The State of the Token Market

9 Months into 2018

FABRIC VENTURES
Fabric Ventures

Fabric is a VC fund adapting the early, technical, and patient approach of venture capital to investing in decentralised data networks. It is building on OpenOcean’s peerless open source pedigree and Firestarters’s background in seed investing & blockchain focus, and is backing the boldest projects forming the foundation of Web 3.0.

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PART I:
Nine Months Into 2018
TIMELINE of the past year

MAY 17 - Start of the ICO Craze, Fastest ICO Ever
- ETH average price @ $125.75
- ICOs raise $200M
- Basic Attention Token (BAT) ICO sells out in 2 blocks, starting the ICO craze.

JUN 17 - Ethereum Congestion
- ETH average price @ $313.75
- ICOs raise $650M
- Bancor and Status raise >$100M each, clogging the Ethereum network

JUL 17 - Regulators Are Watching
- ETH @ $224.12
- ICOs raise $650M
- Tezos raises $230M
- U.S. SEC publishes the report stating DAO tokens were securities

AUG 17 - Summer Slump
- ETH @ $301.61
- ICOs raise $330M
- Bitcoin Cash mined its first block;

SEP 17 - All Hands on Deck with Devcon 3
- ETH @ $293.05
- ICOs raise $775M
- Filecoin closes $200M SAFT round
- China announces an ICOs ban

OCT 17 - Calm Before the Storm
- ETH @ $306.25
- ICOs raise $829M
- Polkadot raises $144.3M

NOV 17 - Billion Dollar Month
- ETH @ $357.94
- ICOs raise $823M

DEC 17 - The Token Rally
- ETH @ $1,103.65
- ICOs raise $2.4B

JAN 18 - A TON of Fundraising
- ETH @ $873.12
- Telegram notifies SEC of 1st $850M private sale

FEB 18 - Alt Coin Correction
- ETH @ $625.75
- Telegram notifies SEC of 2nd $850M private sale
- Token prices drop by >30%
- ICOs still raise $2B

MAR 18 - An ICO slump?
- ETH @ $521.10
- Token prices continue declining by further 20%
- ICOs “only” raise $1.1B

APR 18 - Crossing the $10B yearly mark
- ETH @ $678.80
- EOS raises $900M in one month
- Large (>100M) deals out of Israel and Asia
- ICOs raise $2B

MAY 18 - Top-Notch Institutional VCs Join The Game
- ETH @ $451.88
- ICOs raise $585M
- Andreessen Horowitz closed a $300m dedicated crypto fund

JUN 18 - ETF Hopes
- ETH @ $433.61
- ICOs raise $415M
- Release of the Augur dApp

JUL 18 - ETF Disillusion
- ETH @ $279.18
- ICOs raise $498M
- SEC rejects multiple Bitcoin ETF applications due to risk of market manipulation

AUG 18 - Stamp of Approval from Endowment Funds
- ETH @ $235.39
- ICOs raise $181M
- Harvard, Stanford, MIT, Dartmouth, and University of North Carolina invest in at least one specialist crypto fund
Token Sale Descriptive Statistics:
- Time Period: January 1st - September 31st
- USD Raised: $12.3 billion
- Nr of Token Sales: 981
- Nr of “Completed” Token Sales: 414
- Nr of “Failed” Token Sales: 567
- Average Capital Raised: $29.7M
- Median Capital Raised: $12.9M

Token sales in the first nine months of 2018 amounted to over double the capital raised in 2017 - and there’s still three months to go...

Token sales (ICOs) raised $5.6 billion in 2017. The momentum of the 2017 “ICO hype” accelerated into 2018 with more than $7 billion raised in the first quarter alone. The following two quarters, however, saw a drastic downfall of capital raised, bringing the total for the first nine months of 2018 to $12.3 billion.

USD Raised vs. Month

...but 58% of token sales failed to raise capital, disappeared, or refunded participants

Breakdown of token sale status:
- 414 (42%) “Successful” token sales: token sales with public data on proceeds
- 567 (58%) “Failures”: token sales that either reported a full refund of token sale proceeds to participants, or failed to disclose any data on the completion of fundraising at all. ¹

Besides the significant increase of capital raised in 2018, the number of token sales that have taken place by the end of September (981) is already ahead of the 900 token sales that occurred in all of 2017. Unfortunately, to the most part, it is a surge in low quality projects that accounted for the increase, leading to a higher percentage of “failed” token sales - rising from 48% in 2017 to 58% in 2018.

