



AUTONOMOUS
NEXT

#Token Mania

The new funding mechanism using distributed ledger technology that displaces both public markets (IPOs) and private investment (Venture Capital) with a billion of USD equivalent cryptocurrency

Suitable only for professional investors

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Key takeaways across industry players

Startups/Ecosystem

- Key regulatory and governance questions inhibit the flow of mainstream capital and adoption, so resolve these issues with transparency and standards
- Focus on delivering functional innovations that solve tractable problems in the economy for the mainstream, in addition to the technical infrastructure for smart contracts and processing
- Treat building the ecosystem as a marathon with long-term value creation, rather than taking advantage of ICOs for fast funding
- Find ways to partner with incumbents in your industry to translate value from the Crypto economy to the physical world
- Make UX/UI more intuitive to the average consumer for broader adoption and understanding

Investors

- Although the current ICO market has the symptoms of a bubble, there is an underlying innovation that has the attributes of a massive platform shift in the digital world
- Leverage lessons of the Dotcom years -- while most projects fail, some will redefine their industries in a winner-take-all dynamic over a 10+ year holding period
- Manage exposures appropriately; in a core/satellite asset allocation, Crypto tokens should be a subset of Alternatives, likely no more than 5% of the overall portfolio
- Diversification within Crypto token holdings is also important, evidenced by quick turnover in Altcoins rankings in last 4 years
- Cyber security of wallets and exchanges must be managed, as well as possibilities of scams

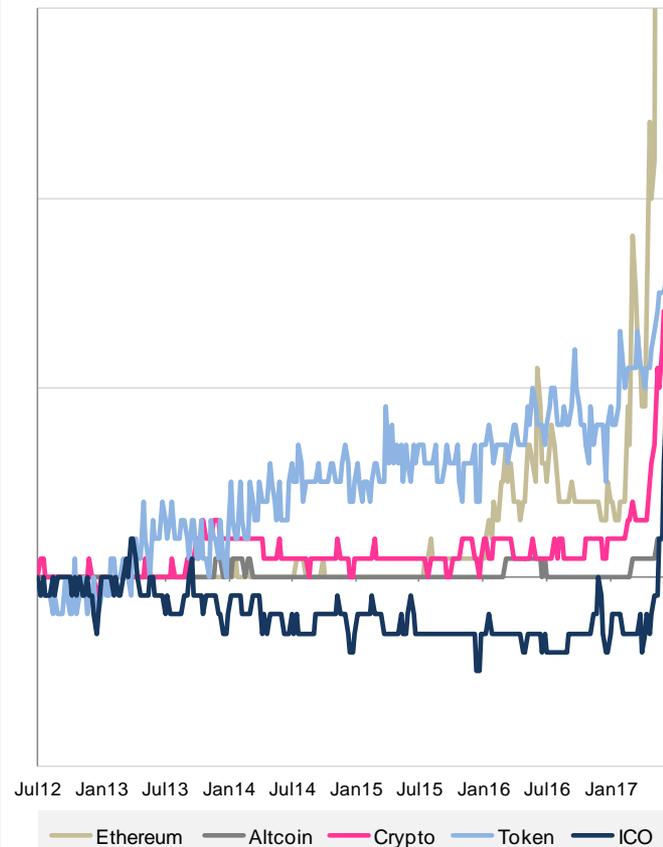
Financial Incumbents

- Understand causes of the ICO wave and its technology; consider geopolitical forces challenging sovereigns and incumbents across the world – from automation to loss of trust and to decentralization
- Build financial capabilities around Crypto tokens as an asset class, from research to custody to exchanges, leveraging regulatory capability as advantage
- Consider using Crypto tokens as an operating strategy, such as tokenizing internal currencies and workflows, or catalyzing developer communities around open APIs
- Extend Corporate Venture Capital to engage with the developing ecosystem at the right risk level
- Find ways to translate economic activity occurring in digital worlds to the traditional economy

A Note on Terminology – ICO or Token Launch?

- Participants in the ecosystem refer to the distribution of tokens as part of a decentralized blockchain project in a variety of ways
- The media and many speculators primarily use the term ICO (“Initial Coin Offering”) or, sometimes, ITO (“Initial Token Offering”)
- This has the effect of comparing token distributions to IPOs (“Initial Public Offerings”), which benefits the hype-cycle but is detrimental to good-faith technologists building decentralized projects
- Such technologists prefer the term “**Token Launches**” as there is no regulatory consensus that tokens are securities, currencies, commodities, assets or instruments, and many tokens are designed specifically to not invoke US securities laws
- Google trends shows that the terms ICO and Crypto have experienced the largest popularity gains with the rise of token launches on the Ethereum blockchain, while the search term “Token Launch” or “Token Offering” is not widely used
- We are resigned to use the term ICO as a shortcut, without any normative meaning as to the status of the tokens themselves

Google Search Trends Delta on an Absolute Basis (Last 5 years)



Executive Summary (1/2)

- **A new funding mechanism has been slowly coming to mainstream awareness that leverages the power of decentralized technology**
 - Over \$1.2 billion raised through these mechanisms in the first half of 2017, far outstripping venture capital investment into Blockchain and Bitcoin firms; approximately 50% of 2017 ICO capital raised in last 30 days
 - Capital is often contributed in the form of Bitcoin (“BTC”) or Ethereum (“ETH”)
- **These offerings are akin to sale of a future money supply or a platform utility enabler, rather than a sale of Securities**
 - Unlike the sale of equities in a private venture investment or in an Initial Public Offering, the object sold is a digital token or coin that is both scarce and validated based on advanced cryptography techniques
 - The offerings are issued by collections of people that may or may not be formally organized as a legal entity
 - Global regulation has not come to agreement about these offerings, with certain jurisdictions treating them as assets, commodities or currencies, and other jurisdictions split over which tokens are securities
- **They must be offered on a Distributed Ledger and are fully digital, with most tokens designed and sold using the protocols of public smart-contract technology called Ethereum**
 - Ethereum is the preferred platform of choice for issuing smart contract tokens using the ERC20 standard
 - Tokens can be used as a medium of exchange and can be a replica of Bitcoin with philosophical differences (e.g., privacy, speed, supply) or have functional utility within a technologically advanced system
 - Features of tokens can be designed to make them more like (a) an investment / security or (b) more functional; best practices for launches are being developed by leaders in the ecosystem (e.g. Coin Center)
 - Some ICOs launch with developed products and roadmaps for utilizing proceeds, while others are raising money without a developed product aiming to leverage speculation

Executive Summary (2/2)

- **The Crypto Economy is growing outside of traditional venues – this has happened before with video game gold farming and virtual economies, but not on such a global scale**
 - While BTC is the first digital currency to go mainstream, it is not the first digital currency or virtual economy
 - Virtual economies with real economic value have evolved within video games such as World of Warcraft, Eve Online, and Second Life. The scale of new technology is orders of magnitude greater than prior iterations.
 - The culture of the early Internet is directly connected to ICOs and investor personalities in the ecosystem
- **Speculation and volatility across the Crypto Economy are rampant, and many participants are aware of both fraudulent practices and a growing bubble fuelled by Bitcoin whales**
 - The marketcap of BTC has increased from \$10 billion at end of 2016 to over \$40 billion halfway through 2017
 - Demand is driven by (1) entry of mainstream investors, (2) enterprise efforts in the financial industry like Enterprise Ethereum, and (3) movement of savings into digital currency in the developing world
 - Unfortunately, many ICOs are fraudulent and intended to take advantage of excitement in the ecosystem by leveraging social media for promotion and a lack of enforceable consumer protection, raising legitimate regulatory concerns and attempts by select market participants to self-regulate
- **Yet, underneath the turbulent waters are seeds for a massive transformation of the real world and we should learn from prior examples of economic phase shifts**
 - While many of the tech companies of the first Tech bubble in the late 1990s have disappeared, winners like Amazon and Netflix have experienced large capital gains and monopolization of their sectors
 - While most cryptocurrencies have not been successful, BTC and ETH have experienced large capital gains and growing adoption, signalling an underlying structural shift that incumbents should embrace
 - Investment into tokens allows economic participation at the protocol layer of a next-generation internet

Introduction to Initial Coin Offerings

Getting started with ICOs

- **Initial Coin Offerings / Token Launches are an emergent phenomenon of Blockchain technology and virtual communities**
 - A group of technologists, often that are well-known in the cryptocurrency community (forums, Twitter, Reddit, Github), or that are part of a more institutional setting, decide to work on a project
 - They author a white paper that explains the technical and business dimensions of a project. Best practices include explaining how the technology works, the role of the token and its source of value, and mechanisms for issuing tokens and accessing raised funds, increasingly supported by independent audits
- **ICOs combine the trends of (1) crowdfunding powered by the virality of Internet marketing, and (2) exponential technology growth through adoption within a tech-forward network**
 - Tokens are sold to a global crowd whose main commonality is technological literacy; there is generally no requirement to be an accredited investor or live in a particular geography
 - Often, the real-world adoption of the project undergoing the ICO correlates with the value of the tokens, and in many cases the community that buys the tokens will also utilize them (e.g., decentralized cloud storage) --
 - Consider the virtual currency of video games, where in-game gold has value only for internal use by players
 - Yet in many cases, participants purchase tokens primarily for speculation and capital gains
- **To participate in an ICO and own a token requires specialized software and knowledge**
 - Ownership is determined by holding the digital access keys allowing transfer or use of the token, or account with an intermediary that holds the token for the owner. Given the state of the ecosystem, some participants essentially hide cash under a mattress, by writing keys on a piece of paper and putting it into a physical safe.
 - A large niche has grown around providing all types of wallets -- hardware, software and otherwise -- in which tokens or coins can be stored, but third parties can be hacked and cannot reverse decentralized transactions

Token Value is derived from two primary sources today: Functional and Speculative



Imagine there are plans to open a new Casino, and for funding, the Casino sells its own plastic chips before opening, in anticipation of customers using these chips and creating economic value.

Further, the buyers start trading these chips based on the expected value of the casino, how well attended it will be, and whether other chip holders are trading.

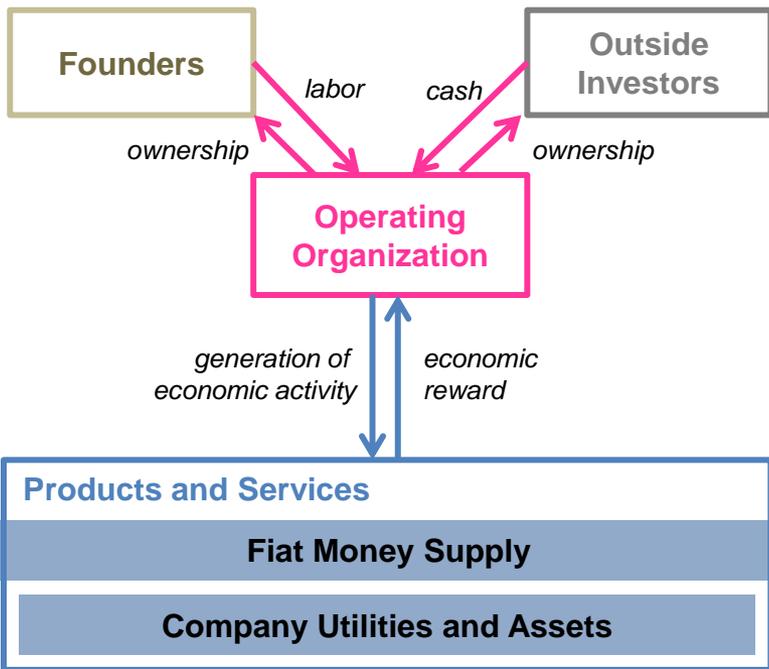
- The **functional value** is that which is derived from the use of the token itself
- In Bitcoin, the utility value is replacing sovereign fiat and enabling payments as a scarce self-regulating digital currency
- In Ethereum, the utility value is the facilitation of a smart-contract ecosystem that powers the global economy, from finance to the Internet of Things
- Recent ICOs have defined very specific utility values for tokens, which fuel their ecosystem



- The **speculative value** is the value a trader of the token derives from trading it on an exchange, relative to others
- This can be a positive development for the ecosystem as it draws validating capital, which can then be invested in real projects
- If tokens are issued primarily for speculation, this raises regulatory issues

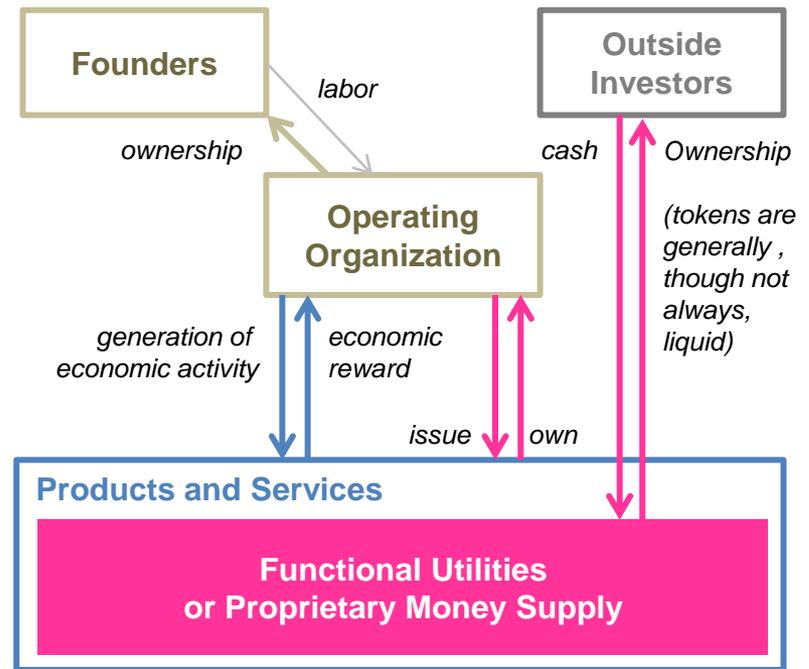
Generally speaking, buying a Token is different from buying a Stock ...

Investing in Stocks



- Investors spend cash for an ownership of the operating company that generates economic activity
- Products and services rely on external money supply to function in an economy
- Company utilities, like money transfer technology between bank departments, is not monetized

Investing in Tokens



- Investors spend cash for an ownership percentage of the functional utilities or proprietary money supply
- Operating organizations have a range of control over token supply, depending on issuance rules
- While best practice is to have partly constructed the network prior to ICO, it is not a requirement

... but Tokens can be designed to have aspects of Securities, and securities can be tokenized

Consensus, Coinbase, Coin Center, Union Square Ventures and the law firm Debevoise propose a framework that separates Blockchain tokens with “investment interests” from those with merely “rights” (i.e., functional features) for the purpose of US Securities Law under SEC. v. Howey (1946). The test is later discussed in the section on Investment Structure Considerations, but we quote from the paper here in regards to features that can make tokens more or less like investments.

Investment interest features

- Ownership interest in a legal entity, including a general partnership or an equity interest
- Share of profits and/or losses, or assets and/or liabilities
- Status as a creditor or lender
- Claim in bankruptcy as equity interest holder or creditor
- Holder of a repayment obligation from the system or the legal entity issuer of the Blockchain Token
- A feature allowing the holder to convert a non-security Blockchain Token into a Blockchain Token or instrument with one or more investment interests, or granting the holder an option to purchase one or more investment interests

Merely functional features / rights

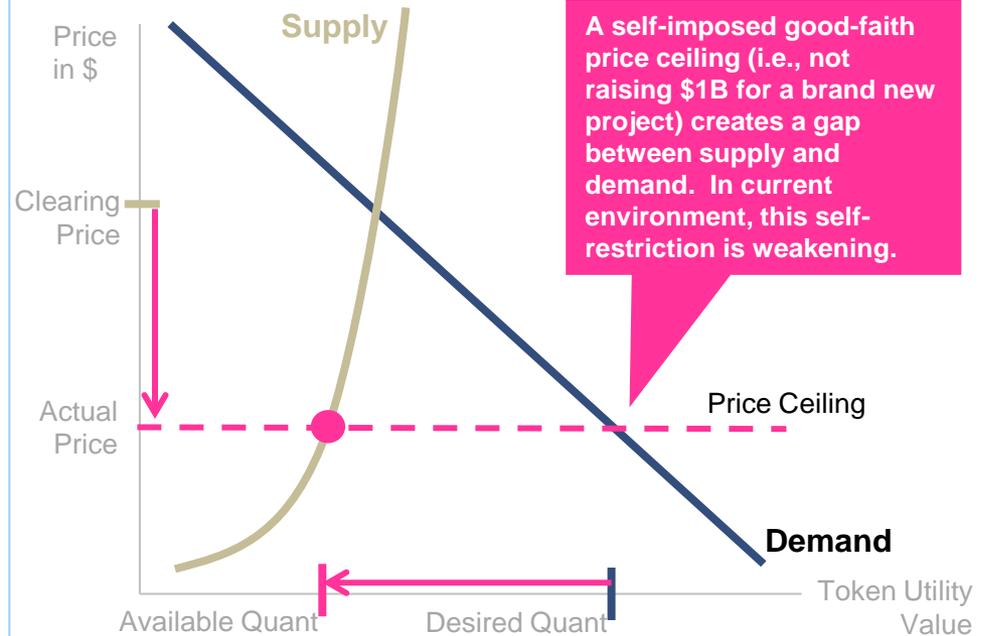
- Rights to program, develop or create features for the system or to “mine” things that are embedded in the system
- Rights to access or license the system
- Rights to charge a toll for such access or license
- Rights to contribute labor or effort to the system
- Rights to use the system and its outputs
- Rights to sell the products of the system
- Rights to vote on additions to or deletions from the system in terms of features and functionality

Supply & Demand dynamics, and associated limitations, shape market behavior and valuation run-ups

Pricing Issues

- Normally, the price of tokens during an ICO would be determined by supply and demand, but current demand is **insensitive to price**
- To avoid irrational outcomes, either supply or demand must be constrained
 - If supply is fixed at a total value for the offering (e.g., \$10MM), there is the question of determining allocations. An example would be the BAT ICO, which raised **\$35MM in 30 seconds**, with many investors locked out
 - If all demand is allowed to pour in, then bubble outcomes are created, with hundreds of USD equivalent poured into unproven projects at what should be a Seed stage, which creates the impression of irresponsibility and greed
- Developers have been experimenting with Dutch auctions, constrained timing mechanisms, and pricing floors/ceilings as solutions to augment distribution and pricing

Aggregate Supply / Demand in Digital Tokens



- Demand is likely 5-10% of all cryptocurrency supply, or about \$5B of value, corresponding to the speculative part of an asset allocation looking for diversification
- Supply of all feasible useful tokens today is constrained by the development talent available to build projects

While the type of risk in ICOs is similar to other early stage projects, judging quality is different from venture capital ...

