockchain to perform functions such as segregated asset custody, net asset value calculation, fee accounting, and management of investor in-flows and out-flows.

Motivation

The goal of this project is to utilize distributed ledger technology to reduce the need for middlemen involved in fund administration such as custodians, accountants, auditors for traditional asset management. The resulting efficiency gains can then be passed to investors as lower fees and faster processing. In addition, the project uses the Ethereum blockchain and standardized token infrastructure to promote transparency and liquidity for investors.

The Opportunity

As we embark on this journey together, we think it is important to share our beliefs to align the community and ecosystem we intend to spark around this initiative:

1. We believe that many more people should have access to financial services and to cheap capital.
2. We believe that people have an inherent right to control the fruit of their legal labor.
3. We believe that global, open, instant, and low-cost movement of money will create immense economic opportunity and more commerce across the world.
4. We believe that people will increasingly trust decentralized forms of governance.
5. We believe that a global currency and financial infrastructure should be designed and governed as a public good.

6. We believe that we all have a responsibility to help advance financial inclusion, support ethical actors, and continuously uphold the integrity of the ecosystem.

How It Works

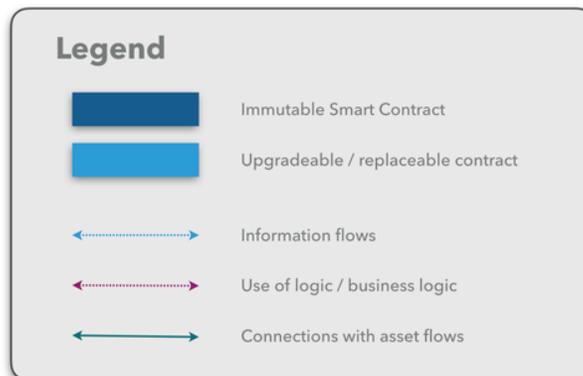
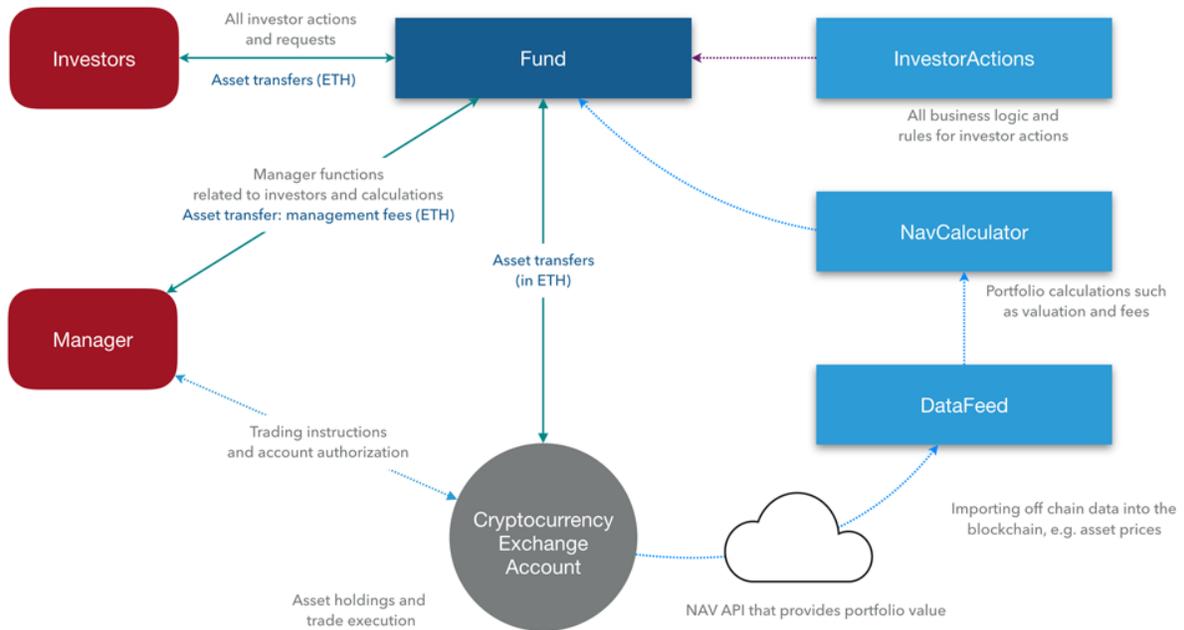
The manager creates a fund by deploying an instance of the Fund smart contract to the blockchain. The Fund contract stores all data, provides investors with methods that they invoke to perform various actions, and provides the manager with methods to administer the fund. Generally, complex logic associated with the investor and manager methods are delegated to other modules, so that these modules may be updated in the event a bug fix or security patch is necessary.