Ten Token Sales Raised 47% of All Capital

A closer look at the largest token sales shows that over 47% of all capital raised came from the 10 largest token sales (1% of the total number of active token sales). Moreover, close to 40% of all capital came from two token sales: Telegram and EOS.

<table>
<thead>
<tr>
<th>Project</th>
<th>Sector</th>
<th>Raise</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOS</td>
<td>Infrastructure</td>
<td>$3,165,000,000</td>
</tr>
<tr>
<td>Telegram Open Network</td>
<td>Infrastructure</td>
<td>$1,700,000,000</td>
</tr>
<tr>
<td>Bankera</td>
<td>Finance</td>
<td>$150,000,000</td>
</tr>
<tr>
<td>t0</td>
<td>Trading</td>
<td>$134,000,000</td>
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<tr>
<td>Basis</td>
<td>Infrastructure</td>
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<tr>
<td>Orbs</td>
<td>Infrastructure</td>
<td>$118,000,000</td>
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<tr>
<td>PumaPay</td>
<td>Finance</td>
<td>$117,019,041</td>
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<tr>
<td>Envision</td>
<td>Finance</td>
<td>$100,012,279</td>
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<tr>
<td>Hedera Hasgraph</td>
<td>Infrastructure</td>
<td>$100,000,000</td>
</tr>
<tr>
<td>Flashmoni</td>
<td>Finance</td>
<td>$72,000,000</td>
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</tbody>
</table>

¹This includes token sales that claim success, but have not published information about funds raised and/or token sale contract.
The Telegram and EOS token sales have been the subject of much controversy. The team behind the EOS blockchain (Block One) ran a token sale that started in June 2017 and concluded in June 2018, raising $1 billion in 2017 and more than $3 billion over 5 months of 2018. The team behind Telegram raised $1.7 billion in two private rounds and canceled their initial plans for a public token sale in Q1 2018.

Token Returns and Model Portfolio

The following graph maps the performance of ICO-issued tokens with sufficient historical data against investments in ETH and BTC. Since January 2017 inception, a portfolio invested in ICO-issued tokens would have, on average, outperformed a portfolio holding only ETH or BTC in dollar terms as of Q2 2018. Compared to 2017 year end and Q1 2018 performance, however, the relative outperformance of ICOs has become marginal as a result of the market correction.

Only 1/3 of all 319 tokens actually outperformed both ETH and BTC.

Crypto Returns Analysis from their Listing Time

We analyzed close to 2,000 cryptocurrencies from their public market perspective, looking at their returns behaviour from the first day of being listed on crypto exchanges, and aggregating tokens into cohorts based on their listing year (Graph 1) and highest market capitalisation ever achieved by the token (Graph 2).
The return behaviour across listing yests differs drastically for various reasons, including current public sentiment, media attention, and overall information availability. Compared with Bitcoin and Litecoin as the oldest coins available, only year that managed to sustain its return close to those was 2016.

Graph 1

Narrowing down the focus on tokens that remained listed for at least 250 days, the average price performance of tokens listed in 2018 appears to be the lowest. In a similar fashion, year 2011 (Litecoin) ended up in negative during its first 250 days. Tokens listed in 2017 achieved the highest average return of over 10x, followed closely by year 2010 (Bitcoin), and average returns in 2012, 2013, 2015, and 2016. Tokens listed in 2014 resulted in null returns in their first 250 days from listing.

Graph 2
In 2017, nearly 32% of capital raised in the 10 largest token sales went to decentralised infrastructure projects. It is reassuring to see there continues to be a large influx of capital to “picks and shovels”, as more investors focus on developer tools and networks forming the core infrastructure layer of the Web 3.0 stack. In the first nine months of 2018, 5 of the 10 largest token sales were held by infrastructure projects.

The infrastructure segment stands out also when looking at the overall number of completed token sales - taking up 40.4% of all ICOs.

Source: Token Data
Geographical Distribution of TOKEN SALES

From a Legal Domicile Perspective

Overview of capital raised in token sales globally (based on legal domicile)\

Source: Token Data

\(^1\) The EOS token sale has been excluded due to the outlier nature of its size. The EOS token sale had its legal domicile in the Cayman Islands.
Shift to a More Crypto-Friendly Regulation

A closer look at some of the most popular emerging domiciliations - and actions taken in respect to regulation of crypto assets.