	Venture	ICO	Kickstarter
Team	<ul style="list-style-type: none"> Mix of technology and business leaders 	<ul style="list-style-type: none"> Track record in cryptocurrency community Highly technical 	<ul style="list-style-type: none"> Most important element of project; proven capacity to deliver on similar projects
Market	<ul style="list-style-type: none"> Large \$1B+ addressable market, potential pivots 	<ul style="list-style-type: none"> Predefined large technical problem Proximity to infrastructure 	<ul style="list-style-type: none"> Predefined product problem, no pivots
Traction	<ul style="list-style-type: none"> MVP or initial committed customers 	<ul style="list-style-type: none"> Prior technical projects publicly shared on Github 	<ul style="list-style-type: none"> Team assures customers on ability to deliver
Competition	<ul style="list-style-type: none"> Structure of industry meaningful for ability to monopolize position 	<ul style="list-style-type: none"> Many blue-ocean opportunities, need only vague market strategy 	<ul style="list-style-type: none"> Not relevant as demand is defined by raise
Economics & Distribution	<ul style="list-style-type: none"> Business model exists and works on margin 	<ul style="list-style-type: none"> Vague indication tends to be sufficient 	<ul style="list-style-type: none"> Not relevant as demand is defined by raise
Legal Status	<ul style="list-style-type: none"> Well defined C-Corp or SAFE investments 	<ul style="list-style-type: none"> Wide range of legality, from CoinList to frauds and scams 	<ul style="list-style-type: none"> Well defined contracts that are automatically papered and actioned
Presentation	<ul style="list-style-type: none"> PowerPoint, Demo Relationship driven 	<ul style="list-style-type: none"> Tech whitepaper, video Highly social media 	<ul style="list-style-type: none"> Video, written narrative Highly social media

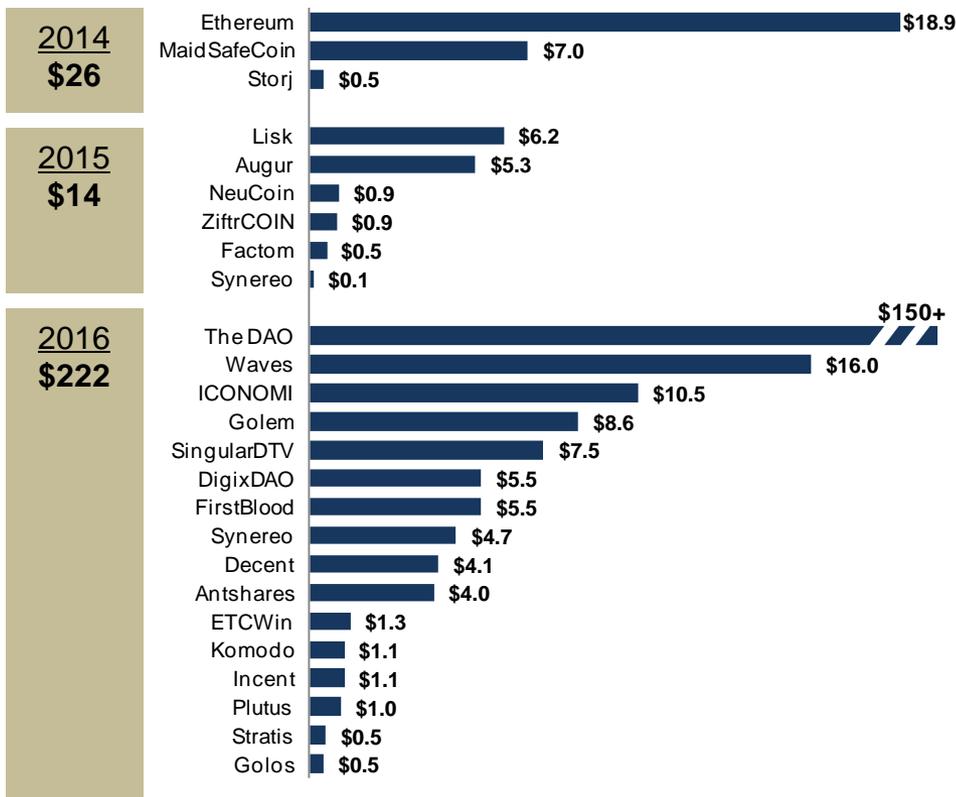
... and best practices are only beginning to be defined

ICO Best Practices (Consensys, Coinbase, Coin Center, USV)	
Detailed White Paper	<ul style="list-style-type: none"> • Clear technical descriptions of what is being built • Explanation of what the token does, why it should exist, and how they are issued
Clear Development Roadmap	<ul style="list-style-type: none"> • Project is divided into stages, for which there is an allocation budget • Funds are escrowed and released upon progress against goals • Constituents receive transparent communication and reporting on progress, both financial and development
Open Source and Published Code	<ul style="list-style-type: none"> • Code is open source and team contributes to the community, using well-known standards • Code that is private or overly centralized control may signal ulterior motives
Clear and Fair Pricing in the Sale	<ul style="list-style-type: none"> • Amount being raised is clearly defined and ICO period ends upon success • Raising far more than project development cost can corrupt incentives
Developer Percentage	<ul style="list-style-type: none"> • Developers are founders, own a percentage of tokens, and interests are aligned • Ownership percentage is consistent with best-practices in other early stage investing
Independent Review	<ul style="list-style-type: none"> • Trusted technical experts vet the white paper and its claims • Security audits and bug bounties for code • ICO rating and diligence agencies evaluate the offering process
Good Faith Marketing Approach	<ul style="list-style-type: none"> • Promotions focus on the function of the network and the token as a clear utility • Token is not marketed as an investment with high speculative upside

ICO Market

Initial Coin Offerings started to gain importance in 2016, with the potential to capture more crowdfunding interest

Notable Initial Coin Offerings
(\$ million)

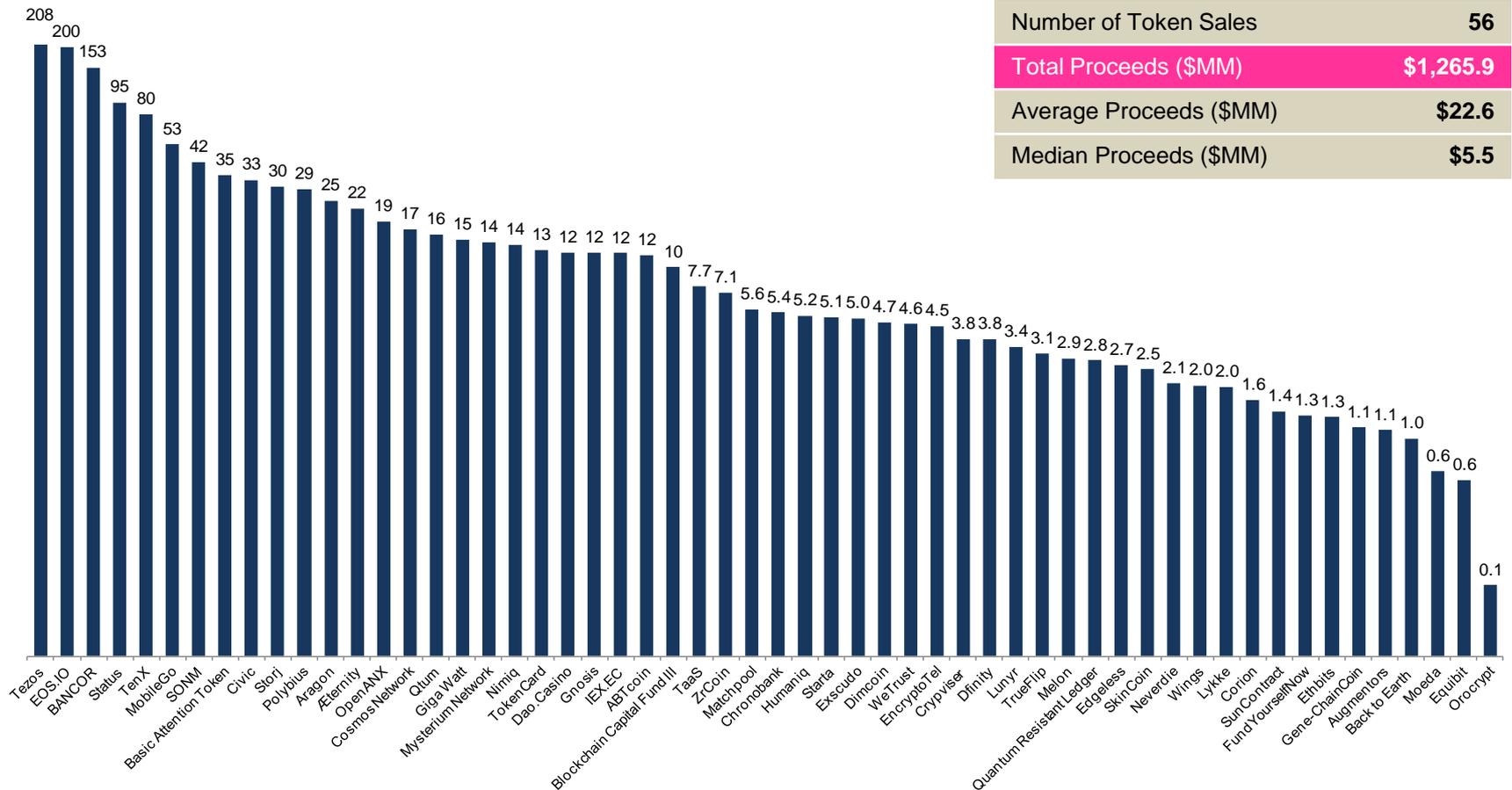


Crowdfunding Volume, Global
(\$ billions, 2015)



2017 YTD ICOs have not disappointed, with over 1.2 billion of USD equivalent raised for over 50 projects

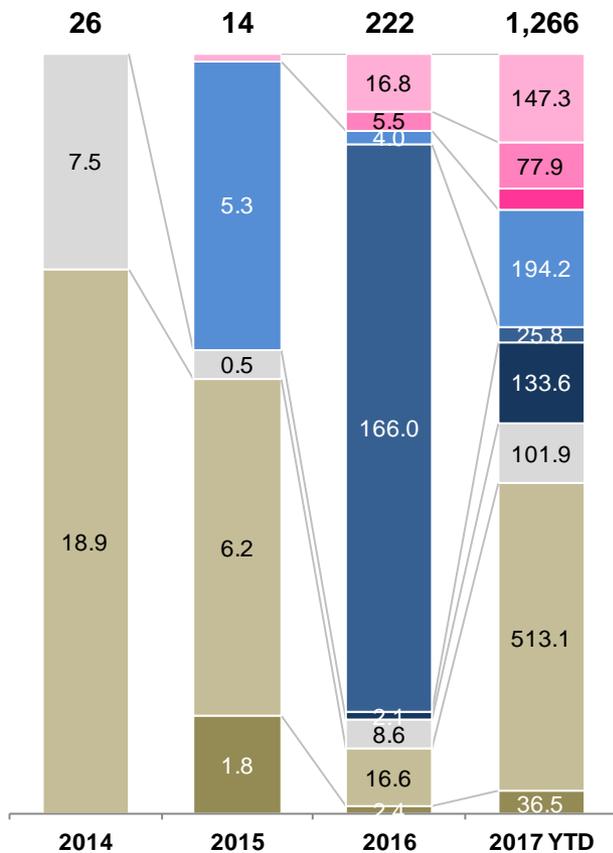
Notable Initial Coin Offerings (\$ million, log scale)



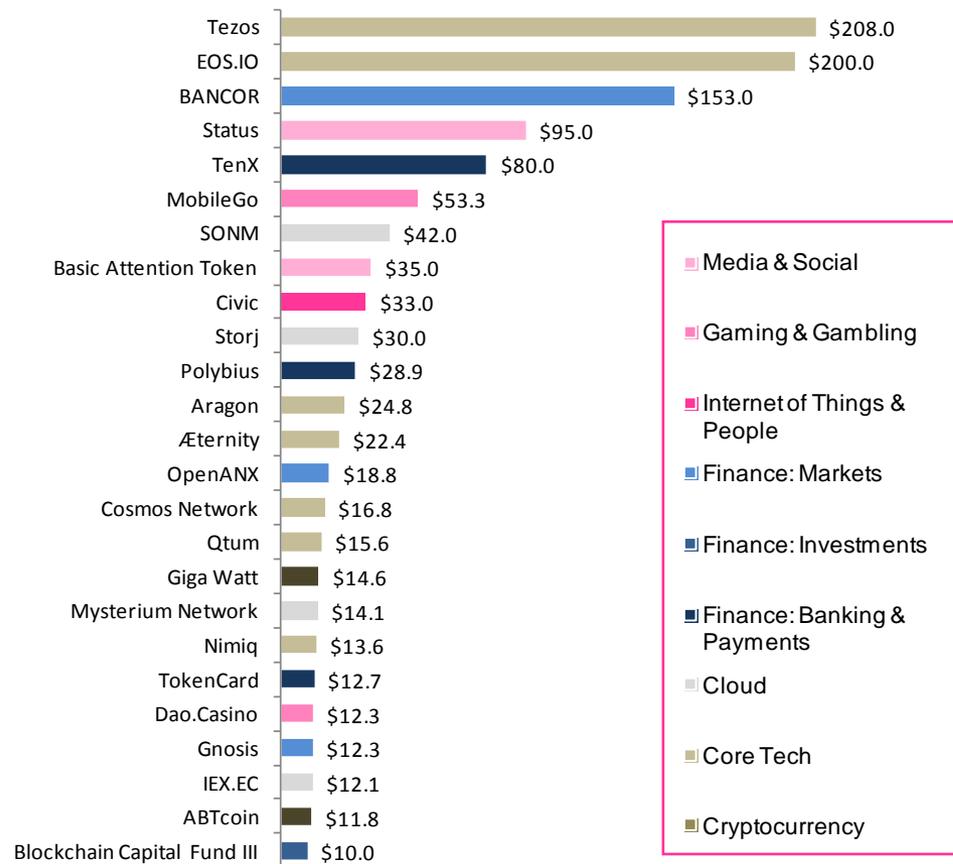
Source: Autonomous NEXT analysis, Smith & Crown, ICO Tracker, ICO List, Finance Magnates, Newsbtc
 Note: Some ICOs are still in progress as of the publishing date, and the value of tokens fluctuates due to exchange rates

Offerings are shifting from core technology to use cases like markets, investment products, media and identity

ICOs by Category (\$ millions)



Top 2017 ICOs by Category (\$ millions)



Example 1: The DAO (Financial Investments)

Overview

- The DAO (Decentralised Autonomous Organisation) is a smart contract system that was designed to function as a community managed venture fund, without the need of any employees and was implemented on the Ethereum blockchain.
- The ICO ran from 1st May – 28th May 2016, after which it issued 1,153,816,599 tokens at an exchange rate of 100 tokens per Ether.
- All funds raised were in the form of Ethers.
- The DAO was the largest ICO of its time but ultimately, a \$59 Million system hack resulted in it's downfall. A 'hard fork' was used to retrieve the stolen funds and the DAO ceased to function.
- The idea has resurfaced as Hong Coin, ICONOMI and TaaS. All differ in that they still have a set of professional investors aiding in fund allocation.

Year

2016

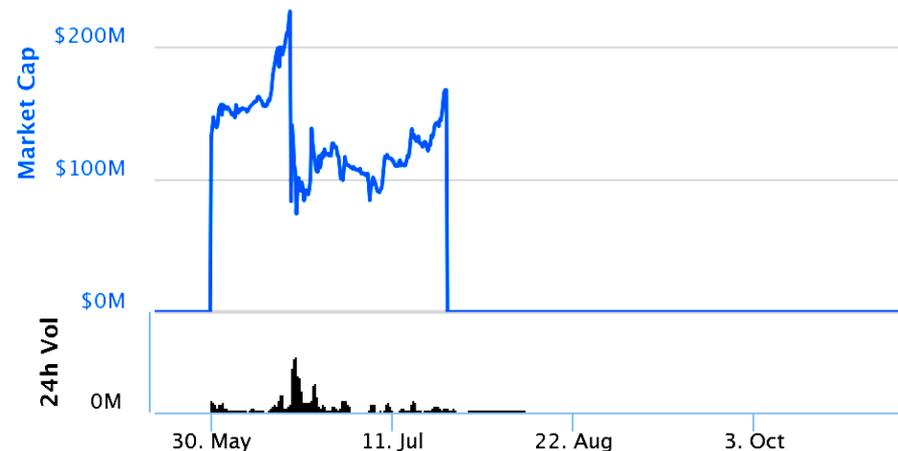
Tokens Issued

1B+

Amount

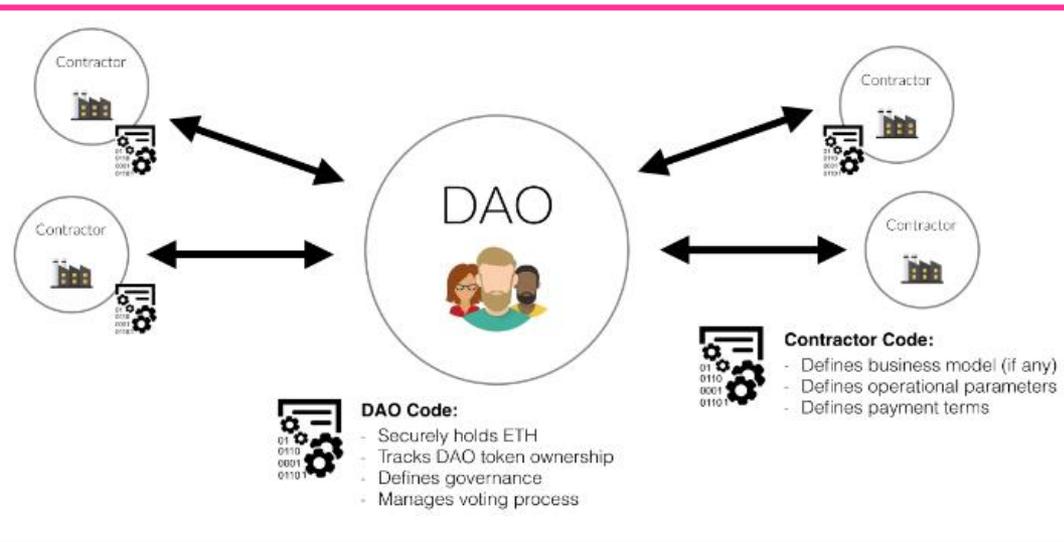
\$150
million

Estimated Market Capitalization (\$mm)



- Exceeded expectations becoming the largest ICO at the time, although market cap fell dramatically when the system was hacked and was shut down shortly afterwards, leading the market capitalisation to fall to 0.