As you can imagine, potential investors had many questions about how the fund works from a mechanics standpoint. Read below for a more technical deep dive that strives to answer those questions. The Quantum Fund will be utilizing the same architecture that CoinAlpha deployed in their Hedge Fund Strategy.

Architecture

Overview

The Fund Protocol utilizes a modular architecture to allow for upgradeability. Because funds issued may be long-term in nature, it is important that funds issued under the protocol have the ability to resolve any security vulnerabilities, upgrade components and fix bugs. In addition, calculations performed by funds rely heavily on market and exchange data supplied by off-chain data sources. Modules that encapsulate interactions with these data sources need to be upgradeable in order to account for future changes.



Modules

Fund Contract

The Fund contract is the primary contract. It stores all investor and fund-related variables, emits events related to changes in these variables, provides a set of methods that enable investors to perform various actions, and provides the manager with methods to administer the fund. Generally, however, complex logic associated with the investor and manager methods are delegated to other modules, so that these modules may be updated in the event a bug fix or security patch is necessary.

NavCalculator

The NavCalculator contract is responsible for calculating the Net Asset Value Per Share (`navPerShare`), the total value of the fund's assets denominated in US Dollars, less all accrued fees and expenses, divided by the total number of shares issued by the fund.

Since the Fund contract needs to process subscriptions and redemptions at an updated Net Asset Value per Share, the fund manager calls the `calcNav()` function periodically. For funds like Quantum Capital's proprietary Quantum Capital Advisors, LLC fund that offer daily liquidity, the interval between periods is typically every business day.

When the manager calls the `calcNav()` function on the Fund contract, it calls a corresponding `calculate` function in `NavCalculator`. The `calculate` function interfaces the `DataFeed` module to retrieve the gross asset value of the fund portfolio and performs a set of calculations to derive the `navPerShare`, total accrued management fees (`accumulatedMgmtFees`), total accrued performance fees (`accumulatedPerFormFees`), and the total amount of losses that the fund needs to make up in order for the manager to earn performance fees, if any (`lossCarryforward`). These variables are returned to the Fund contract and stored there.

DataFeed

To calculate `navPerShare`, the `NavCalculator` module first needs the gross asset value, the mark-to-market value of the portfolio. Since the bulk of the portfolio will be held and traded on off-chain cryptocurrency exchanges, the protocol uses an oracle contract to retrieve this data. The `DataFeed` module manages interactions with the oracle.

InvestorActions

The `InvestorActions` module handles logic related to changes in investor balances, such as changes in approved allocations, subscriptions, share balances, redemptions, and withdrawals. For each investor, these balances are housed in an `Investor` struct stored in the Fund contract. Upon a function call that modifies one or more `Investor` structs, the Fund contract calls a corresponding function in the `InvestorActions` module. The `InvestorActions` function checks for invariant conditions, performs calculations, and returns a modified `Investor` struct to the Fund contract.