**HONG KONG**

*Action:* Multiple warnings have been issued hinting that tokens may be subject to the securities law of Hong Kong. No clear guidelines have been published so far.

*ICO Approach:* Allowed; cautious regulation

*Capital raised in ICOs in 2018:* $272M

**SINGAPORE**

*Action:* Singapore government stated that cryptocurrencies are “capital market products” and may be subject to regulation under the securities law. ICO issuers who structure security tokens must obtain a licence.

*ICO Approach:* Allowed; heavy regulation

*Capital raised in ICOs in 2018:* $658M

**MALTA**

*Action:* “Blockchain Island” passed three cryptocurrency/blockchain bills in June 2018 and became the first country to approve a full framework for distributed ledger technology regulation, that are due to come into effect in Q4 2018. Malta’s transparent approach has attracted major exchanges such as Binance, OKex, ZB.com, and Bitbay.

*ICO Approach:* Allowed; transparent and forward-thinking regulation

*Capital raised in ICOs in 2018:* £105M

**ZUG, SWITZERLAND**

*Action:* Became a “crypto nation” by announcing a set of positive guidelines, differentiating between payment, utility, and asset tokens.

*ICO Approach:* Allowed; methodical and forward-thinking approach

*Capital raised in ICOs in 2018:* $556M

**UNITED KINGDOM**

*Action:* Launched a special “crypto assets task force” alongside the Bank of England & the FCA, striving to make the country the “global centre” for crypto projects.

*ICO Approach:* Not yet regulated; approaches being evaluated

*Capital raised in ICOs in 2018:* $490M

**FRANCE**

*Action:* France pledged not to “miss out on the blockchain revolution” and has launched the “PACTE” regulatory project. The new legal scheme - if approved by the parliament - will introduce legal definitions of Tokens and ICOs, as well as a set of rules for securing the AMF’s “license” - certifying transparency and diligence towards investors.

*ICO Approach:* Not yet regulated; new legislation in development

*Capital raised in ICOs in 2018:* $63M

**LITHUANIA**

*Action:* Lithuania issues a comprehensive set of “ICO Guidelines” covering regulation, taxation, accounting, and Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT). The new regulation clearly distinguishes between security and utility tokens, and provides guidelines on corresponding laws already in place.

*ICO Approach:* Allowed; transparent and forward-thinking approach

*Capital raised in ICOs in 2018:* $271M
Strong Project Formation in Europe

While an increasing number of countries strive to attract crypto projects by creating a regulatory ‘sandbox’, the majority of founding teams and developer talent remain Europe-based. London, Zug, Berlin, and Tallinn are just a handful of cities leading Europe with robust blockchain talent. It comes as no surprise that these cities have historically been hubs for attracting top fintech startups.

Legal Domicile vs Founders’ Domicile

Emergence of Four Core Hubs

**LONDON**
- Projects: Gnosis, Ocean Protocol, Polymath, Verisign, Everledger, Provenance, Electron, Blockchain.com, Elliptic
- Funds: Fabric Ventures, Libertus Capital, Outlier Ventures, KKR
- Hubs: London Blockchain Labs, Consensys (opening soon), Fabric House (opening soon)
- Associations: Consensys, CoinAllium
- Events & media: On Deck, CogX, Coinscrum, Christie’s Art + Tech Summit, Blockchain Live

**SAN FRANCISCO**
- Projects: Ripple, Coinbase, Dv, Civic, Dfinity, Stellar, Litecoin, Keep Network, Kraken
- People: Naval Ravikant, Olaf Carlson-Wee, Brian Armstrong, Fred Ehrsam, Matt Huang, Kathleen Brittain, Juan Benet, Babajji Srinivasan, Jesse Powell, Stefan Thomas, Steven Waterhouse
- Funds: Metastable, a16z crypto, Polychain Capital, Consensys Capital, Pantheon Capital, Paradigm
- Hubs: Node
- Associations: Blockchain at Berkeley
- Events & media: CogX, On Deck, Céline, Coinscrum, Christie’s Art + Tech Summit, Blockchain Live

**NEW YORK**
- Projects: Blockchain, Binar, K5, LO3’s Exergy, MASSARI
- People: Albert Wenger, Barry Silbert, Joseph Lubin, Laura Shin, Chris Burniske, Jake Brakhman, Amber Baldet, Mike Novogratz, Karl Floersch, Ryan Selkis, Erik Voorhees
- Funds: Digital Currency Group, Boost VC, Union Square Ventures, Galaxy Digital, ConsenSys
- Hubs: Crypto NYC, NYC Blockchain Resource Center
- Associations: CoinDesk, Cointelegraph, Laura Shin’s Unchained and Unconfirmed
- Events & media: Blockchain Week NYC, Ethereal Summit, F0256, Consensus, Token Summit, The Block