Example 1: The DAO (Financial Investments)



Discussion

- Rather than having an owner, manager and analysts, in its place was just code with consensus mechanisms on particular investments.
- This in theory would make the DAO automatic, unbiased and incorruptible, whilst processing the wants of investors.
- A developer figured out how to “double-spend” money in the DAO and kept recursively withdrawing millions. In the end, the entire Ethereum chain was “forked”, transactions were reversed, and this became a huge split in the community.
- The DAO has no owner. Funds generated in the ICO and Creation period are sent from users to a smart contract address that creates DAO tokens and sends them back to the user address.
- The Smart Contract system allowed companies to make proposals for funding. These would be white-listed by the DAO ‘curators’ and the token holders would vote on proposals.
- If investors found an accepted proposal to be damaging, they could get back the Ether they sent to the DAO. This was known as the ‘split function’.
- The ICO was considered risk-free where users could recover their invested Ether by splitting their tokens on a scale of 1 Ether to 100 DAO and move them off the DAO chain.

Example 2: The SONM (Cloud Computing)

Overview

- SONM is a decentralised fog supercomputer operating on the Ethereum network. It plans to utilise spare computational power to aid networks that don't have sufficient power.
- Buyers of computer power are provided a more cost-efficient solution than conventional cloud providers by combining spare capacity on a pool of devices (IoT) with cloud servers. This is known as 'fog' computing.
- The ICO raised \$42 million by over 4 days. All investments were to be made in Ethers only.
- Most notable competitors on the Ethereum network are Golem, Elastic and iEx.ec, all of whom operate on a similar business model.
- No additional tokens released into the system, resultantly replacing hash-based cryptocurrency mining with the option to provide computational power instead.

Year

2017

Tokens Issued

166
million

Amount

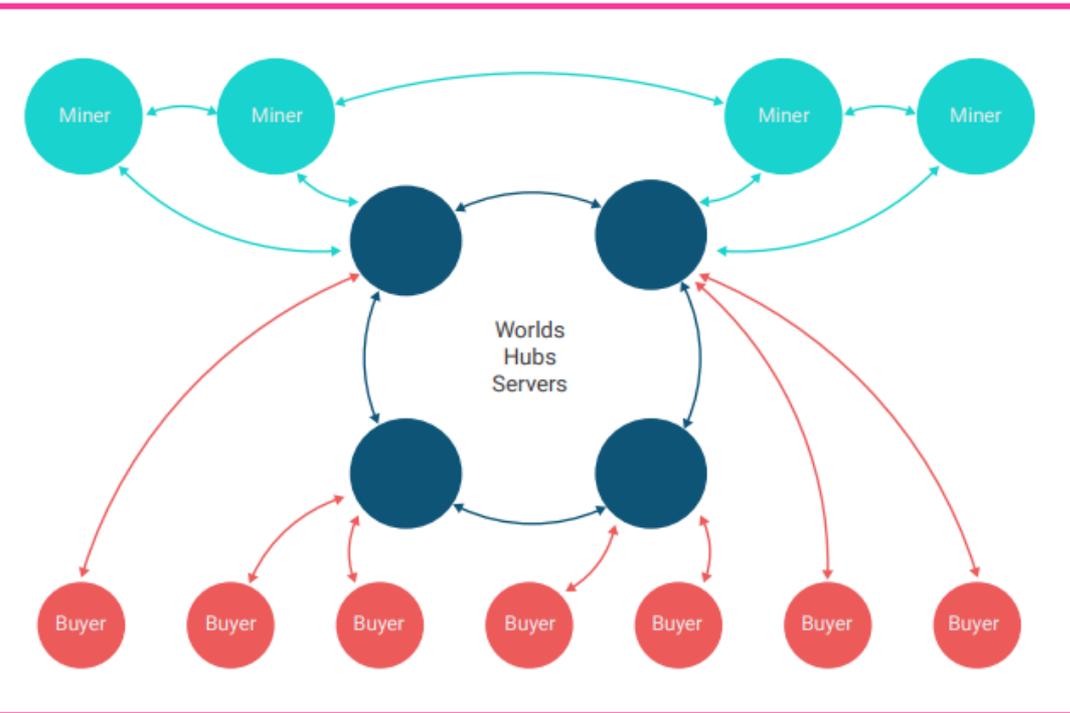
\$42
million

Estimated Market Capitalization (\$mm)



- Price captures Ethereum and BTC volatility

Example 2: The SONM (Cloud Computing)



SONM allows for all computing devices to be used for adding computational power into the network, including GPU, CPU, Playstations, smartphones, and others.

Discussion

- SONM connects buyers and workers through a decentralised open market place that profits the users primarily.
- Within the currency, the aim is to replace traditional proof-of-work mining with fog computing to reduce costs, thus providing a 'fresh start' to solo miners.
- Passive income is offered to users who provide their spare computational resources for rent through SONM.
- Fog computing enables completion of previously incomputable tasks, such as: Complex scientific projects, site hosting, game servers, neural network projects and rendering video and CGI.
- Cloud technologies are highly monopolised at present, fog computing claims to provide cheaper computational power at scale.

Example 3: Storj (Cloud Storage)

Overview

- Storj is a decentralised cloud storage network that was built initially as a decentralised app on top of the Counterparty network.
- Storj issued up to 25% of the 500 million total tokens in its second ICO on the June 21st, 2017.
- Of the \$30 million raised, Bitcoin, Ether and Storj coins were accepted as payments.
- Competitors include centralised cloud storage companies, such as AWS, Microsoft Azure and Google Cloud, but also decentralised networks like MaidSafe Network, Filecoin and Sia. All are broadly similar operationally but Storj is the only provider that is on the Ethereum network.
- Storj have recently transferred network from Counterparty to Ethereum, due to benefits in speed, lower fees and access to a larger and more active blockchain community.

Year

2015 &
2017

Tokens Issued

<125
million

Latest Amount

\$30
million

Estimated Market Capitalization (\$mm)



- Storj first raised \$0.5 million in a 2014 ICO
- It has since maintained a fairly constant market cap, until the run-up prior to the 2017 ICO

Example 3: Storj (Cloud Storage)

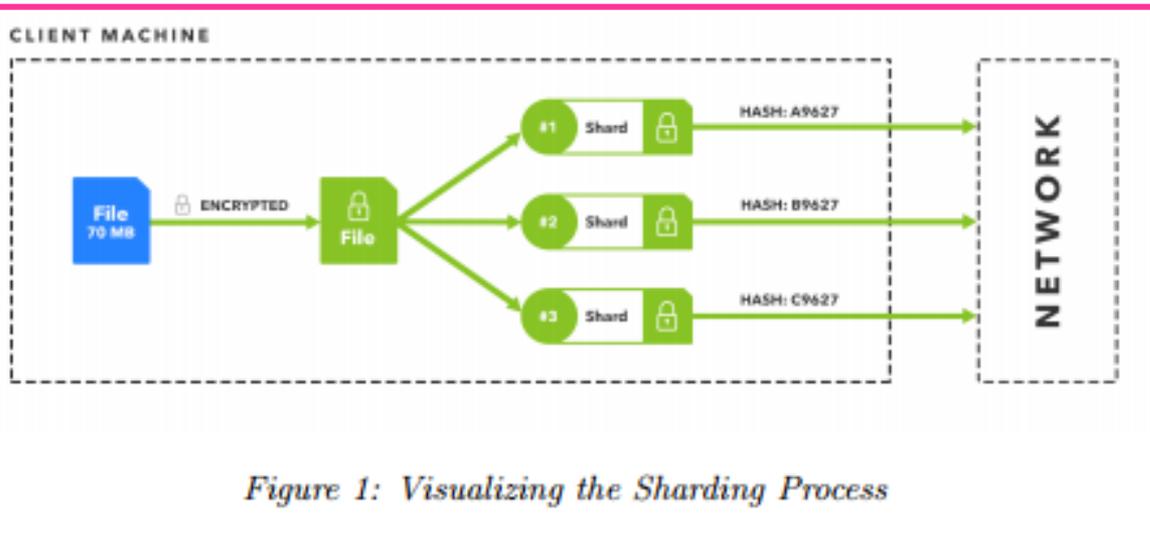


Figure 1: Visualizing the Sharding Process

Lower maintenance and overhead costs:

Data centres are not a necessity due to the decentralised nature of the network. This allows for competitive pricing, minimal operating costs and no costs from hardware redundancy. Data does not need to be backed up as nodes are mirrored onto others.

Security:

Centralised services can be prone to regular malicious attacks. Expanding nature of nodes makes finding other shards increasingly difficult and encryption ensures further safety.

Discussion

- The system consists of a community of users, farmers, that contribute computational storage and bandwidth to the network. This is done through the creation and maintenance of nodes.
- Thereafter users can upload data, which is encrypted and then split into equally weighted shards. The shards are distributed through the farming nodes in the data owner's network and the location of each shard is stored on a centralised, off-chain server.
- When the users wishes to withdraw their data, a transaction is initiated, scanning the merkle tree for shards, verifying identity and reassembling to produce the requested data file.

Example 4: Status (Media & Social)

Overview

- Status is an open source messaging platform, payment system and mobile web browser designed to run distributed applications (“Dapps”) on the Ethereum Network.
- Ether and Chinese Yuan were accepted in the Status ICO, with an exchange rate of one Ether for 10,000 SNT.
- Although Status is the first of its kind, messaging Dapps such as Echo and Blokcom are still in development but can be expected to create competition soon. Additional services such as Parity provide an add-on to browsers like Chrome so that users can integrate the Ethereum client into the browser.
- Status expected large demand for its ICO and attempted to create a “dynamic ceiling” ahead of launch that adjusted to allocate tokens to the long tail of interested investors. As a result, the ICO had thousands of participants but also many failed transactions.

Year

2017

Tokens Issued

41% of
total supply

Amount

\$95
million

Token Price (in ETH)

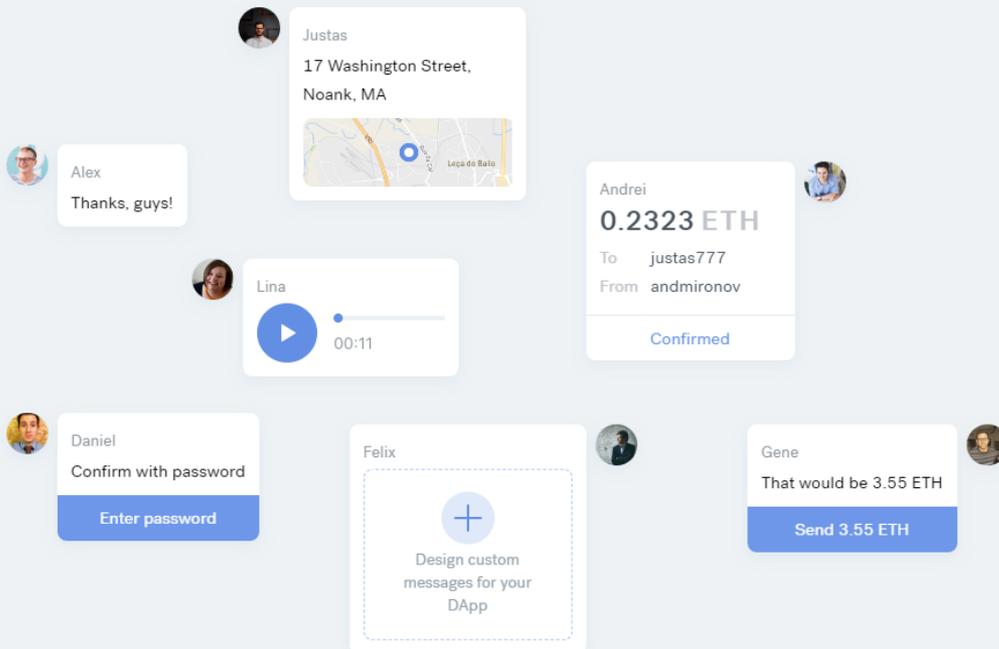


- Status Network Token prices are only available in Ether
- Growth started on June 16th when the ICO began. The initial rise is due to a single investor investing \$8.5 million of ETH. The dip is due to the large amount of network congestion causing tens of thousands of pending transactions.

Example 4: Status (Media & Social)

Smarter private messaging

Status is more than a messenger. Send payments and smart contracts to friends from within chats, and enjoy encrypted messaging by default, using a peer-to-peer protocol that doesn't rely on centralized servers.



Strikes at the heart of messaging apps and social networks while emulating WeChat's functionality

Discussion

- Status is a user-driven application built on the Ethereum blockchain with the vision of decreasing data collecting and manipulation by centralised social networks (i.e. Facebook).
- Status aims to give its users control of personal data through a variety of built-in decentralised technologies.
- The application offers three central features:
 1. Send/receive encrypted messages, smart contracts and payment
 2. Browse, chat and interact with other decentralised apps
 3. Store and control Cryptocurrency in the Status Wallet
- The Status Network Tokens will be used to empower stakeholders within the network. This is applied across governance, push notifications, usernames and more.

Example 5: Gnosis (Markets)

Overview

- Gnosis is an accessible prediction market platform that enables collaborative information sharing and rewards participants for contributing their opinions.
- Gnosis used a modified Dutch auction to minimize the benefit for those participating early compared to those participating at a late period of the ICO.
- The ICO raised \$12 million in one day. All investments were to be made in Ethers only.
- Most notable competition for Gnosis is the prediction market Augur. Gnosis is more focused on being a platform for the creation of dapps.
- Gnosis have set aside 7.5% of their operating budget for potential legal challenges and to aid Dapp developers with uncertain regulatory environments. This includes for services such as betting, gambling, insurance and financial market applications.

Year

2017

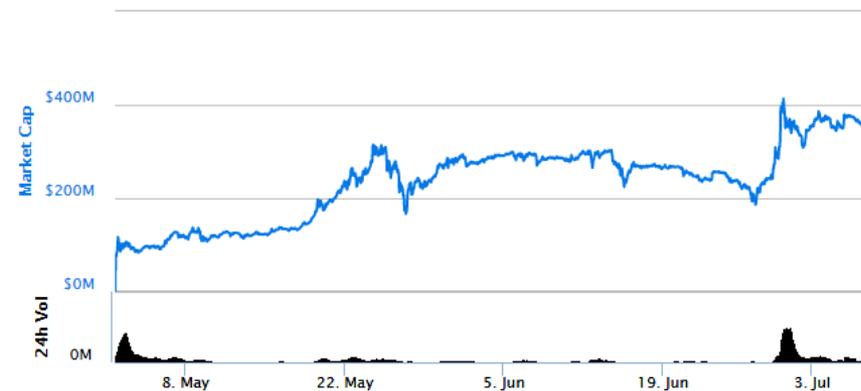
Tokens Issued

10 million

Amount

\$12 million

Estimated Market Capitalization (\$mm)



- Gnosis is built on the Ethereum protocol and has maintained fairly consistent growth since its inception as the firm grew in popularity.
- Notable increase towards the end of June as Blockchain related firms have grown in recognition.

Example 5: Gnosis (Markets)

PLATFORM LAYERS



Gnosis consists of four main components, Ethereum, IPFS, GnosisDB and GNODEX

- IPFS is utilised to store static files in a distributed file system
- GnosisDB provides a distributed and scalable search through both on and off-chain data, which can be used to query event descriptions for prediction markets
- GNODEX is a decentralised exchange for the trading of predictive assets

Discussion

- Gnosis enables the creation of prediction markets. It is a smart contract ecosystem that rewards participants who can successfully predict event outcomes
- Users take a position on whether they agree or disagree with a statement; if correct the winning shares are redeemable for an economic reward, if not they become worthless
- Users are only incentivized to give their opinion on a topic if they believe they have superior knowledge on that topic
- This prediction model will provide more accurate results than a typical poll or survey, in which participants have nothing at stake
- Prediction markets have the potential to for aggregating the wisdom of the crowd at an unprecedented scale

Sources of Capital



Understanding large Cryptocurrency investors, colloquially called “Bitcoin Whales”

- **Capital ownership mechanics in the cryptocurrency ecosystem matter and partly explain the current price fluctuations**
 - Bitcoin was launched in 2009, which has provided for 8+ years of price discovery and ecosystem maturity
 - Early developers and investors are likely to have millions of USD equivalent of Cryptocurrency
 - Cryptocurrency mining companies, mining pools and exchanges are also likely to hold large reserves
- **Institutional investors are in the early adoption phase of investing in the asset class, but are becoming as important as High-Net-Worth early adopters**
 - Some private equity (Fortress, via Pantera) and venture capital (Union Square, Bain Capital) investors have seeded hedge funds and operating companies that invest in tokens, currencies and equity of projects
 - Structures like the Bitcoin Investment Trust, which now has a NAV of ~\$400 million, are large enough to move markets and require Over-The-Counter services for large transactions
 - Asian cryptocurrency investors are hard to identify, but are likely to similarly require enterprise services provided by firms like Richfund and Binary Financial
 - Despite attempts to create SEC-registered Exchange Traded Funds for the space, none have been approved
- **Impact of Whales is to distort prices and market mechanics on new offerings**
 - Just the capital gains on a hypothetical \$100 million holding in Bitcoin between 2016 and 2017 could easily fund many of the ICOs in the system
 - Short time frames for full funding (e.g. 30 minutes) suggest price insensitivity and large pools of available capital looking to (1) lock in the value of capital gains in a less liquid investment, (2) speculate for higher upside in a technology venture and (3) diversify portfolio exposure away from store of value
 - Overfunding can be destructive to developers of emerging projects by undermining incentives and credibility



Cryptocurrency market volatility likely created very large capital gains for early adopters

Total Marketcap of Cryptocurrencies (Apr 28, 2013 – Jun 22, 2017)



Price movement catalysts include:

- Growing mainstream awareness through the media
- Technical improvements in underlying protocols (better speed, ability to handle larger volume, power consumption)
- Enterprise level agreements to use technology (Ripple/ETH)
- Global wealth looking for new asset classes and diversification
- Creation of new exchanges and listings of new tokens

Marketcap (\$ billion; Jun 22, 2017)