Off-Chain Dependencies

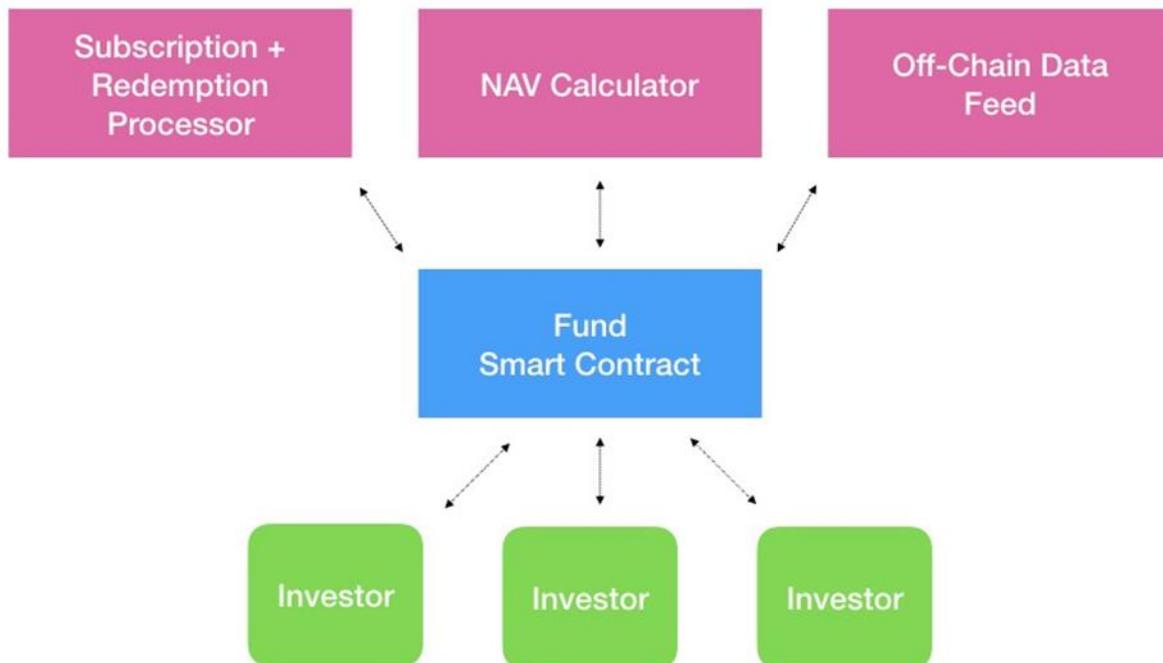
While the Fund Protocol reduces the need for many of the middlemen involved in traditional asset management, the first iteration of the protocol still places a high degree of trust in various centralized parties. Since hedge fund investors by definition seek a trusted, professional asset manager to actively make investment decisions on their behalf, much of this centralization has been by design.

As blockchain infrastructure becomes more efficient and robust, we plan to revisit these dependencies on central actors to achieve greater decentralization and transparency where it's justified.

Manager: The fund manager is responsible for both fund administration and investment management. In the future, we plan on separating these concerns into an Administrator and an Investment Manager role, each with more limited authorities.

Cryptocurrency Exchanges: To perform trades in highly liquid markets, funds need to register and hold account at centralized cryptocurrency exchanges. While decentralized exchanges such as EtherDelta and others are available, they don't have the liquidity at this time to be reliable.

NAV API: The `DataFeed` module fetches the portfolio gross asset value via an oracle contract from an off-chain NAV-API service. This NAV-API is responsible for retrieving the balance of each cryptocurrency and fiat currency held by the fund at cryptocurrency exchanges.



Blockchain as the source of truth

All fund-related transactions such as subscriptions, redemptions, net asset value calculations, and fee payments are recorded on the Ethereum blockchain and utilize its distributed ledger technology to ensure transaction accuracy. Investor balances are also recorded and stored in the smart contract.

Transparent by design

All transactions that transfer funds or alter state emit events which are recorded on the blockchain, generating a replayable audit trail.

Liquidity using the ERC20 token standard

Assuming that investors comply with their regulatory requirements, they can transfer the tokens that represent their share ownership to other investors via standard infrastructure that supports ERC20 tokens.

Updates to the Detail of the Token Sale

Quantum reserves the right, at its sole discretion, to change, modify, add, or remove portions of this whitepaper and the terms at any time during the sale by posting the amendment on the Quantum website. Any purchaser will be deemed to have accepted such changes by purchasing QTM tokens. If at any point you do not agree to any portion of the then-current version of this whitepaper and the terms, you should not purchase QTM tokens.

The team

Quantum Capital Advisors is led by Terrence Elliott, a serial entrepreneur. With the help of four of his fellow New York University classmates they successfully launched an educational startup revolutionizing

online learning. The company, Jasmine Technologies, grew from five (5) friends into seventy (70) employees with over a 90% customer base of all school systems in Pennsylvania, New Jersey and a major foothold in New York City's education system. Jasmine was eventually acquired by a larger company. Mr. Elliott then joined Falcon Brokerage group as a managing partner and participated in over 50 investments and operating company acquisitions, and follow-on transactions. Most of which were buyouts of medium sized businesses by their employees.