**BERLIN**
- Projects: Gnosis, Ocean Protocol, Polymath Technologies, Golem, Stock it, Raiden, Lisk, Cosmos, Centrifuge, Energy Web Foundation
- People: Carl Bennetts, Antje Steiner, Gavin Wood, Trent McCambridge, Maria Paula Fernández, Stefan George, Brian Fabian Crain
- Funds: BlueYard, Neufund, 1kx
- Hubs: Fullnode, Factory Berlin
- Associations: Web 3 Foundation, Grid Singularity, Ethereum Foundation
- Events & media: Web 3 Summit, EthBerlin, Dezentral, Blockchain Berlin, Blueyard events, Tech Open Air, Episocenter, Zero Knowledge Podcast
Fundraising Trends

The dominance of private rounds and pre-sales

The $1.7 billion Telegram token sale is an example of one of the biggest trends that took place in 2018: the dominance of private rounds and pre-sales. Private rounds have the following characteristics:

- **Timing:** the round takes place before the actual (public) token sale
- **Size:** the contribution is large but with a big range (from a few thousand to tens of millions of dollars)
- **Accredited Investors Only/KYC requirements:** KYC and attestation of investor status is mandatory
- **Discounts/Bonus:** token buyers usually receive a discounted exchange rate
- **Vesting/Lock-Up:** tokens are released in tranches over an agreed time period

Although private rounds aren’t new, the data for 2018 shows their significant role for the average token sale:

- **85%** of all Token Sales used private rounds.
- Projects that utilise private rounds raise **two thirds** of their capital in the private round.
- **34%** is the average discount or “bonus” that a private round investor received for participating.

There are a number of drivers behind the shift towards private rounds:

- **Regulation:** some token sales sell tokens exclusively to accredited investors because of pending securities regulation.
- **Focus on building the product:** more and more projects strive to hit critical development milestones and test their products prior to a public sale.
- **Institutional and Venture Capital:** projects are increasingly keen on attracting VC funding from the right partners - both to secure stronger reputation, and use the operational and strategic support from specialised funds.
- **Cryptocurrency Price Volatility:** the volatility in cryptocurrency prices leads to a project hitting its fiat-denominated fundraising milestones before the public sale is scheduled to start.

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1. Out of practicality we will use the term “private rounds” for both the private round and pre-sale phase of a token sale. The main distinction between a private round and pre-sale is that the private round often happens before a token sale has been announced.

2.  https://tokeneconomy.co/%EF%BB%8F-token-economy-34-nip-ico-c895a45d9fd6

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VC funding

A continuous growth in Venture Capital funding into blockchain projects over the past 7 years

**10 Biggest Venture Rounds**

**Robinhood - 2018**  $350m
DST Global, Sequoia Capital, Kleiner Perkins, ICONIQ Capital, CapitalG

**21 Inc - 2015**  $116m
Andrews Horowitz, Dots Collective, Khosla Ventures, RRE Ventures, Yuan Capital, Qualcomm Ventures, Pantera Capital, Jeff Shell Group, Founders Fund, and others

**Circle - 2018**  $110m
Accel, General Catalyst, IDG Capital, Breyer Capital, Bitmain, Pantera Capital, Blockchain Capital, DCG, and others

**Coinbase - 2017**  $108m
Institutional Venture Partners, Battery Ventures, Draper Associates, Greylock Partners, Section 32, Spark Capital, Task Ventures, Kindred Ventures, Balyasny Asset Management, Expanding Capital, Shanti Bergel

**R3 - 2017**  $107m
Bank of America Merrill Lynch, HSBC, Intel, SBI Group, Temasek Holdings, Banco Bradesco, Barclays PLC, ING Group, Itau Unibanco, Natixis, UBC, Wells Fargo, and others

**PINTEC - 2018**  $103m
Zhuang Capital Fund, SINA Corporation, Shunwei Capital, Mandra Capital, S1i Financial Group

**Coinbase - 2015**  $75m
DFU, Union Square Ventures, New York Stock Exchange, Vayner/RSE, Valor Capital Group, USA, Reinvestment Group, BBVA, DoCoMo, Tim Draper, Ribbit Capital, Andrews Horowitz, Vikram Pandit, Tom Glaser, Kindred Ventures, Fueled, Propal Venture Partners