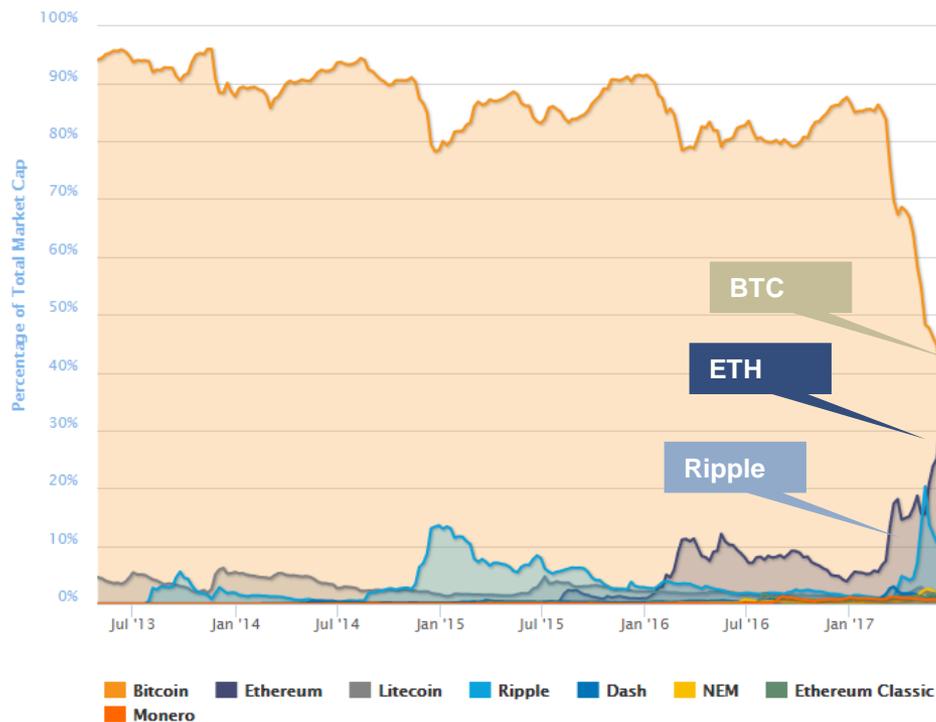




Decreasing Bitcoin dominance suggest maturity – market participants ready to buy assets other than “digital gold”

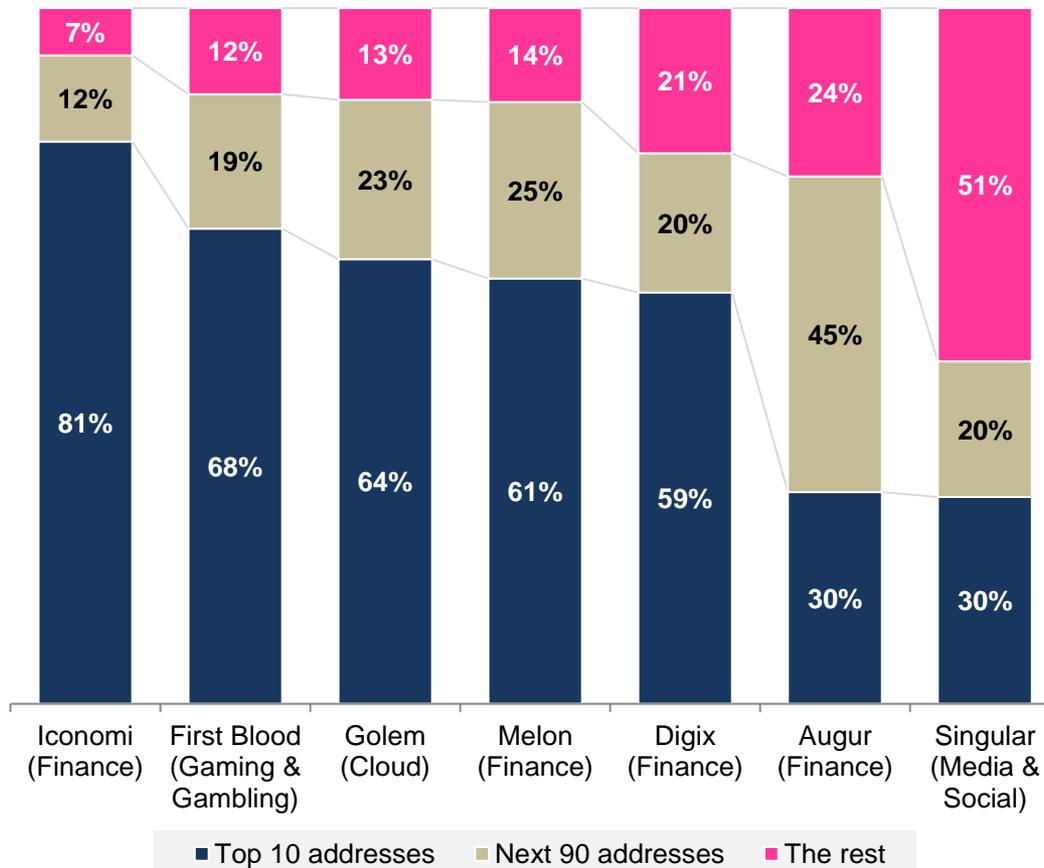
- Early phase of cryptocurrency market development focused on who will be the “digital gold” – and Bitcoin won through the largest developer and adoption ecosystem
- However, current battle is for other functionalities, such as global decentralized computing or smart contracts infrastructure
- Ethereum’s lead in monopolizing smart contracts infrastructure and development is complementary and different from the Bitcoin usecase (even though smart contracts can be built on top of BTC in a less elegant way)
- The third largest currency is Ripple, whose value is to create interoperability between blockchains, creating something like a non-fiat reserve currency
- As the ecosystem matures, holders of any one particularly currency may want to de-risk through diversification in what are different asset classes trading on the same market

**% of Total Crypto Market Capitalization
(Apr 28, 2013 – Jun 22, 2017)**



Large market participants are able to dominate the new assets coming up through ICOs

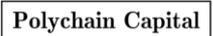
Distribution of Token Ownership in Select Assets



- This chart shows the concentration of token ownership by address band – first 10, next 90, and all the rest
- A holder of an asset may have one or more addresses, which, like an IP address, are a machine-readable string of numbers
- A holder may have addresses that are generated by an exchange or by a wallet, third party of their own
- As a result, actual concentration is likely higher than shown
- Founders and developers also hold a concentrated position in their own project, mitigating to some extent the external ownership concentration shown

There are several possible sources for these whales, ranging from Crypto players to traditional capital

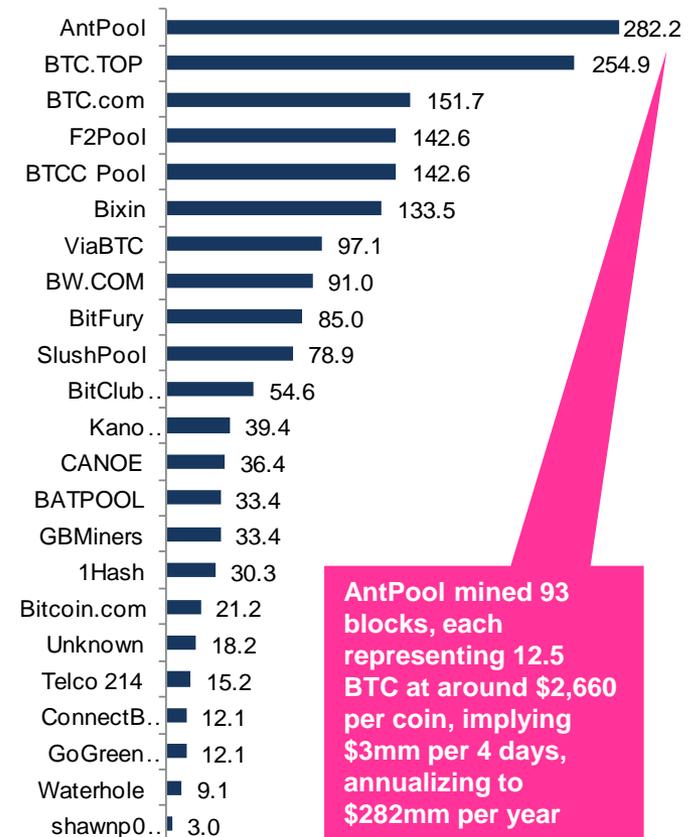
Sources of Capital

Mining Pools	Exchanges	Funds & Traders of Currencies	Initial Coin/Token Offering Investors	Traditional Financial Investors
    	    	     	    	   
<ul style="list-style-type: none"> • Collection of specialized computing clusters that compete to get the next coin distribution • Early beneficiaries of cryptocurrency wave 	<ul style="list-style-type: none"> • Retail and OTC venues that allow for conversion between fiat and digital currencies, as well as between coins/tokens • Listing ICO tokens on an exchange creates liquidity 	<ul style="list-style-type: none"> • Funds & other pools of capital that focus on trading cryptocurrencies for gains, rather than investing into tech projects • Many were started during Alt Coin explosion 	<ul style="list-style-type: none"> • Large investors that have institutional or private capital to invest in emerging technology projects • Increasingly institutional mandates, many in Asia 	<ul style="list-style-type: none"> • Venture and Angel investors in the equity of companies working on Blockchain solutions • Are now considering ICOs as a comparable investments

Miners in Proof-of-Work Blockchains are gold diggers that annualize to hundreds of millions of USD in proceeds

- In a proof of work blockchain like Bitcoin, miners run software that:
 1. updates and verifies the ledger in a decentralized way and
 2. distributes rewards for their work in an algorithmic manner that is proportional to computing power spent on an arbitrary cryptographic problem
- Bitcoin has an algorithm for controlling money supply
 - Total supply is fixed at 21 million BTC
 - Current supply is 16 million BTC
 - Since 2009, miners have been receiving blocks of BTC resulting from their activity
 - The size of the blocks has decreased from 50 BTC, to 25 BTC, and now to 12.5 BTC, continuing to decrease every 4 years
- Cryptocurrency miners are either large industrial computer-farm operations that run specialized hardware (e.g., Bitfury) or crowds of people that pool together to increase the likelihood of a mining reward for the pool (e.g., Slush Pool)
- Ethereum also uses proof-of-work and has miners, but is considering switching to an alternate governance mechanism called proof-of-stake that is less computing intensive
- Machine learning can be used to optimize which cryptocurrency should be mined per unit of computing power
- There is no general requirement for a token/coin to be mined. Supply controlled by a development team arbitrarily is a governance issue.

Annualized Mining Proceeds (\$mm, based on Jun 16-20, 2017)



AntPool mined 93 blocks, each representing 12.5 BTC at around \$2,660 per coin, implying \$3mm per 4 days, annualizing to \$282mm per year

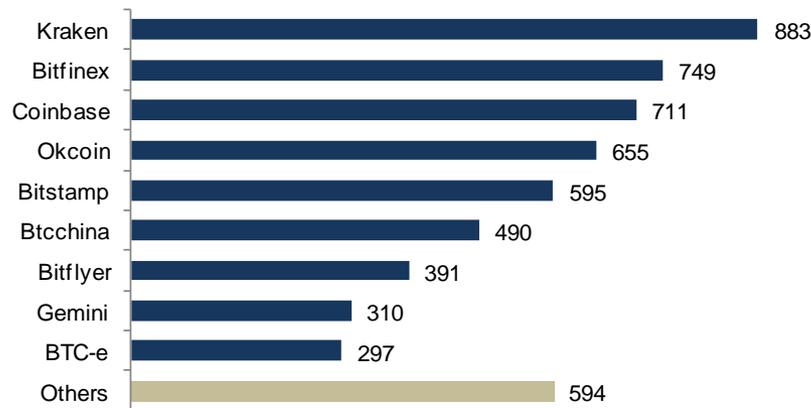


Exchanges also play a major role in the ecosystem and process billions of USD equivalent in trading volume

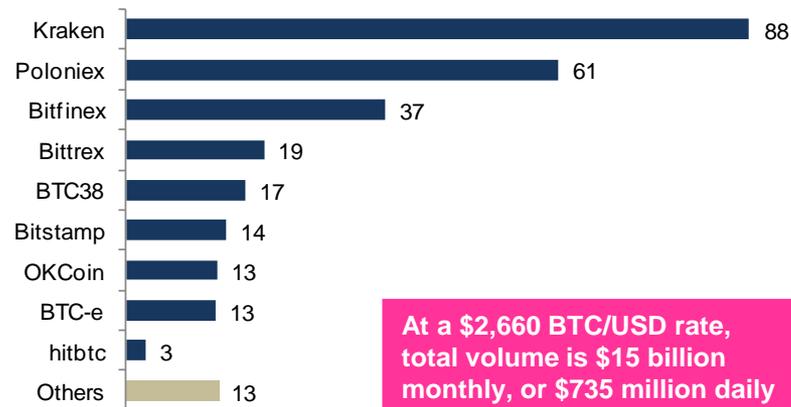
- Exchanges provide liquidity between fiat (e.g., USD or GBP) and cryptocurrencies (e.g., BTC or ETH) and do some regulatory compliance
- They also provide liquidity between different cryptocurrency pairs (e.g., BTC and ETH)
- Not all tokens are available everywhere driven by regulatory concerns about exposure to US Securities law – for example, tokens like Antshares are only available on Chinese exchanges. To access this token, an American customer would need to:
 - Buy Bitcoin on an American facing exchange for USD
 - Transfer Bitcoin to the Chinese exchange
 - Use Bitcoin to buy Antshares
- Exchanges also function like wallets for the more casual traders who do not set up software or hardware wallets. Therefore, exchanges must work hard to secure these brokerage balances as they are high target for hackers.
- In order to make markets in tokens, it is possible that exchanges end up being large owners and meaningfully move prices

Volume of BTC per Exchange (in thousands)

30 days (05/23-06/21)
Source: Bitcoinity



1 day (6/21-06/22)
Source: CryptocoIncharts



At a \$2,660 BTC/USD rate, total volume is \$15 billion monthly, or \$735 million daily

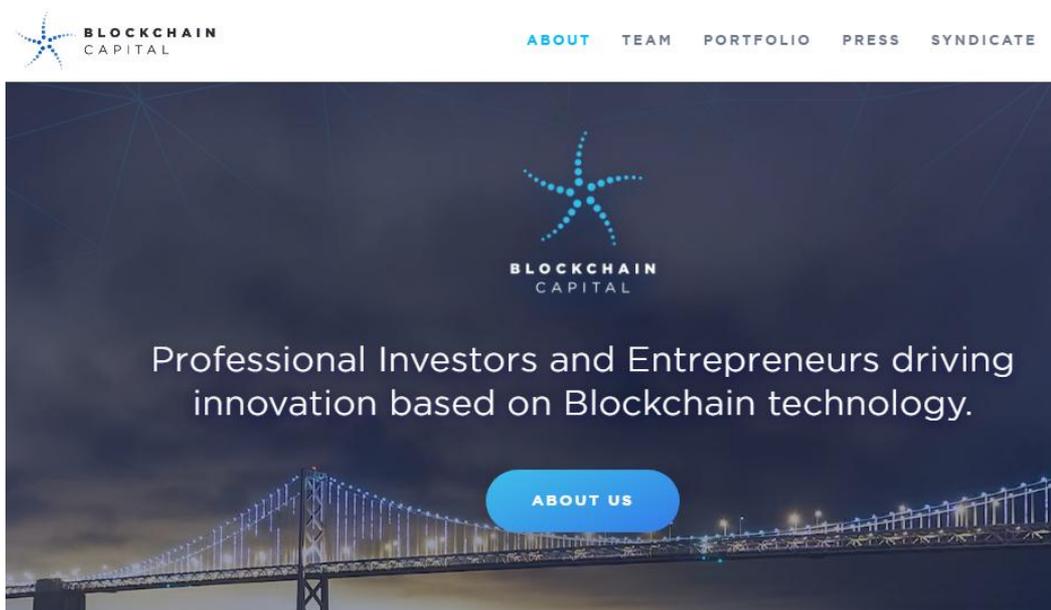
Traditional Investors are waking up to the opportunity and starting to allocate capital

- **The venture capital community has been most engaged with the space**
 - The earliest sets of investments in the space targeted Bitcoin infrastructure
 - Private blockchain projects like Chain, R3, and Digital Asset Holdings became the next wave
 - There is a current realization that ICOs have a similar risk profile to venture investments, and that participating in them within a new structure is worthwhile
 - As a result, venture funds have invested into either hedge fund (Polychain) or operating company (Digital Currency Group) structures that are indexed to the rise of the sector
 - Like Crowdfunding, public participation in ICOs may compete with venture capital as an asset class
- **The high finance communities (hedge funds, private equity) are just learning the basics**
 - Though some firms like Fortress have seeded strategies targeting Crypto, it is not yet a broadly accepted asset class given the lack of institutional structuring
 - The Bitcoin Investment Trust provides a stark example of bridging the gap between HNW investors / institutions and an acceptable legal structure
 - Structured products backed by broker/dealers that synthesize underlying digital currency returns are possible
 - There are ICOs, like ICONOMI, that aim to package cryptocurrency indexes into an investable product
- **Retail demand is bubbling through, but has not been able to access the asset class easily**
 - Technical understanding is still fairly important in being able to set up accounts and select investments
 - The Winklevoss have been advocates for creating a Bitcoin ETF, but the SEC has stalled the project for years and not allowed it to market; similar efforts are happening for Ethereum
 - Some roboadvisors like Hedgeable hold Bitcoin as part of a core-satellite strategy for retail clients

Investor Example: Blockchain Capital

Overview

- Early investor in Blockchain companies
- Portfolio includes Chain, BTCC, BitFury, Ripple, Blockstream, Coinbase, itBit
- Angellist syndicate shows average investment size of \$160-250K
- Launched the first venture capital Initial Token Offering raised \$10MM in 6 hours
- Team includes Brock Pierce, Bart Stephens and Brad Stephens – a combination of hedge fund and internet culture backgrounds
- Pierce previously founded video game gold farming company IGE/Affinity, which had reportedly received a \$60MM investment from Goldman Sachs, faced a class-action lawsuit and nearly went bankrupt, before installing Stephen Bannon (of Breitbart fame) as CEO