This experience led him to create Quantum Capital Advisors.

Investment Team : Will be comprised of three individual Quantum partners and a select group of accomplished individuals that we will invest alongside or form a strategic entity to mutually invest under while keeping our main funds separate.

The roadmap

The roadmap going forward will be as follows:

1. July 15 through August 15, 2019 – “Test the Water” campaign
2. August 15, 2019 - SEC approval for Initial QTM offering
3. August 15, 2019 through August 14, 2020 \$50M fund raise
4. September 2019 – Initial listing on crypto exchanges
5. TBD (anticipated September 2019) initial investment in target companies

Social Media

- **Facebook:** <https://www.facebook.com/quantumadvisors/>
- **Telegram:** <https://t.me/quantumca>
- **Official website:** <https://www.qcafund.com>
- **Twitter:** tbd
- **Slack:** TBD
- **BitcoinTalk:** TBD

FAQ

What is Quantum Capital Advisors?

Quantum is a Venture Capital firm structured as a Hedge Fund. This unique structure allows Quantum to have non-U.S. and U.S. investors. It will allow us to connect with and reach a broad base of non-traditional investors that would normally be left out of the venture world due to not meeting traditional income requirements, ie accredited investors with more than \$1M in assets.

What components make up the Quantum platform?

Fund protocol (github.com/CoinAlpha/fund-protocol): An Ethereum-based protocol for creating tokenized hedge funds. Until our code is verified by two independent parties, you can view CoinAlpha's code. Quantum token is based 99% on the CoinAlpha codebase.

Investor portal (investors.qcafund.com): a web app that enables investors to discover, invest in and manage a portfolio of tokenized hedge funds.

Fund (TBD): A fund that utilizes the protocol.

Fund manager portal (TBD): a web or decentralized client app that enables fund managers to create and administer tokenized funds.

Trading infrastructure (TBD): a suite of services that help fund managers access data, connect to exchanges, and execute cryptocurrency trades.

Why use the blockchain?

The blockchain streamlines payments and information flows without the need for intermediaries. Like all financial securities, funds are legal contracts between market participants that govern the flows of capital. To ensure that the flows of capital are prompt and accurate throughout the lifecycle of a traditional fund, each participant either maintains redundant systems and siloed databases, or they rely on other intermediaries like fund administrators, accountants, and auditors to do so. By providing a single source of truth, blockchain-based smart contracts make funds more efficient, transparent and liquid.

What's a smart contract?

To explain how this works, let's first define a smart contract. Smart contracts are mini-computer programs that allows you to set the rules that govern a cryptocurrency transaction. For example, a simple smart contract is a multi-sig wallet, a wallet owned by multiple parties. For a wallet with two owners, both signatures are needed to authorize any transfers to external parties. Because the smart contract is deployed on the blockchain, it can set and enforce these rules without the need for a trusted third party. It's critical that these rules are encoded correctly. When they are not bad things happen.

"Smart contract" is a great marketing term, but today's smart contracts are neither smart nor are they contracts. In fact, a term that more accurately describes a smart contract's current functionality is **dumb program**. Dumb programs are still extremely useful: the ability to combine the logic and data of a computer program with the transparency and trust of distributed ledger technology is a true game-changer for many applications in financial services.

Rather than many participants translating legal language into code across multiple closed system, a smart contract lives in the blockchain and executes in a publicly verifiable, transparent manner. Rather than redundant data structures that need to reconcile with one another, the blockchain prevents fraudulent, incorrect transactions and provides an immutable, replayable audit trail.

How does a blockchain-based fund work?

To fulfill the role of the administrator, custodian, payment bank, accountant, and auditor in traditional fund, Quantum will use a set of open-source smart contracts that we call the Fund Protocol:

Handle Fund inflows and outflows: enforce investment restrictions and process subscriptions and redemptions;

Calculate net asset value: retrieve the portfolio's gross asset value on a daily basis, allocate gains/losses between investors and management fees, and maintain the high-water mark;

Maintain data for reporting: log data needed for performance monitoring, tax, and audit purposes to the Ethereum blockchain.