**Ledger - 2018**  $75m
Draper Esprit, Draper Dragan, Draper Associates, DCG, Korelya Capital, XAnge, MAF, GTTRE, FirstMark, Cathay Innovation, Boost VC, CapHorn Investments

**Paxos - 2018**  $65m
RRE Ventures, Liberty City Ventures, Jay Jordan

**DFINITY - 2018**  $61m
Andrews Horowitz, Scalar Capital, Polychain, Multicoin Capital, KKR, Amino Capital, Aspect Ventures, Eternum Capital, SV Angel, Village Global

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Source: Coindesk
Airdrops as Extras

Another token distribution mechanism that has gained popularity in token projects is Airdrop - a “free” distribution of tokens to a network of select wallets. The economic rationale behind the airdrop is that it increases the user base and populates the network prior to launch. The data for 2018 shows that a third of all completed sales announced airdrops in addition to their token sale.

A handful of projects even used airdrops as a replacement for a public sale after they raised a large private round. The long term efficacy, as well as the regulatory position of airdrops is still uncertain - but they remain a strong marketing tool for generating communities around a project.

Width of Distribution

Token centralisation remained a primary topic of focus from a risk and valuation perspective.

Most Centralised

![Most Centralised Tokens](image1)

Biggest Tail of Distribution

![Biggest Tail of Distribution Tokens](image2)

TokenAnalyst looked at 20 popular ICOs from 2017 and found that their token distributions across wallets were fairly centralised. On average, the top 10 wallets hold 60% of the tokens (50% market cap weighted average). Those wallets are mostly owned by the project teams, exchanges, and pre-sale investors. This percentage is high relative to Bitcoin’s 6% and Ethereum’s 11% ownership across top 10 wallet addresses.

Github activity analysis

Time to fundraise from Github creation

Looking at time interval between a project creating its Github repository and launching its (public) fundraising, we can see that more than half of analysed projects (57%) created the code repository just 3 months or less before token sale.

![Github activity analysis](image3)
Our analysis also shows, unsurprisingly, that the success of an ICO project is highly dependent on the amount of time developers spend working on code - which is normally reflected in the Github repository activity. That is, the more mature the Github project, the more likely it is to be successful when fundraising. 74% of projects that created their repositories in 3 months or less before fundraising failed to raise money. Many of these projects did not have working code to show to investors, and failed initial investor due diligence.

Along the same vein, ICO projects with less repository contributors have a drastically higher likelihood of failure. Of all analysed ICOs, 76% had 1-3 contributors. This number raises to a staggering 89% viewed within the scope of failed ICOs.

Successful ICOs tend to have large communities of contributors

Weekly ICO repository activity pre- and post-fundraising shows a clear increase in the number of active repositories during the weeks leading up to the fundraising date. For successful ICOs, code commits spiked typically between 2-4 weeks prior to the token sale date, suggesting many of these projects had a last minute push for code finalisations prior to fundraising. For failed ICOs, in turn, the noticeable drop in code commits over the fundraising period likely suggests a lack of funding and, as such, interest in the project. Failed projects with continued activity can be attributed to developers choosing to carry out the project despite insufficient funding.
PART II:
Fabric Ventures
Investment Thesis
A Generational Platform Shift

History

We are at the start of a paradigm shift in software architecture: the wave of decentralised data networks. The movement we have seen build up over the past few years goes beyond Bitcoin and other crypto-assets, or even open source software and blockchains. Taking a broader view, it is the victory of peer-to-peer data networks based on open standards, it reflects the power of properly aligned economic incentives, and it begins to harness the individual data centres in everyone’s pocket, desktop, car, living room and wrist. The movement is made possible by the proliferation of access to high speed wireless broadband, rapidly maturing cloud-native software and a surge of recent machine learning advancements.

Over the past few decades, technology architecture advancements have commoditised operating systems and software packages by making them globally accessible via data centres and cloud infrastructure. In this new wave, the data centre is being spread to the very edge of the network and the data itself is being ‘open-sourced’, commoditised into reusable trusted building blocks. Distributed users and machines interact with this data via a substrate of peer-to-peer networks. These peer-to-peer data networks become a ‘fabric’ that validates and curates information inputs without the need for third parties, while empowering individual users with their own data in a usable, secure and scalable manner.