Launched

2013

Investments

54

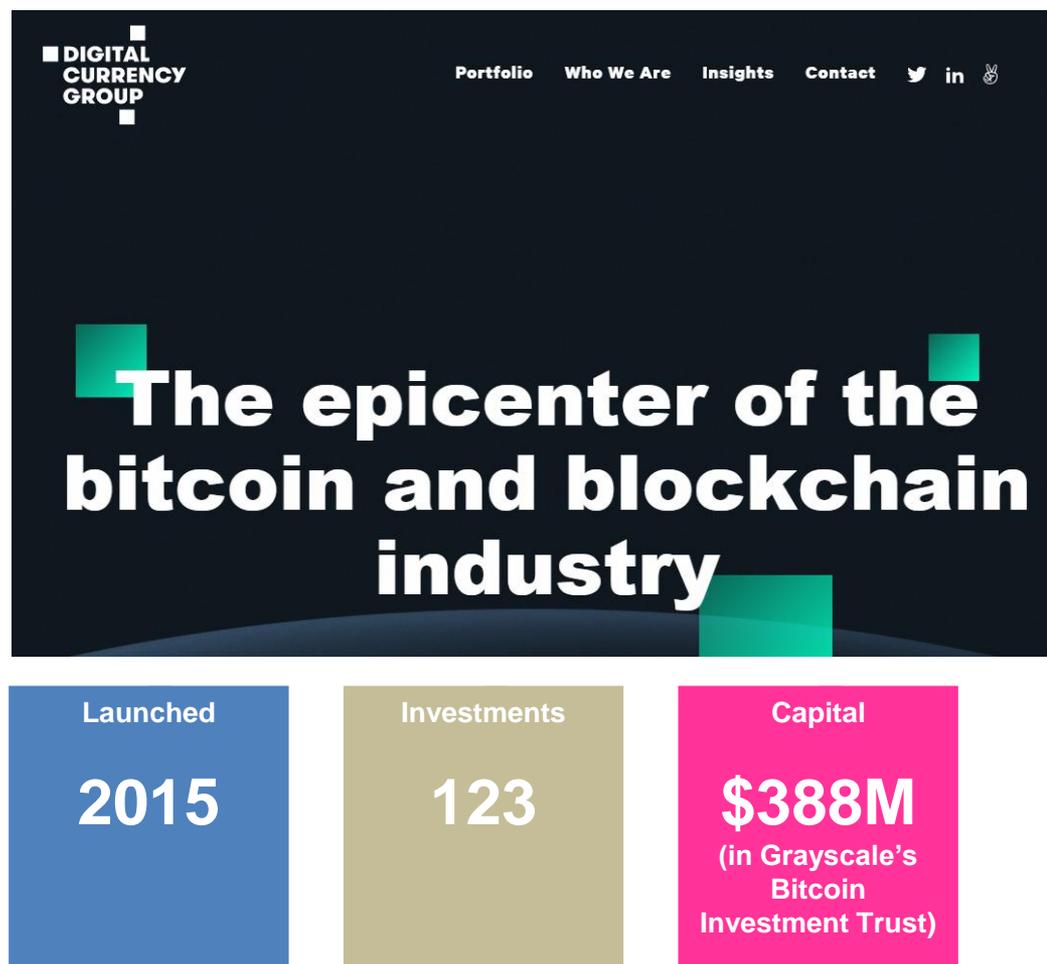
Capital

\$23mm

Investor Example: Digital Currency Group / Grayscale

Overview

- Holding firm focused on investing and developing businesses that deal in bitcoin and other cryptocurrencies
- Backed by Bain Capital Ventures, MasterCard, New York Life Insurance Company and CIBC, among others
- Portfolio includes Axoni, Bitflyer, Bitpesa, Bloq, Chain, Circle, Coindesk, Everledger, Gem, Moni, Ripple, and Zcash
- Board includes Barry Silbert, Glenn Hutchins, Lawrence Lenihan – a combination of institutional tech investors and entrepreneurs
- Silbert previously founded Secondmarket, a platform to provide liquidity for private shares, which was sold to Nasdaq in 2015
- Silbert also founded Grayscale, which runs the Bitcoin Investment Trust and is under the DGC umbrella



Investor Example: Polychain Capital

Overview

- Hedge fund which invests in a diversified portfolio of blockchain tokens
- Backed by Union Square Ventures, Andreessen Horowitz among others
- Investment focus on the infrastructure layer of public blockchains, rather than the applications built on top of those layers. Tokens must interact within the business, rather than behave like a security.
- Examples of target projects include Tezos, Cosmos, IPFS, Polkadot and Ethereum
- Run by Olaf Carlson-Wee, who was the first employee USV-backed Coinbase, and Ryan Zurrer, a former CEO of a Brazilian energy firm

POLYCHAIN CAPITAL

The emergence of bitcoin and subsequent blockchain technologies has generated a new digital asset class in which scarcity is based on mathematical properties. Through cryptographic verification and game-theoretic equilibrium, blockchain-based digital assets can be created, issued, and transmitted using software. Polychain Capital manages a hedge fund committed to exceptional returns for investors through an actively managed portfolio of these blockchain assets.

The materials on this website are for illustration and discussion purposes only and do not constitute an offering. An offering may be made only by delivery of a confidential offering memorandum to appropriate investors. Past performance is no guarantee of future results.

Contact: olaf@polychain.capital

Launched

2015

Investments

n/a

Capital

£10M

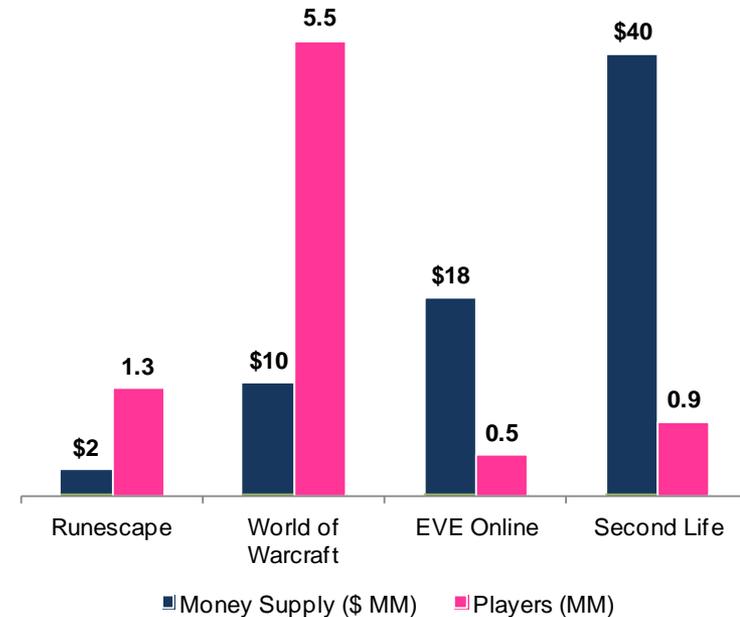
Strategic Context and Direction

Digital currencies are a known emergent phenomenon in digital worlds, like video games and digital sandboxes



- Virtual currencies existed before Bitcoin in virtual worlds like World of Warcraft, Runescape, EVE Online and Second Life
- These worlds range from video games to 3D sandboxes where people can create and communicate
- Companies developing these worlds act like a central bank issuing digital money supply to keep functional economies of entirely virtual activity
- This phenomenon shows how entirely digital tokens that represent utility value in a non-physical world can have both utility value and speculative value, as some currencies traded on vibrant exchanges
- In mid-2000s, people like Brock Pierce of Blockchain Capital ran companies that “farm” game currency using software bots or outsourced humans

Money Supply and User Base of Popular Virtual Economies (2014-2016)

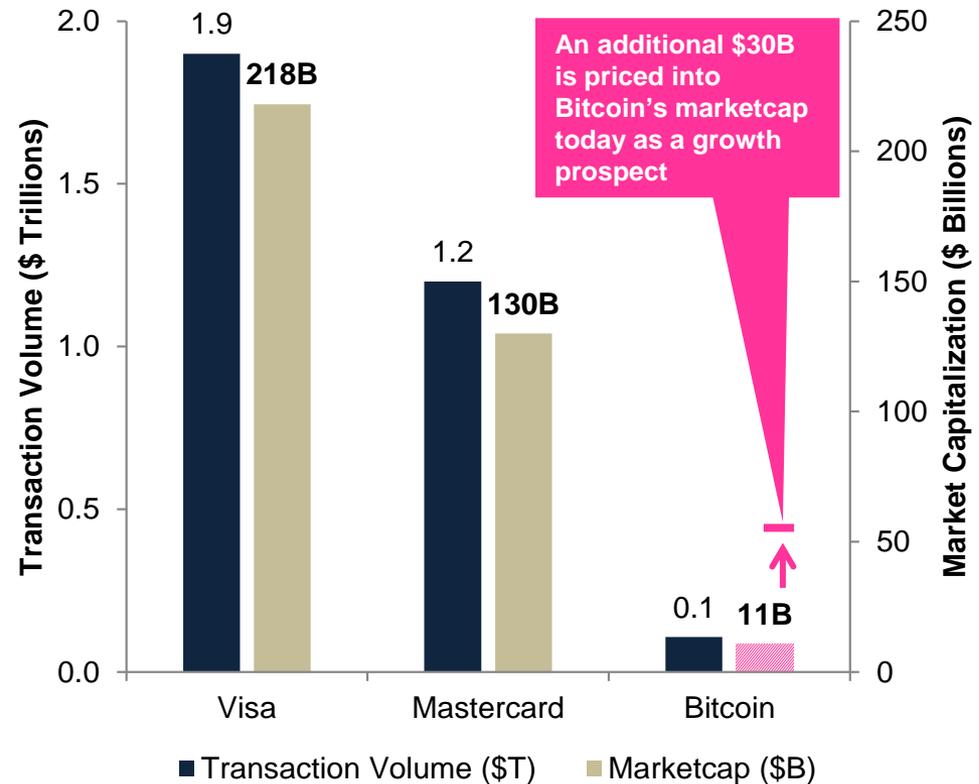


- Money supplies of virtual currencies range up to \$40 million equivalent, with player bases up to 5 million
- Linden Labs, the creators of Second Life, claims a \$500 million GDP for their virtual world in 2015

It is time for financial incumbents to acknowledge the meaningful economic activity that is being developed

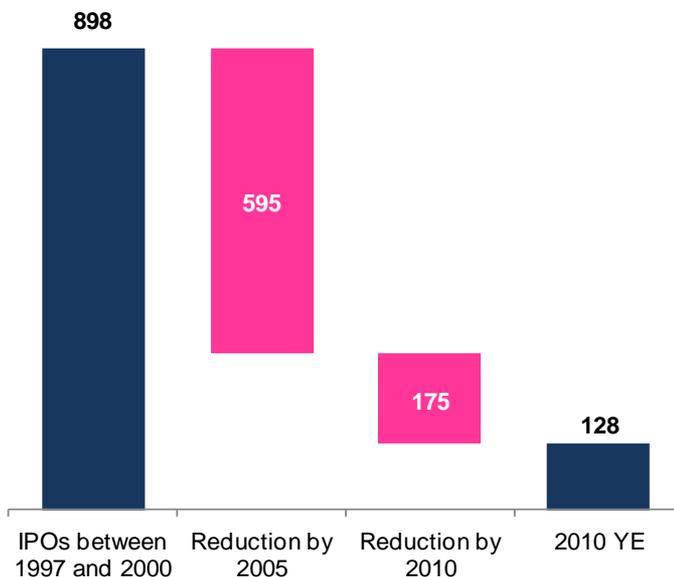
- Looking at the transaction volumes of Visa and Mastercard, they were \$1.9 trillion and \$1.2 trillion in 4Q 2016
- The marketcap of both firms is roughly 1% of total transaction volumes – admittedly a crude but useful metric
- Taking a similar view of Bitcoin and its \$107 billion in transaction volume during the last 12 months, the value of the ecosystem is \$11 billion. Ethereum has quickly reached a similar transaction volume, with each blockchain doing over 250,000 per day.
- That number can be discounted by the heavy correlation of those funds with speculation, lack of full scale, and technical and regulatory hurdles
- It can be buffered by the other 50% of the Cryptocurrency assets and the next-generation growth technology that is being built in the ecosystem

Transaction Volume and Value of Network



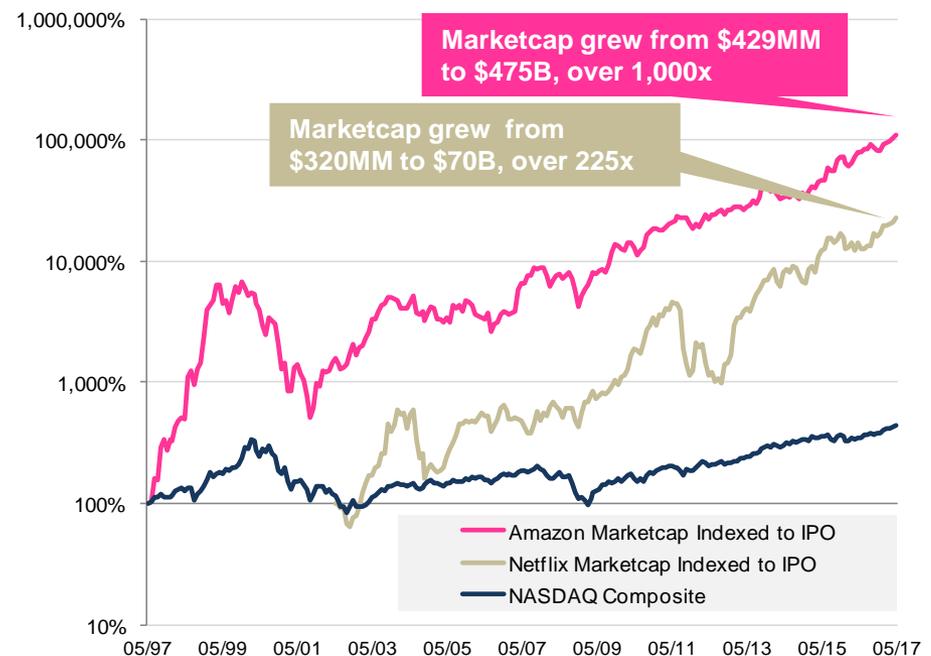
The Dotcom bubble teaches a valuable lesson – most new ventures die, but survivors become winners that take all

Tech Company Initial Public Offerings ('97-2000)



- On a per-company basis, IPOs from the Dotcom bubble have done spectacularly poorly, with an 86% company failure rate by 2010
- Annual share-price return for this cohort was - 3.7% between 2000 and 2010

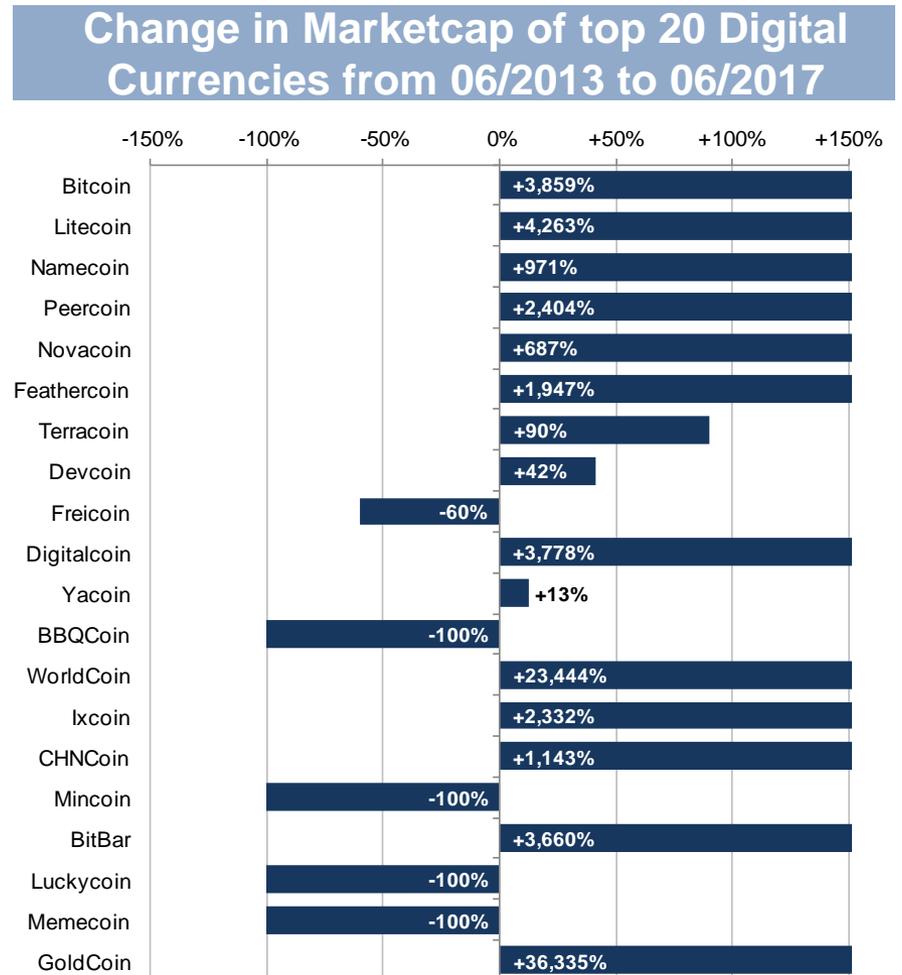
Performance of Dotcom Survivors (logarithmic, indexed to IPO date)