How does a blockchain-based fund compare to an ICO?

Unlike an ICO in which the proceeds are used to build a project of uncertain value, our fund's investment proceeds can only be invested in a limited portfolio of liquid investments, marked-to-market on a daily basis. The "tokens" that investors receive from our fund directly represent each investor's proportional holdings of assets held in the fund. Investors cannot transfer our fund's tokens among one another until they are listed on an exchange; however, they can redeem their tokens for Ether or invest more Ether in exchange for tokens each day.

Is this a decentralized autonomous organization (DAO)?

No. An investment in our fund requires a high degree of trust placed in the fund manager. This is by design. Fund investors want their capital to be managed by a centralized professional manager, not managed via decentralized consensus.

Can any investor participate in funds created using this protocol?

Participation in funds depends on local laws and regulations. We anticipate that our funds will utilize exemptions under Regulation A, Tier 2 of the 1930 Securities Act, which means that we can offer our token to U.S. investors without them needing to be Accredited Investors or Qualified Institutional Buyers, as defined therein.

How do investors know that the fund valuation is accurate?

On a daily basis, the smart contract utilizes the real-time value of the exchange portfolio to calculate the fund net asset value per share. Inputs, intermediate steps, and outputs are emitted as blockchain events, enabling full audibility afterwards. In addition, each fund's trading activity and historical performance are available to fund investors via the Investor Portal.

What happens to investor proceeds after investment?

Once shares have been allocated, the smart contract immediately deploys investor capital to a Quantum registered account at an approved cryptocurrency exchange such as GDAX or Gemini. The fund manager has trading authority over this account and employs proprietary strategies to actively manage the portfolio.

We eagerly anticipate the evolution of decentralized exchanges such as [RadarRelay](#), [EtherDelta](#), and [Paradex](#) in order to reduce our dependency on centralized exchanges. However, at today's [average daily volumes](#) of less than \$5,000, decentralized exchanges are simply not a practical option today.

How does the fund handle blockchain-related challenges like scalability and transaction costs?

Compared to other sectors like payments, the fund administration world is slow and expensive. Hedge funds typically allow new subscriptions and redemptions once per month, and monthly operational costs are typically \$50–100k per month. Relative to those options, a blockchain-based solution offers significant efficiency improvements. For example, it costs approximately \$3.00 and takes 2 minutes for us to perform the daily net asset value (NAV) calculation process, process subscriptions and redemptions at the new NAV, and publish a permanent record of all transactions on the Ethereum blockchain.

How do you handle security and other operational issues?

A smart contract that operates a fund that may exist for 10 or more years requires a different design than a one-time ICO contract:

1. **Security:** We only expose selected functions to external investors. Administrative functions such as NAV calculation are only callable from addresses stored in air-gapped hardware wallets that we securely store.
2. **Upgradability:** We delegate logic related to processing fund flows and calculating net asset values to child contracts that may be upgraded to resolve security vulnerabilities and fix bugs.
3. **Modularity:** Daily calculations rely on data supplied by off-chain data sources. Modules that encapsulate interactions with these data sources need to be flexible, hot-swappable, and resilient in case the data sources are unavailable or need to be adjusted.
4. **Compliance:** We will be utilizing a 3rd party verification system to ensure we are compliant with KYC and AML statutes. Quantum will use an invite system when the CTO offering goes live. Only people that signed up before hand and verified will be able to participate in the initial token offering. After the initial offering is complete, we will make all best efforts to have the QTM token listed on various exchanges. We anticipate listing them on three (3) major exchanges.

Market and Industry Information

This whitepaper includes market and industry information and forecasts that have been obtained from internal surveys, reports and studies, where appropriate, as well as market research, publicly available information and industry publications. Such surveys, reports, studies, market research, publicly available information and publications generally state that the information that they contain has been obtained from sources believed to be reliable, but there can be no assurance as to the accuracy or completeness of such included information. Quantum Capital Advisors has not conducted any independent review of the information extracted from third party sources, verified the accuracy or completeness of such information or ascertained the underlying economic assumptions relied upon therein.

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