The Sovereign Individual

By empowering users with their own data, the decentralised data networks wave is breaking down the colossal data silos that have been the lifeblood, but increasingly the untenable liability of today’s tech giants. Driven by central leaks such as Equifax’s data breach that cost 145m Americans their privacy or Facebook’s revelation that Cambridge Analytica used personal data from 87m accounts and recently a further 50m logins were compromised, users are becoming weary of entrusting their personal data to these centralised silos. While Google quietly discarded its “Don’t be evil” motto1, here at Fabric Ventures, we are much more interested in a new software architecture, where the motto becomes “Can’t be evil”2: an architecture, in which all users control their data locally, therefore enabling the rise of the sovereign individual. As Yuval Harari posited at a recent TED conference3, totalitarianism is not the ugly force that is often depicted in retrospect; instead, it presents itself as a seductively simple solution to the problems of the day that can seem foolish to resist. Harari argued that the concentration of data-sets within certain commercial or governmental organisations may be tempting them to master and personalise this technique to a degree hitherto unimagined. We need organisational structures, data architectures, incentives and technologies that neutralise this danger. Beyond eliminating the possibility that third parties behave in an evil manner, the applications built upon these decentralised data networks will make possible a much more intimate bond of trust between each human individual and the computing services delivered via an ever more complete envelope of devices.

A shift to more human-centric computing

While this trust layer has become a commonality between individuals and communities, it has proven difficult to create in human dealings with hardware devices and software applications. As the potential for software to serve us in increasingly intimate and personal ways expands, the imperative to deliver a trusted relationship increases. This becomes mandatory when one is sharing personal genetic and physiological information, relying on algorithms to make split-second trade-offs in moments of human peril or even when filtering the stream of news that constitutes the factbase for our day to day decision-making.

In “Sapiens”, Yuval Harari also explores the idea that ultimately, on a historical scale, it is our ability to conceptualise abstract concepts through language and share common beliefs that allowed strangers to cooperate and communities to rise. Technology now has the ability to abstract this trust, with the right incentives encoded at the protocol level, allowing for cooperation and trade at a global scale.

The forthcoming wave of decentralised data networks shifts us from zero-sum game capitalism to the compounded benefits of collaborating communities. Perhaps a good way to imagine such evolving coordination with minimal central control is the technological feat that is the modern city. Distributed Autonomous Organisations built upon blockchain technology can achieve a balance of resilience & efficiency, coordination & incentive on a whole range of new frontiers. The replacement of the owner’s profit for a shared interest in the level of adoption of the network aligns incentives across builders, service providers and users: the substitution of top down command and control power structures, with their high propensity for corruption, with emergent structures.

1 https://www.fastcompany.com/3056389/why-google-was-smart-to-drop-its-dont-be-evil-motto
2 https://medium.com/@muneeb/cant-be-evil-bc5ec16c6306
3 https://www.ted.com/talks/yuval_noah_harari_why_fascism_is_so_tempting_and_how_your_data_could_power_it?language=en
Innovation

Microsoft understood the future would see a personal computer in every home. IBM had trouble imagining the need for more than a handful of computers, Bill Gates of systems to the chip manufacturers and software companies. Where Tom Watson at improved economics flipped the power in the industry from the proprietary hardware costs of microprocessors plummeted, a new architecture for computing with radically users, consisting of governments, businesses and wealthy individuals. As the production hardware. The result was that computers remained in the hands of a limited group of primarily to take a margin on the expensive production of proprietary computer US firms became multinationals, the business model of technology companies was

Let’s pick the story up in the postwar American boom of the 1950s and 1960s. As US firms became multinationals, the business model of technology companies was primarily to take a margin on the expensive production of proprietary computer hardware. The result was that computers remained in the hands of a limited group of users, consisting of governments, businesses and wealthy individuals. As the production costs of microprocessors plummeted, a new architecture for computing with radically improved economics flipped the power in the industry from the proprietary hardware systems to the chip manufacturers and software companies. Where Tom Watson at IBM had trouble imagining the need for more than a handful of computers, Bill Gates of Microsoft understood the future would see a personal computer in every home.

With the democratisation of access to personal computers, the 1970s and 1980s led to a new wave in which technology companies shifted their business models to selling cheap hardware with a licensed operating system. With the fulgurant rise of Microsoft and its relentless focus on winning over developers, consumers chose the platforms with the greatest array of compatible applications, and the company’s Windows operating system began to propagate across hardware providers and unified almost all software packages under one roof. By the year 2000, Microsoft’s market share was above 90% of all personal computers sold and it accrued most of its value from the operating software and application software layers.