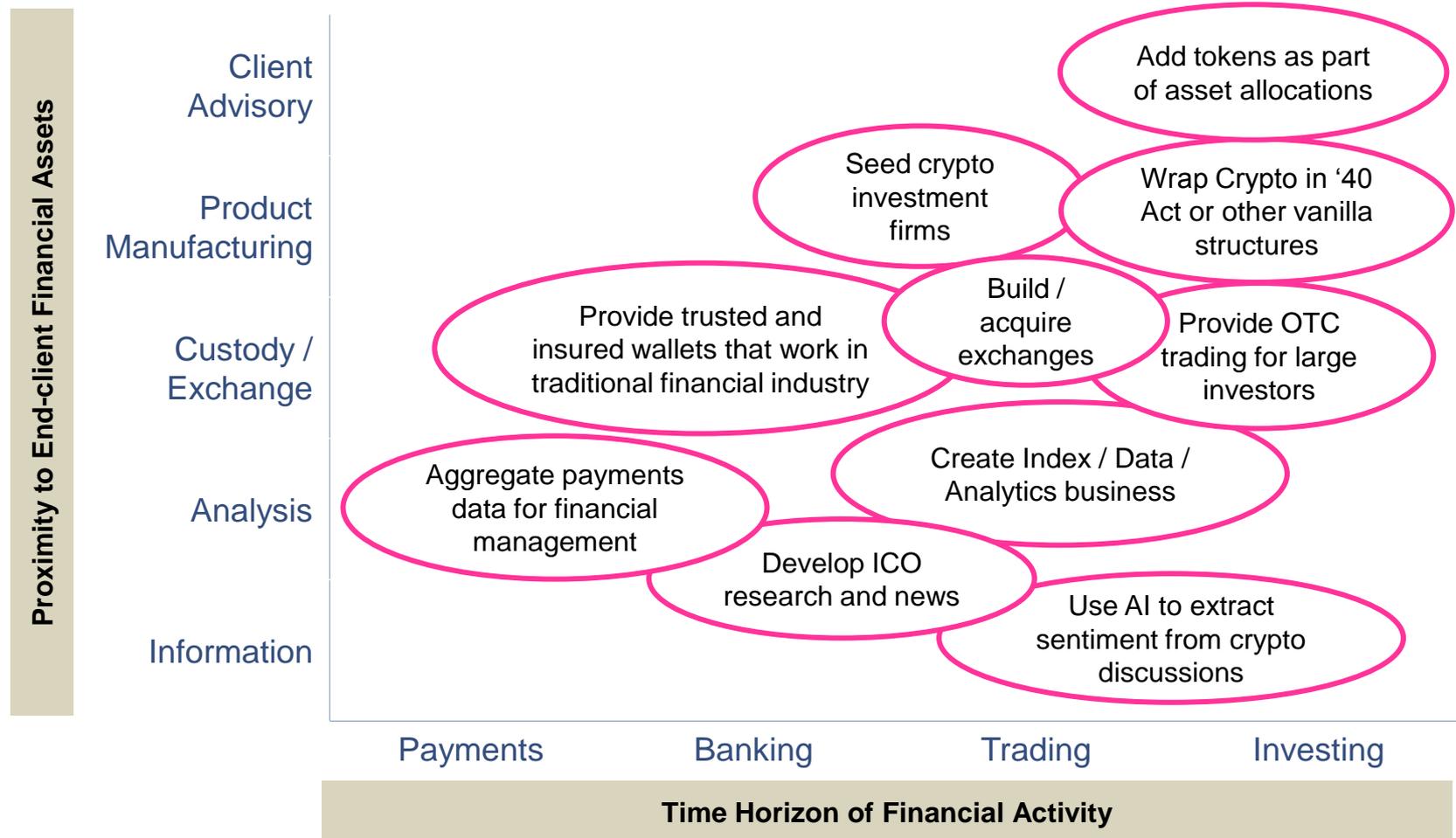
- Yet, the underlying thesis was correct, and individual winners like Amazon and Netflix grew to dominate entire industries
- Timing is extremely important. Pets.com IPOed with \$375 million and shut down later that year; Zooplus was launched in 2006 and in 2017 is worth over \$1 billion

The recent Alt-coin bubble also teaches a valuable lesson – the market is quickly separating the wheat from the chaff

- There has been massive volatility and rotation in the top digital currencies over last 5 years
- When looking at top 20 cryptocurrencies in June 2017, only 2 (Bitcoin and Bytecoin) were in the top 20 four years prior
- When looking at top 20 cryptocurrencies from four years prior, the distribution of returns is fairly inconsistent as evident on the diagram to the right
- However, the current leaders are building next generation protocol layers that has potential as new Internet (and Internet of Things) infrastructure layer across the entire world
- Whoever does survive is likely to experience winner-take-all dynamics and transform their industry

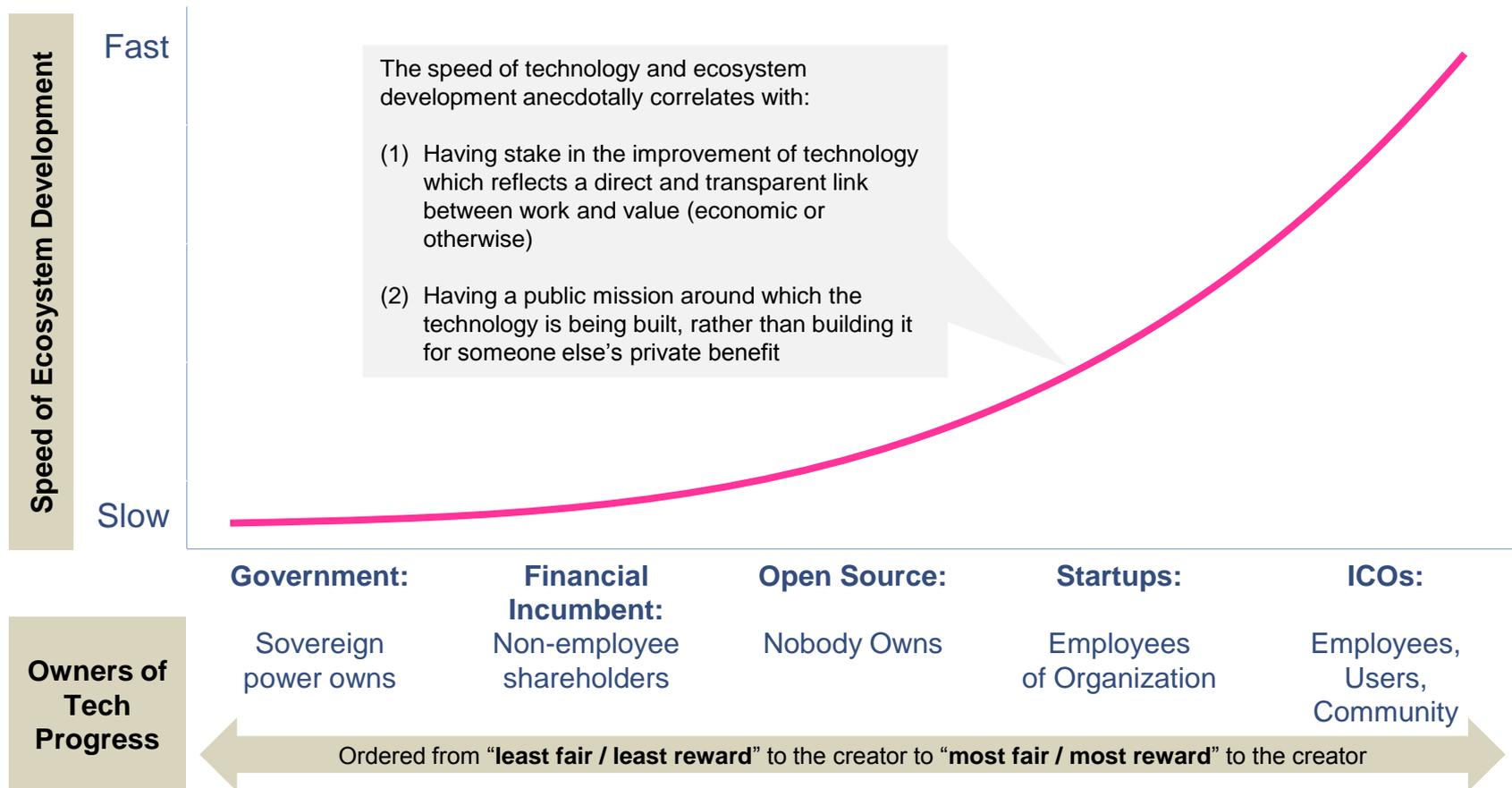


Many Opportunities for Financial Services Incumbents to incorporate ICOs as an asset class into business model



Similarly, opportunities to leverage the ICO mode of thinking can help develop community and tech

Effect of Participation in Technology Layer on Speed of Development



Can incumbents tap into the power of ICOs to operate differently?

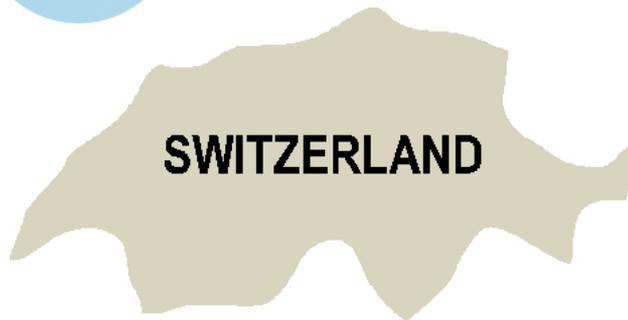
- **Closed banking networks must become more open through regulation like PSD2**
 - The value of opening up data and APIs is in third party services that choose to develop on top of a particular ecosystem
 - Therefore attracting Fintech startups and innovative developers must be a top priority for a successful open banking initiative, or risk becoming the Blackberry relative to the Apple/Google app stores
 - Are there tokenizable assets, like internal money movement systems or personal financial data, that could be unlocked for use in a secure way to build economic value for the ecosystem as a whole?
 - What would happen if Visa did an ICO for money movement tokens or Facebook did an ICO for units of human attention?
- **Many private blockchain projects – from Hyperledger, Enterprise Ethereum, Ripple, R3 and others – are already putting in place the technical foundation for tokenizing incumbents**
 - There remains a question of interoperability between private and public chains in the long run, as well as the general viability of either effort
 - Depending on a financial firm's risk appetite, they could build ways to move risk and trust between these ecosystems and attract developer effort through ICOs
 - By analogy, imagine buying a virtual good, like a house, in some particular video game. Then imagine being able to exchange or move that virtual good into a completely different digital world. This good will have passed from one network to another, and would have functional implications. Could this be done for securitization/tranching?
- **Don't be afraid to experiment, fail, learn and experiment again. This is unproven ground.**

Regulatory and Governance Issues

The current legal and regulatory climate is uncertain for ICOs and has not kept up with the fast developments

- **There is no definitive agreement on what tokens actually are**
 - Like **currencies**, digital tokens can be used to buy and sell certain goods and services; Bitcoin in particular has cemented this understanding of the ecosystem through outside parties.
 - Like gold and other precious metals, digital tokens can be seen as **commodities** or **assets** that store value or perform some particular function
 - Like equities and packaged investment products, digital tokens can be viewed as **securities** or **financial instruments**, especially when they aggregate other tokens into “investment funds”
- **There are no obvious geographic or jurisdictional lines in which the Crypto world behaves**
 - While projects funded by tokens can be located in a particular geography, they are just as likely to be massively distributed, with developers across the world under different jurisdictions
 - Many contributors are in Eastern Europe, China and other parts of the developing world, where regulatory expectations and consumer protection are much looser, or are manipulated for competitive reasons
 - Participants may say they are building “companies”, but that does not mean there are actual legal entities with meaningful contracts in place; this is an important point to diligence for potential investors
- **Inevitable clash between the old and new worlds as projects move to the mainstream**
 - The Crypto-economy wants to be self-regulated and is allergic to sovereign power, but governments will want to regulate it once a large proportion of consumers in a geography has meaningful exposure
 - Exchanges are a centralized point of failure and an easy to target for control. If the ecosystem moves to decentralized exchanges, it will be far more difficult to contain. Think Napster (central servers) vs PirateBay (decentralized).

State of Regulation: Switzerland



2016 GDP: \$496 billion

Key Regulators

FINMA

Crypto-tokens are

**Asset,
not a
Security**

Overview – Directional Guide, not Legal Advice

- Switzerland is considered as a ‘Bitcoin-friendly’ country and is home to the “Crypto-Valley” of the world, Zug.
- Any company wishing to do business in Switzerland must gain approval from the Swiss Financial Market Supervisory Authority FINMA. However, no special license is needed for a Cryptocurrency business.
- If activities are subject to the Swiss Anti-Money Laundering Act (buying /selling Bitcoin on a commercial basis and operating trading platforms), companies can be licensed as a directly supervised financial intermediary (DSFI) or become a self-regulatory organisation (SRO).
- The Swiss government is fostering Fintech innovation in Blockchain area, exploring the creation of a new regulated entity called the “crypto-bank”, but will not compromise on AML and KYC.
- Digital Currencies are not considered securities but assets. Companies such as Bitcoin Suisse AG help start-ups ICO and take them through the legal process.
- A new fund called Crypt Fund AG is planned for Q4 2017 with an AUM target of €100 million under the Swiss Collective Investment Schemes Act (CISA).
- Some Crypto companies are jurisdiction shopping and moving to Switzerland, e.g., Xapo., while retaining specialized licenses elsewhere

State of Regulation: Singapore



2016 GDP: \$487 billion

Key Regulators

**Monetary
Authority of
Singapore**

Crypto-tokens are

**Asset,
not a
Security**

Overview – Directional Guide, not Legal Advice

- The Monetary Authority of Singapore (“MAS”) controls regulations and puts forward proposals to the government for approval
- MAS has provided regulatory clarification on virtual currencies and crypto-exchanges since 2014:
 - Digital currencies are not considered as regulated funding sources or payment instruments, and are instead seen as assets
 - MAS does not regulate the safety and soundness of virtual currency intermediaries nor the proper functioning of virtual currency transactions
 - It does regulate KYC and AML requirements to prevent money laundering and terrorist financing
- A Proposed Payment Framework (PPF) is being developed to review existing payments and remittance frameworks and will provide for licensing, regulation and supervision of relevant segments of payments ecosystem and remittance business, including virtual currency intermediaries
- MAS is also working on Project Ubin, which will use DLT to issue Central Bank Digital Money
- Cooperation agreement signed for Fintech regulation with Switzerland

State of Regulation: China



2016 GDP: \$21,140 billion

Key Regulators

**People's
Bank of
China**

Crypto-tokens are

**Non-
monetary
digital asset**

Overview – Directional Guide, not Legal Advice

- Regulation is set by the People's Bank of China, influenced by the Digital Currency Research Department
 - PBoC is planning on implementing a sandbox regulation mechanism similar to UK and Singapore with the aim of reaching a cooperative innovation ecosystem where innovators can formulate and report their own risk-control measures
 - Bitcoin is considered a non-monetary digital asset. However, exchanges have faced high regulatory scrutiny, with a focus on high KYC/AML barriers (video identity verification) and consumer protection (no margin or zero-fee trading)
 - Blockchain is considered a separate technology from decentralized digital currency
- Current ICO scene is unregulated with 2 million+ people participating, but PBoC plans to regulate the ICO market in the near future due to high risk and unsuitability for non-professional investors as well as monitoring difficulties.
- View that national fiat will be cornerstone of the next-generation financial infrastructure and the future of digital economic development. As an example, the Royal Chinese Mint is experimenting with digitizing the Chinese yuan using Ethereum.

State of Regulation: United Kingdom



2016 GDP: \$2,788 billion

Key Regulators

**Financial
Conduct
Authority**

Crypto-tokens are

**Private
Currency**

Overview – Directional Guide, not Legal Advice

- The FCA has taken a neutral approach to Distributed Ledger Technology (“DLT”), waiting to learn more from the regulatory Sandbox.
- The sandbox provides a supervised space for authorised and unauthorised firms, where trials are overseen by the FCA using a customised regulatory environment for each pilot.
- It has also issued a broad first stage discussion paper on DLT, which includes a very general question on ICOs. This may then turn into a consultation paper, policy statement and then Handbook notice, but there is no guarantee the topic will be explored or addressed.
- ICO issuers are acting on their own interpretation of the rules, with the risk that future regulations could be damaging to participating firms.
- Cryptocurrencies are treated like private money; VAT is only applicable for commissions made by digital currency exchanges as digital currencies are outside the regulatory perimeter due to it not being a regulated financial product.
- GDPR regulation of May 2018 may create potential issues with ‘right to be forgotten’ since blockchains cannot forget.
- In order to use cryptocurrency exchanges, users need to register, provide proof of residency and identity for AML and KYC compliance procedures before being given access to the platform’s services.

State of Regulation: Russia



2016 GDP: \$3,745 billion

<p>Key Regulators</p> <p>Central Bank of Russia</p> <p>Russian Finance Ministry</p>	<p>Crypto-tokens are</p> <p>Financial instruments, not currency</p>
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Overview – Directional Guide, not Legal Advice

- Russia has been hostile to cryptocurrency historically, but given its popularity is now planning to assign a legal status to the digital currency to pave the way for a more structured crypto-ecosystem in the country
- The debate points to classifying crypto-tokens points not as a virtual currency but as legal financial instruments, similar to derivatives
- By recognizing Bitcoin and other cryptocurrencies as legitimate, the country intends to:
 - Implement regulations enforcing AML/KYC
 - Monitor all transactions and parties to these transactions
 - Tax capital gains in this asset class
- Core issue around sovereign control are bubbling through. The Bank of Russia has developed and tested an Ethereum-based blockchain prototype called 'Masterchain' for financial messaging, to be used by banks in Russia
 - Participating financial institutions include Sberbank, Alfa Bank and Tinkoff Bank (which confirmed usage of Ethereum's technology) and Russian payments operator, Qiwi Group
 - Will not connect to other Ethereum nodes, customized specifically for Russian market to build proprietary national blockchain

State of Regulation: United States



2016 GDP: \$18,560 billion

Key Regulators

SEC
CFTC
OCC
50 States

Crypto-tokens are

Commodities,
potentially
securities

Overview – Directional Guide, not Legal Advice

- Alphabet soup of regulators in the United States has made building cryptocurrency companies and issuing tokens difficult:
 - **SEC** has jurisdiction over securities, securities exchanges and brokers dealers. But it has not yet defined tokens as securities, though it rejected the application to launch a Bitcoin ETF
 - **OCC** grants bank charters, and under a considered Fintech charter may potentially allow a new category of “crypto-banks”. Existing national banks have broad powers to engage in activities but have not yet entered the business meaningfully.
 - **CFTC** defined digital currencies as commodities in 2015 in order to regulate activities involving digital currency futures, swaps, and other derivatives
 - **FinCEN** (part of Treasury) requires exchanges to register and have AML/KYC programs
 - The **IRS** has focused on capital gains in cryptocurrencies, going after exchanges like Coinbase and soliciting their entire list of customers, to enforce KYC/AML and reporting
- Each of the 50 States can, in principle, have its own regulation
 - **NY State Department of Financial Services** created a BitLicense regime (exchanges, money transmission) in 2015
 - **Delaware**, home of American incorporation, is working on projects to record and legally recognize corporate equity on a blockchain



In addition to regulation, participants should think about project governance, which falls into opposing camps

The argument for prioritizing the written Code

- In the Crypto-economy, all rules and governance purport to be digital. As a result, there is a strong desire to treat the written software code as the law of the land (“Code=Law”).
- Without a stable set of rules and norms that everyone can rely on (i.e., expecting no forced forks), developers cannot build new features and services or trust the impartiality of a currency
- Human-led systems, like central banks, fail and unhappy constituents may prefer mathematical rules

The argument for interpreting and applying existing Law

- Human society is imprecise and always evolving, governed by legal systems that are shaped by messy negotiations between specially trained legal thinkers; interpretation, empathy and social justice are core elements of guiding a complex economy and society
- Legal developments are further connected into politics via legislation, and draw their power from the entire population of a particular nation state

- While need for stability is important, interpretation is necessary and part of the human condition
- While the code is auditable by anyone, one needs a complex technical skillset to understand and attempt to predict certain outcomes that software generates. This is true for the legal skillset as well, but a lawyer may influence a particular judgment/outcome, whereas software only executes rules as written.
- Code=Law requires near-perfect upfront system design, rather than flexible, interpretable guidelines that are softened by human judgment

Legal thinkers beginning to consider whether and how public decentralized software can be financial infrastructure

N.Y.U. Journal of Legislation & Public Policy

A nonpartisan periodical specializing in the analysis of local, state, and federal legislation and policy

The Bitcoin Blockchain As Financial Market Infrastructure: A Consideration Of Operational Risk

- The paper questions whether a public decentralized ecosystem has the attributes for a global financial system through the following criticisms:
- Bitcoin is software, and therefore it will --
 - Have bugs by definition
 - Be vulnerable to a 51% attack, DDOS, or hacking of third parties like wallets and exchanges
 - Is ever-changing through new releases, where it is unclear who controls versions
 - Few people understand how it works
- Bitcoin has decentralized structure, and therefore nobody is responsible for performance, or can be treated as the definitive management or constituent
- Open-source software development process allows for code contribution of uneven quality
- Expertise problem in that the people designing technical systems are not economists and may not have best skill set to design social policy



Realizing the Potential of Blockchain: A Multi-stakeholder Approach to the Stewardship of Blockchain and Cryptocurrencies

- The global resource of the blockchain should not be only governed by nation states, state-based institutions or corporation, but by a coordinated global approach
- Unlike the internet of information, this internet of value has three levels that need governance:
 - **Platform**; issues of scalability and management
 - **Application**; goal of fostering innovation/talent
 - **Ecosystem**; encouraging scientific and business development with oversight
- Need for a multi-stakeholder approach using global governance networks, each of which have different roles
 1. Standard networks
 2. Knowledge networks
 3. Delivery networks
 4. Policy networks
 5. Advisory networks
 6. Watchdog networks
 7. Networked institutions

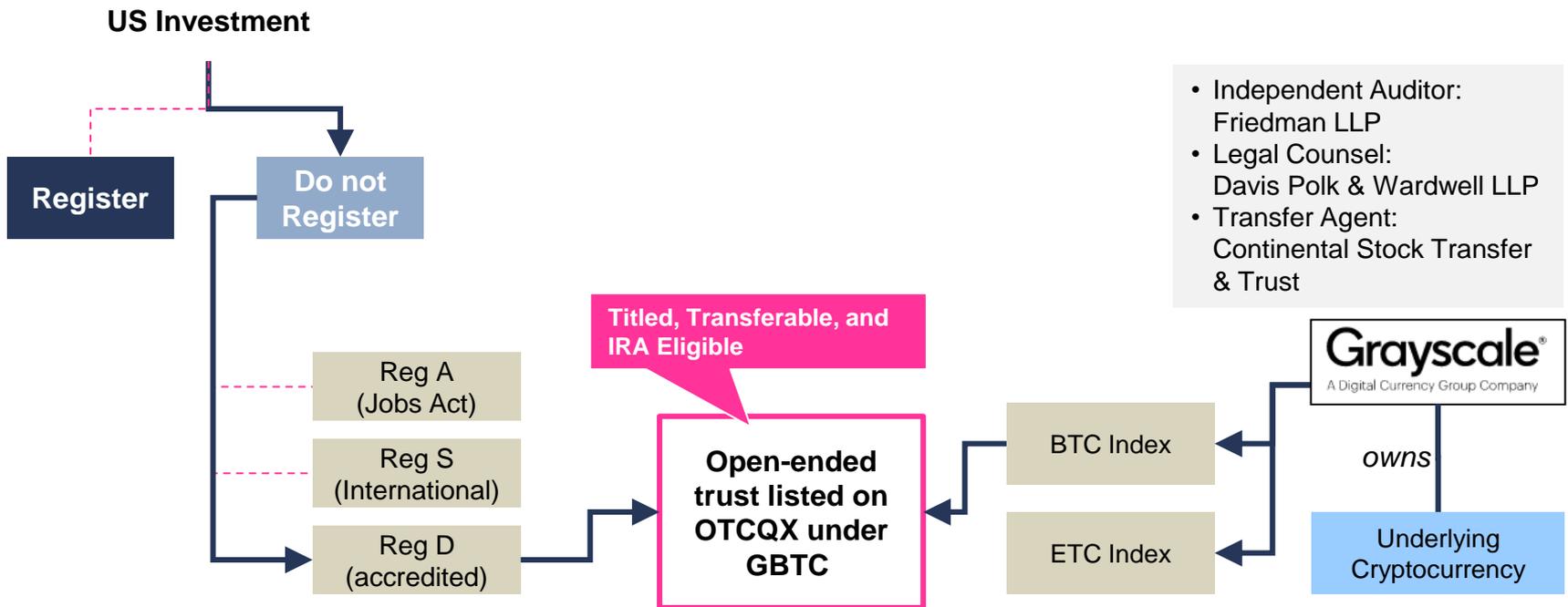
Investment Structure Considerations

From the perspective of US Securities law, ICOs with American investors must thread a fine needle

- **In a prospective ICO, the first question is whether the ICO is targeting American investors**
 - Non-US investors are not subject to US Securities laws; US issuers can sell to foreign investors under Reg S
 - Some ICOs have legal documents that target only non-US investors, and exclude them from exchanges
 - Enforcement is spotty as American investors can use software tools like VPN to mask their location given that KYC requirements and enforcement practices vary across exchanges
- **If an ICO is being offered in the US, the *Howey* test can be used to determine if the token offered is an investment security and are subject to SEC regulation**
 - An "investment contract" under the Securities Act of 1933 is one that involves:
 1. an **investment of money** – likely most token sales qualify
 2. arising from a **common enterprise**; (a) Horizontal approach finds a common enterprise if the profits of the investor are tied with those of other investors (quite likely), (b) Vertical approach finds a common enterprise if the profits of the investor are tied with that of the issuer of the token (less likely)
 3. with an **expectation of profits** – as a passive investment, not via own efforts
 4. depending solely on the **efforts of a promoter or third party** – key prong that hinges on the fact pattern of a particular token offering, and whether it is a functional or an investment token
- **If the token is a security, or if any investment vehicle is created for investing in tokens, whether or not those tokens are themselves securities, there is a well-worn legal path**
 - JOBS Act crowdfunding and Regulation A
 - Regulation D for accredited investors, and Rule 144A for secondary liquidity

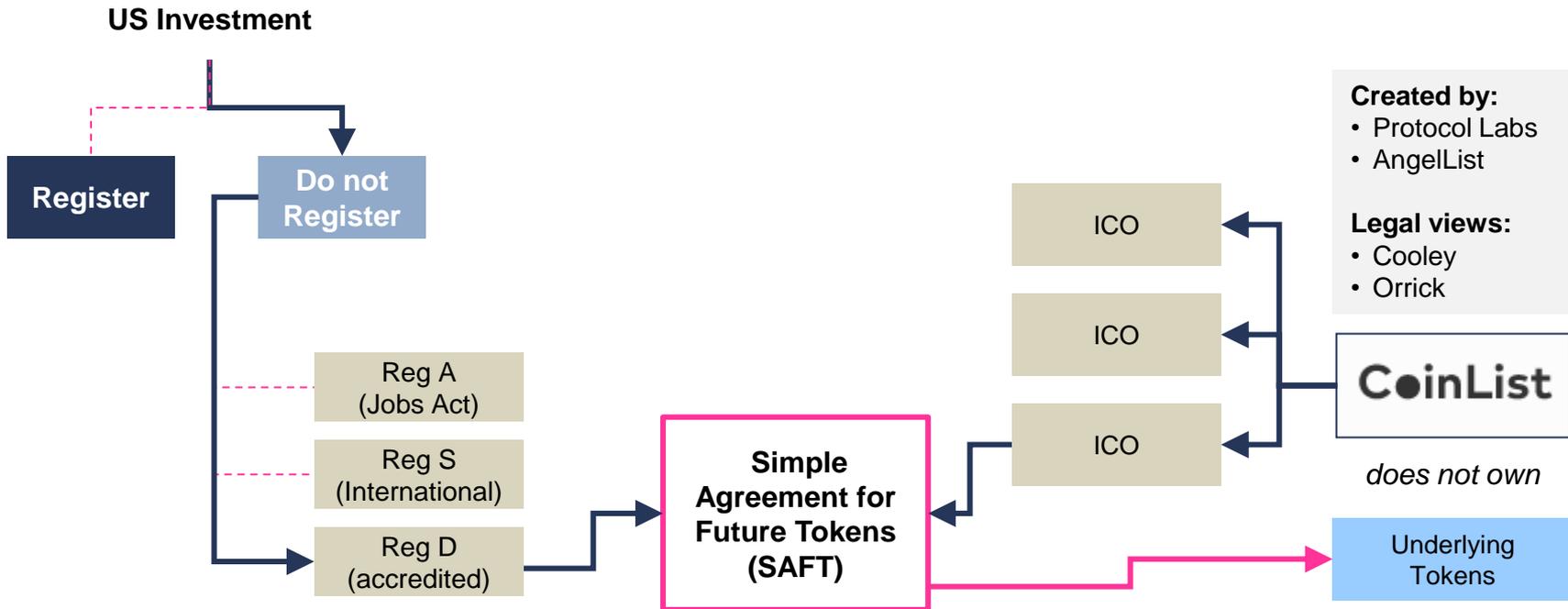
Example of structure: Bitcoin Investment Trust

- The Bitcoin Investment Trust and the Ethereum Classic Investment Trust are open ended trusts that derive values from the referenced cryptocurrencies
- Grayscale, owned by Digital Currency Group, has launched these two funds, which can be bought and sold inside different types of traditional accounts by accredited investors
- Financial advisors at other Registered Investment Advisors or Broker/Dealers can theoretically put these funds inside client portfolios
- Fees run at 200 bps for BTC and 300 bps annually, with current combined AUM at nearly \$450 million



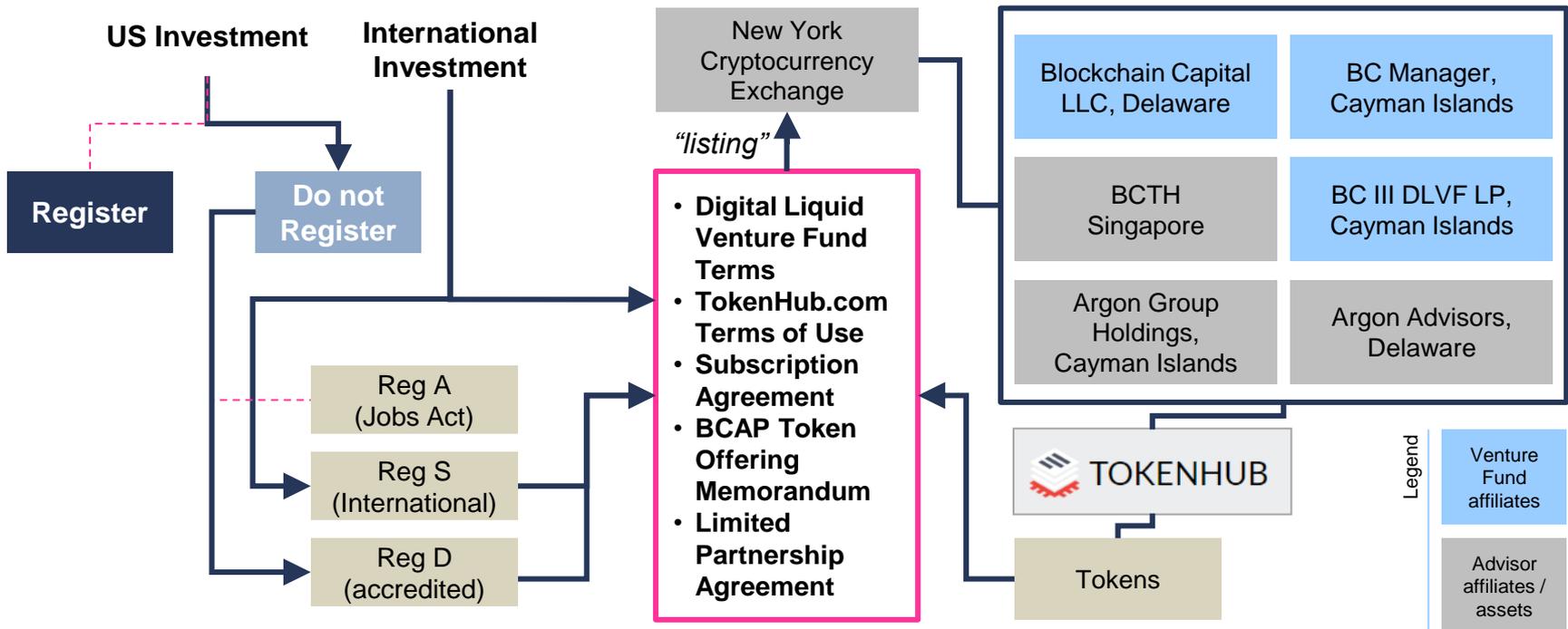
Example of structure: CoinList

- AngelList is a popular Angel investing website, that supports accredited investor checks into early-stage companies
- It is not registered as a broker dealer given that it receives no compensation in connection with the transactions identified through its website and does not have possession of customer funds – a position under the JOBS Act
- Separately, AngelList also provides syndicate-based investing through an SPV per company as a series LLC, managed by Assure Fund Management and advised by AngelList Advisors
- CoinList is the next project of AngelList and a tech company called Protocol Labs, in which Union Square Ventures is an investor. They are working on the legal structure for the US, which has not been fully revealed but will use Reg D.



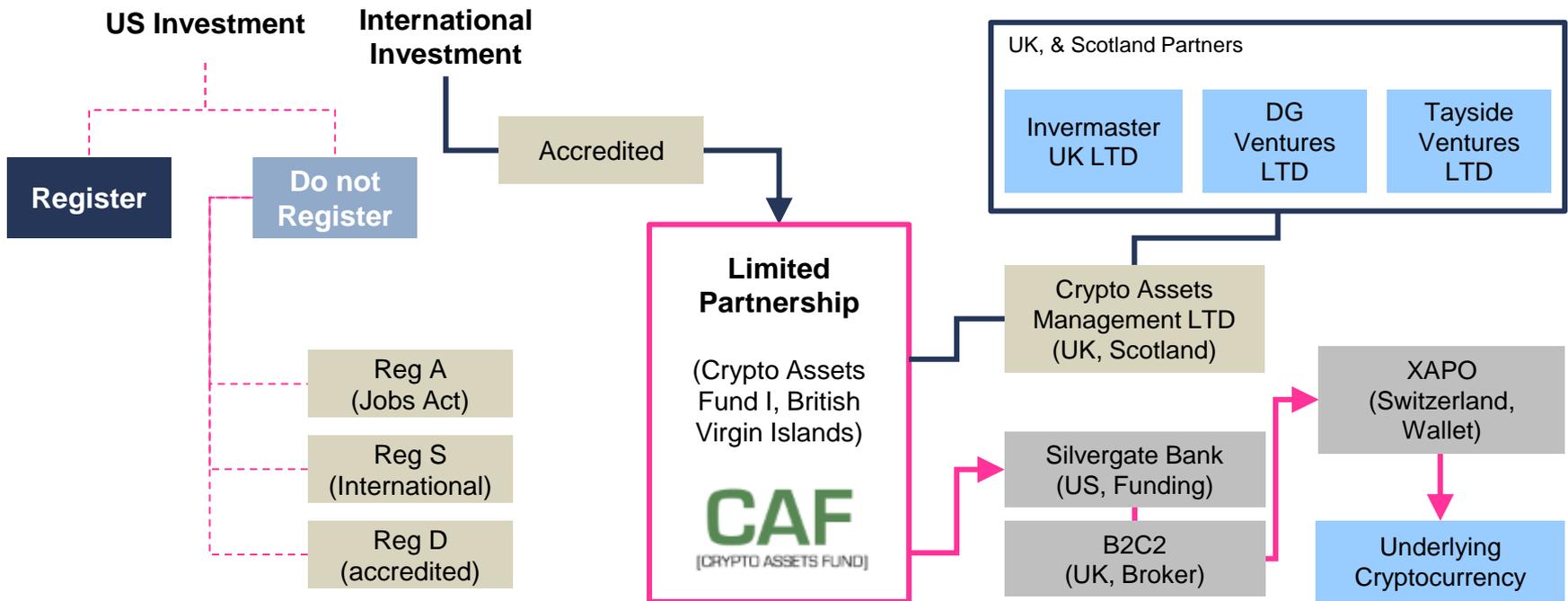
Example of structure: Blockchain Capital

- Blockchain Capital raised \$10 million in an ICO offered on a platform called Tokenhub, suggesting they were treating investments as securities and moving ahead of potential regulations
- Based on available information, these were also Reg D investments subject to several controlling documents, including the BCAP Token Offering Memorandum
- The offering has a complicated structure – from the venture fund and its multiple international entities, to an advisory group called Aragon that develops Tokenhub, a cryptocurrency exchange, and owns the entity issuing tokens
- Fees for holding the fund token are 250 bps management fee and 25% performance fee



Example of structure: Crypto Assets Fund

- The Crypto Assets Fund is designed for family offices in Argentina and Costa Rica, and across Latin America
- Half of the funds will be invested in Bitcoin, the rest in other coins
- The currency will be held by Xapo in Switzerland, OTC trading will be provided by B2C in the UK under FCA jurisdiction, and Silvergate Bank will provide broker funding
- No US-based investors are included in the fund's initial focus
- Fees are set at 0 bps for management and 30% for carried interest



About Autonomous



Autonomous NEXT is a mission-driven innovation and fintech analysis process for financial firms and investors



- We are independent, creative and original thinkers about the future of finance serving the world's largest financial services investors
- We combine both a fundamental and innovation perspective
- Better decisions in financial services = better outcomes for real people





We are a leading financial research firm ...



- 
 Founded in London in 2009 as an independent research firm, specialising in European banks and insurers.
- 
 In 2012, Autonomous opened an office in New York and launched coverage on US financials.
- 
 Autonomous opened an office in Hong Kong in Q1 2015 and launched coverage on Chinese financials and China macro.

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 Autonomous has 90 people globally including 40 full time analysts with unrivaled experience covering banks, insurers, diversified financials and FinTech.
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 Autonomous offers unique and unbiased perspectives on the future of Fintech by exploring the way in which technology will shape the global financials industry.