However, while Microsoft held the desktop domination, it had never secured the servers in the wiring closet and data centers - these remained the domain of the most successful Unix workstation companies of the 80’s (Sun, Silicon Graphics and IBM). In the early 90’s Linux Torvalds sought to undermine this expensive hegemony with a cheaper & more open alternative: Linux - an open source version of the Unix operating system for software servers. A new wave of technology businesses was unleashed by combining commodity hardware and the Linux operating system with Apache web servers, MySQL and PHP. By 2012, Microsoft’s share of the compute market had fallen to 20%, while by 2017, Linux based Android captured 85% of the mobile compute market.

This democratisation of access to cheaper software coupled with widely available networks, pushed technology businesses to shift their business models towards offering free software & networks with the intent of monetising the data they gather. The tech titans of today have co-opted open source software, and combined it with massive monopolised silos of user data, to create competitive moats protecting trillions of dollars of market capitalisation. However, as incumbents are facing more and more data usage issues, users are starting to scrutinise the ownership of their data and governments are pushing through extensive data protection regulation (e.g GDPR).

Following the democratisation of the hardware, the operating system, the software and the networks, the new paradigm shift we are observing will open up access to the data within networks. As the existing data silos break down, we will observe the commoditisation, in the sense of packaging and access, of the data itself. The question remains - what will the business model of technology companies become, once the data monopolisation angle has eroded or died?

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4 https://old.seattletimes.com/html/microsoftpri0/2019853245_goldman_sachs_microsoft_os_has_gone_from_more_than.html
5 https://www.idc.com/promo/smartphone-market-share/os
To answer this question, we re-trace the history of open source software development in relation to the motivations & monetisation methods that accompanied it. At its very beginning, the free software movement emerged amongst privacy & security hobbyists, hackers and government entities that realised they could not commercialise their software. The movement was heavily hinged on the ethical belief that software should be in the open domain, available and accessible to all.

Developers realised that, beyond making software freely available, the open source model fundamentally improved the software development process. Communities established themselves around projects and reputation layers started settling within these communities, generating exponential growth in contributors, maintainers and users. With the ability to widely distribute software across the world, developers started forming companies that added very thin monetisation layers onto wide distribution networks. In 1993 Bob Young incorporated the ACC Corporation that sold Linux and Unix accessories and later became Red Hat. Around the same time, in 1994, Monty Widenius (Advisor to Fabric Ventures & Founder at OpenOcean) began working on MySQL which consolidated itself into the Linux, Apache, MySQL & Python, or ‘LAMP’ stack ⁶ and became the world’s most popular database before being acquired by Sun Microsystems for $1 billion in 2008.

Over the past two decades, as large corporations realised the viability and benefits of open source development, the entire world has become reliant on open source software. The React and React-native JavaScript development tools are primarily maintained by Facebook while Google has made countless contributions to Android, Kubernetes and Go amongst others. Microsoft, which would have been considered as the primary opponent of open source less than 20 years ago, has reinvented itself into the company supporting the largest number of open source developers in 2017 and recently acquired Github for $7.5b. The tech giants have co-opted open source software, have mostly stopped charging for software, and have built their entire business around monetising their users’ data instead: creating trillions of dollars of market cap by using software that they don’t own, and data that isn’t theirs.

Unfortunately, in this third wave of open source software development, the developers have lost the ethical aspirations and romantic motivations that drove the first wave, often without benefiting from the financial upside or the reputational rewards that drove the second wave.

With Satoshi Nakamoto’s 2008 release of the Bitcoin whitepaper, we’ve entered into the fourth age of open source software development: by solving the ‘double spend’ problem and creating ‘digital scarcity’ in decentralised systems, Satoshi lay the foundation enabling the integration of a digital value transfer layer within peer to peer networks. This fundamental architecture breakthrough enables open source networks to reward and incentivise contributors without a central authority or sponsor. The permissionless innovation on open platforms and ‘trustless’ peer to peer networks combined with token-driven incentive and governance systems has started a Cambrian explosion of developers and ecosystems uniting around open source projects. We believe that the open source development movement has finally found its elusive ‘business model’ - a model which doesn’t necessarily reward a single central entity, but instead fairly incentivises all contributors and participants, creating a distributed digital economy within each network.