... that combines an entrepreneurial and fundamental view

Lex Sokolin

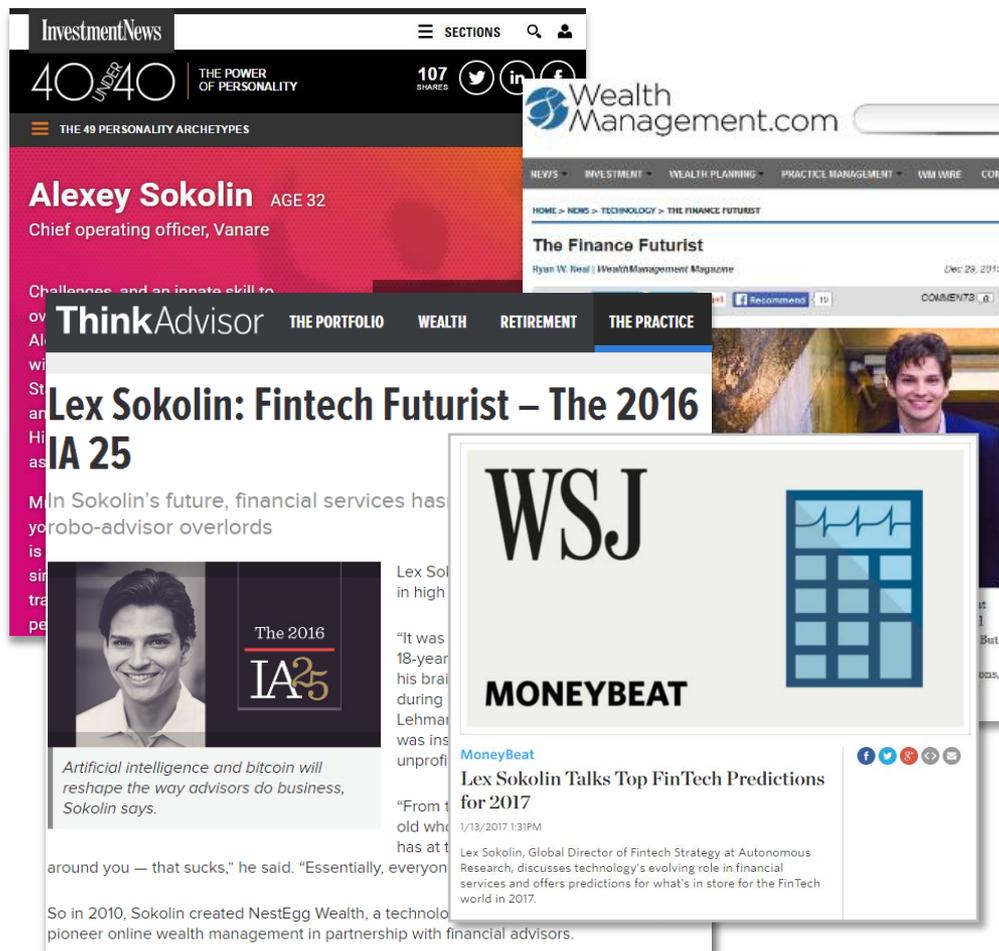
Global Director Fintech Strategy

Lex is a futurist and entrepreneur focused on the next generation of financial services. He directs Fintech Strategy at Autonomous Research, a global research firm for the financial sector, helping clients understand and leverage innovation.

Lex is on the Board of Directors and previously was the Chief Operating Office at AdvisorEngine (formerly Vanare), a digital wealth management technology platform that received a \$20mm investment from Wisdom Tree. He was also founder and CEO of NestEgg Wealth, a roboadvisor that pioneered online wealth management in partnership with financial advisors, acquired by AdvisorEngine.

Lex is a contributor of thought leadership to the Economist, WSJ, CNBC, Reuters, Investopedia, American Banker, ThinkAdvisor, and Investment News, among others. He has spoken on the future of technology and achieving extraordinary growth at conferences for Techonomy, General Assembly, In|Vest, T3 Enterprise Edition, and the FPA.

Prior to NestEgg, Lex held a variety of roles in investment management and banking at Barclays, Lehman Brothers and Deutsche Bank. He holds a JD/MBA from Columbia University and a B.A. in Economics and Law from Amherst College.



The collage consists of several overlapping screenshots:

- InvestmentNews:** A profile for Alexey Sokolin, AGE 32, Chief operating officer, Vanare. It features a '40 UNDER 40' badge and '107 SHARES'.
- Wealth Management.com:** An article titled 'The Finance Futurist' by Ryan W. Beal, published in Wealth Management Magazine on Dec 28, 2013.
- ThinkAdvisor:** The main article 'Lex Sokolin: Fintech Futurist – The 2016 IA 25'. It includes a photo of Lex Sokolin and a quote: 'Artificial intelligence and bitcoin will reshape the way advisors do business, Sokolin says.'
- MoneyBeat:** An article titled 'Lex Sokolin Talks Top FinTech Predictions for 2017' dated 1/13/2017 1:31PM. It features a WSJ logo and a calculator icon.

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Appendix

ICO Tracker: 2014-2015

Size Rank	Name	Proceeds (\$ MM)	Description
2014-1	Ethereum	\$18.9	An open-source, public, blockchain-based distributed computing platform featuring smart contract functionality, which facilitates online contractual agreements.
2014-2	MaidSafeCoin	\$7.0	A decentralised data storage and management system with user-contributed computing resources, designed to be a cheaper, more efficient and more secure data-storage infrastructure.
2014-3	Storj	\$0.5	A decentralised cloud storage network with the ultimate goal of disrupting the traditional cloud storage industry's centralised storage model.
2015-1	Lisk	\$6.2	A cryptocurrency with the promise of making it easier for the worldwide developer community to build decentralised applications.
2015-2	Augur	\$5.3	Augur is a fully open-source and decentralised prediction market platform built on Ethereum, a blockchain that allows for the execution of smart contracts.
2015-3	NeuCoin	\$0.9	A decentralised peer-to-peer cryptocurrency that is a fork from Peercoin, it is a proof-of-sale coin that pays interest as it is staked.
2015-4	ZiftrCOIN	\$0.9	A new altcoin cryptocurrency that aims to revolutionise shopping and to put cryptocurrency into the hands of consumers and enabling them to conduct simple, secure transactions.
2015-5	Factom	\$0.5	The first usable blockchain technology to solve real-world business problems by providing an unalterable record-keeping system.
2015-6	Synereo	\$0.1	Designed to integrate social dynamics into distributed systems: not just a social network but a social layer that any protocol can use and upon which many distributed applications can be built.

ICO Tracker: 2016

Size Rank	Name	Proceeds (\$ MM)	Description
2016-1	The DAO	\$150.0	A decentralised autonomous organisation and a form of investor-directed venture capital fund for both commercial and non-profit enterprises.
2016-2	Waves	\$16.0	WAVES is a crypto-platform for asset/custom token issuance, transfer, and trading on blockchain.
2016-3	ICONOMI	\$10.5	A decentralised fund management platform on which investors can buy cryptocurrency investment products.
2016-4	Golem	\$8.6	A platform built on peer-to-peer network which sources computing infrastructure in a decentralised manner to create a global market for computation
2016-5	SingularDTV	\$7.5	An Ethereum-based token for a Blockchain Film & TV Entertainment Studio & Distribution Portal, with a Smart Contract Rights Management Platform.
2016-6	DigixDAO	\$5.5	A Decentralised Autonomous Organisation on Ethereum which aims to create gold-backed token on Ethereum
2016-7	FirstBlood	\$5.5	A platform that lets eSports players challenge each other to competitive games and win rewards. Players put up a stake of in-platform tokens, similar to a wager.
2016-8	Synereo	\$4.7	Designed to integrate social dynamics into distributed systems: not just a social network but a social layer that any protocol can use and upon which many distributed applications can be built.
2016-9	Decent	\$4.1	A decentralised independent communications protocol for anyone who wants to share or publish digital data on the Internet
2016-10	Antshares	\$4.0	A blockchain used to register digital assets. Asset owners can digitise assets and trade them on the blockchain.
2016-11	ETCWin	\$1.3	A Chinese cryptocurrency exchange focused on Ethereum Classic.
2016-12	Komodo	\$1.1	A cryptocurrency that will replace Bitcoin Dark (the coin originally envisioned as a truly anonymous cryptocurrency)
2016-13	Incent	\$1.1	A platform for customer loyalty rewards built on Waves. Merchants can reward customers with Incent tokens. These can be traded at any merchant within the Incent network.
2016-14	Plutus	\$1.0	A unique mobile Bitcoin wallet for making in-store purchases at NFC terminals worldwide. Bitcoin is converted to fiat on the go using a true p2p exchange on the Ethereum network
2016-15	Stratis	\$0.5	A blockchain development environment that lets users program on private blockchains secured by a central Bitcoin-based blockchain.
2016-16	Golos	\$0.5	A dedicated Russian language social media and content platform that rewards users for generating well liked content

ICO Tracker: 2017 (1/4)

Size Rank	Name	Proceeds (\$ MM)	Description
2017-1	Tezos	\$208.0	Smart contract platform with governance rules and an emphasis on security through formal verification
2017-2	EOS.IO	\$200.0	Designed to be a foundation for blockchain business applications with eliminated transaction fees and high processing power.
2017-3	BANCOR	\$153.0	Decentralised exchange system. Tokens hold many 'reserve' tokens that allows purchasing and liquidating the token in exchange for its reserve tokens.
2017-4	Status	\$95.0	Open source messaging platform that offers mobile browser payments and smart contracts to friends from within chats
2017-5	TenX	\$80.0	Connects blockchain assets for everyday use. TenX's debit card and banking licence will allow it to be a hub for the blockchain ecosystem to connect for real-world use cases.
2017-6	MobileGo	\$53.3	Tokens issued on Ethereum blockchain to facilitate payments on gaming platforms. They use smart contract technology to decentralise virtual mobile gamer marketplace, decentralise gamer vs gamer matchplay and decentralise gamer tournaments.
2017-7	SONM	\$42.0	Decentralised worldwide fog computer for any general purpose computing - from site hosting to scientific calculations. its decentralised open structure lets buyers and workers interact without middlemen
2017-8	Basic Attention Token	\$35.0	An ERC20 token exclusively used by Brave Browser, an open source web browser that automatically blocks ads and trackers. Users reward web publishers for producing content they support in exchange for ad-free browsing.
2017-9	Civic	\$33.0	On-demand, secure and lower cost access to identity verification via the blockchain.
2017-10	Storj	\$30.0	A decentralised cloud storage network with the ultimate goal of disrupting the traditional cloud storage industry's centralised storage model.
2017-11	Polybius	\$28.9	The first regulated bank for crypto-finance
2017-12	Aragon	\$24.8	Platform, built on Ethereum, for creating and managing DAOs. Allows enough flexibility and usability to create functioning blockchain organisations that can be used to manage voting, share issuance and member roles.
2017-13	Æternity	\$22.4	Smart-contract blockchain secured through a hybrid of proof-of-stake and proof-of-work. The team asserts it will be ready to shard (like Ethereum) for massive scalability.

ICO Tracker: 2017 (2/4)

Size Rank	Name	Proceeds (\$ MM)	Description
2017-14	OpenANX	\$18.8	A crypto-exchange platform that combines the transparency of decentralized exchanges with the liquidity and reliability of centralized exchanges
2017-15	Cosmos Network	\$16.8	A Tendermint-based proof-of-stake blockchain that will be interoperable with any blockchain, communicate with any programming language, and support any token asset. IT works through a network of 'zones' connected by a main 'hub'.
2017-16	Qtum	\$15.6	A proof-of-stake smart contract compatible blockchain that can run both Bitcoin-based and Ethereum-based applications. Applications built for Bitcoin, Ethereum, or either of their derivatives, should be easy to port.
2017-17	Giga Watt	\$14.6	Offers turn key mining services such as equipment sales
2017-18	Mysterium Network	\$14.1	A decentralised marketplace for VPN services built using Ethereum smart contracts.
2017-19	Nimiq	\$13.6	A blockchain with a simple web browser based interface
2017-20	TokenCard	\$12.7	Issues a physical debit card through VISA that is backed by an ethereum wallet contract. TokenCard can store and transact Ethereum as well as eight other major ERC20 tokens.
2017-21	Dao.Casino	\$12.3	Defines the relationship between parties in the gambling industry including players, investors and bankrolls, etc.
2017-22	Gnosis	\$12.3	A platform for the creation of prediction markets - a smart contract ecosystem that pays out rewards to users who successfully predict the outcome of a given event.
2017-23	IEX.EC	\$12.1	A blockchain-based distributed cloud computing platform built on Ethereum. It will also build functionality for contributing and accessing off-chain resources, such as data and services
2017-24	ABTcoin	\$11.8	Cryptocurrency designed to deliver fast, secure and near-zero cost payments around the globe
2017-25	Blockchain Capital Fund III	\$10.0	A venture capital firm investing in blockchain technology companies.
2017-26	TaaS	\$7.7	Token-as-a-service is selling membership tokens in a closed-end crypto-asset fund. The token will entitle holders to 50 percent of funds profits, paid out using a profit-sharing Ethereum smart contract.

ICO Tracker: 2017 (3/4)

Size Rank	Name	Proceeds (\$ MM)	Description
2017-27	ZrCoin	\$7.1	A Waves platform meta-token backed by the production of zirconium oxide - a valuable industrial input. Token holders will receive a portion of the profits earned by Zrcoin LTD in the form of BTC
2017-28	Matchpool	\$5.6	A platform built around exclusive dating communities to facilitate matchmaking economies.
2017-29	Chronobank	\$5.4	Aims to disrupt the employment services industry by implementing stable crypto-tokens whose value is pegged to the national average hourly wage in Australia.
2017-30	Humaniq	\$5.2	Humaniq is a mobile wallet for transacting and storing Humaniq coins (HMQ), aims to expand financial inclusion with bio-identification and mobile technology. Bio-identification crates personal identities on a blockchain so that anyone can invest.
2017-31	Starta	\$5.1	An acceleration program launched to help Eastern Europe gain exposure to the US market
2017-32	Exscudo	\$5.0	A cryptocurrenfcy exchange platform with social trading features and analytic tools.
2017-33	Dimcoin	\$4.7	A speculative cryptocurrency that gives access to a community of complementary virtual currencies
2017-34	WeTrust	\$4.6	A platform for a variety of reciprocal aid based financial services, such as mutual insurance funds and peer to peer lending. The first dapp plans to launch is a platform for the creation and manegement of Rotating Savings and Credit Associations.
2017-35	EncryptoTel	\$4.5	A multi-platform internet messaging and communication infrastructure, similar to Signal. Blockchain integration will allow for identity confirmation and secure invoicing using a digital signature.
2017-36	Crypviser	\$3.8	Encrypted network for social and business communications based on blockchain
2017-37	Dfinity	\$3.8	A decentralised computing cloud with native smart contracts and a distributed intelligence DAO
2017-38	Lunyr	\$3.4	A decentralised encyclopedia built on Ethereum with a for-profit business model and rewards for users who create or edit content
2017-39	TrueFlip	\$3.1	Blockchain-based lottery service with proven vitality and independence from any third-party
2017-40	Melon	\$2.9	Distributed digital asset management of hedge funds on the Ethereum blockchain.

ICO Tracker: 2017 (4/4)

Size Rank	Name	Proceeds (\$ MM)	Description
2017-41	Quantum Resistant Ledger	\$2.8	A high security blockchain designed for long-term stability with quantum computing resistant encryption.
2017-42	Edgeless	\$2.7	Ethereum smart contract-based Casino with a 0% house edge using decentralised gambling platforms.
2017-43	SkinCoin	\$2.5	A new ERC20 token for eSports Industry
2017-44	Neverdie	\$2.1	Virtual reality infrastructure on the Ethereum blockchain
2017-45	Wings	\$2.0	A platform for planning, launching and managing DAOs using the wisdom of prediction markets.
2017-46	Lykke	\$2.0	A crypto-asset exchange platform built on top of the Bitcoin network, where users can issue stocks, company shares or commodities backed tokens using fractional Bitcoins. Traded on a decentralised Lykke exchange.
2017-47	Corion	\$1.6	Payment platform with a price controlled token and incentive based inflation rewards
2017-48	SunContract	\$1.4	Connecting energy producers and consumers into a decentralised energy grid
2017-49	FundYourselfNow	\$1.3	Crowdfunding platform aiming to provide technical, marketing, and ultimately legal support for token sales
2017-50	Ethbits	\$1.3	A platform for digital p2p and face to face exchange of crypto and fiat currencies.
2017-51	Gene-ChainCoin	\$1.1	Private blockchain for researchers and patients to safely store and share data
2017-52	Augmentors	\$1.1	An augmented reality creature fighting game built on the Bitcoin network
2017-53	Back to Earth	\$1.0	Immersive entertainment game that can be enhanced by spending cryptographic tokens.
2017-54	Moeda	\$0.6	Crypto-banking platform helping women affect positive change in their communities
2017-55	Equibit	\$0.6	A blockchain platform for issuing, trading and managing both public and private equity.
2017-56	Orocrypt	\$0.1	Tokenized precious metals on the Ethereum blockchain



Further reading

- *A Securities Law Framework for Blockchain Tokens*, Coinbase, Coin Center, Union Square Ventures and Consensys, <https://www.coinbase.com/legal/securities-law-framework.pdf>
- *Framework for Securities Regulation of Cryptocurrencies*, Peter Van Valkenburgh, <https://coincenter.org/entry/framework-for-securities-regulation-of-cryptocurrencies>
- *Realizing the Potential of Blockchain: A Multi-stakeholder Approach to the Stewardship of Blockchain and Cryptocurrencies*, Don Tapscott and Alex Tapscott, http://www3.weforum.org/docs/WEF_Realizing_Potential_Blockchain.pdf
- *The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk*, Angela Walch, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2579482
- *Analyzing Token Sale Models*, Vitalik Buterin, <http://vitalik.ca/general/2017/06/09/sales.html>
- Utilities:
 - ICO Trackers: <https://www.smithandcrown.com/icos/>; <https://www.coinschedule.com/>; <https://icotracker.net/>; <https://www.ico-list.com/>
 - Cryptocurrency data providers: <https://coinmarketcap.com/>; <https://www.cryptocompare.com/>; <https://www.coingecko.com/>
 - ICO news providers: <http://www.coindesk.com/> (DGC owned); <https://www.cryptocoinsnews.com/>; <https://cointelegraph.com/>; <https://bitcoinmagazine.com/>
 - Social media & forums: <https://bitcointalk.org/>; <http://boards.4chan.org/biz/> (NSFW); <https://www.reddit.com/r/ethereum/>; <https://www.reddit.com/r/Bitcoin/>; <https://www.reddit.com/r/icocrypto/>