A paradigm shift driven by 3 mega trends

The success of the Web 2.0 Era over the past two decades has largely been dominated by three fundamental technologies: Cloud, Social & Mobile. We’re convinced that the coming decades of technical innovation will be driven by the interplay between Edge Computing, Machine Learning and Decentralised Data: the edge computing on swarms of devices capturing millions of data points, the advancements in machine learning algorithms ingesting this wealth of data & a substrate of decentralised data enabling secure & scalable communication, coordination and fair incentivisation.

Compounding these three technological waves will open up a wealth of data that is currently still locked away for privacy, trust, or competitive reasons. In 2010, the world produced around 1 zettabyte of data. According to McKinsey, in 2016, the world produced 16 zettabytes of data, and yet only analysed 1% of it. By 2025, the world’s data generation is expected to surpass 160 zettabytes. Previously untapped data sources, privacy-preserving provenance and granular value distribution, will lead to currently still inconceivable breakthroughs such as personalised medical predictions via genomic data, coordination of distributed autonomous agents and unlocking of new unexplored monetisation methods for the data generators.

However, if the siloed data structures of today are not rapidly upgraded, the proliferation of available data and the efficiency of machine learning algorithms could quickly lead us to a dystopian future of surveillance capitalism and politics capable of not only predicting, but tapping into our emotions to ‘benevolently’ prescribe decisions we are yet to make. In effect, acting on the future they have foreseen with immense precision and with objectives that are neither necessarily transparent nor aligned with our own. Decentralised data architectures will not only prevent tech giants and other data monopolies from gaining such pervasive power, but will instead enable individual actors to enhance their lives with this new wave of applications whilst they both maintain control over their privacy and gain financial returns from their participation.

Novelty of tokens & cryptoeconomics

A fundamental problem that has historically plagued network architects of all varieties can be simplified down to the mismatch between value creation by a network and value capture by an equity structure. Equity structures derive their value from the future cash flows generated by the central company’s ability to extract revenues from its customers at a net profit. A system that worked well for companies selling goods and services: Apple selling premium hardware or Netflix and Spotify selling monthly memberships. The equity model does however result in a dangerous divergence of interests when applied to networks in which the core value lies within the cheap distribution and user driven content creation: Twitter has had difficulties monetising the content created by its user base, Facebook had to turn to an almost dystopian & panoptical model to monetise their user base & open source networks never managed to properly monetise their full value creation. While the community generates the valuable content inside a network, the user transforms from the customer to the product itself. The fundamental mismatch lies in the fact that a central entity is attempting to capture the entire value created by the community of users, which receives no financial upside in return.

By moving away from a central equity company governing the network, and instead modeling the network as a digital economy with a native token, we can not only increase the value captured, but also distribute it to the actual value creators. This digital economy uses tokens as manifestations of digital scarcity within a network, which are used to incentivise distributed people, machines and other actors to contribute and manage valuable resource, work and usage. Representing the digital scarcity of the network (e.g. compute power, human labour, content creation or governance) as a digital token renders it upgradable and infinitely flexible. These tokens become a programmable digital software link between humans and the assets they own - both virtual (e.g. personal data) and physical (e.g. real estate).

What these tokens enable, is a cleverly architected balance of network-intrinsic stake & utility for users, developers, resource providers (e.g. miners), and capital providers (e.g. investors), achieved through Token Economics - the new frontier for incentive mechanisms design. As tokenisation allows a re-imagining of ownership on a wholesale basis even beyond pure digital assets, existing assets will enjoy the potential for improved liquidity, transparency, access, compliance and taxation which will drive their tokenisation and the ultimate supremacy of the new crypto capital markets.

A couple of decades back, we witnessed data and content shifting from analogue to digital distribution. This allowed everything from creation to distribution to...
monetization to be reimagined. The impact of digitisation on newspaper, television and movie content is well documented: new titans like Netflix and Spotify have arisen and firms like Blockbuster and Kodak are marginalised or gone. We have now become convinced that tokenisation will be to ownership as digitisation was to content.

"Tokenisation is to OWNERSHIP as digitisation was to content." 

Types of tokens
Diving into the universe of tokens, we classify the different characteristics into three core categories: Currencies & Commodities, Utility Tokens and Security Tokens. Bearing in mind that any individual token might exhibit several of the characteristics at the same time or even evolve their characteristics over their life cycle of the underlying network, we have summarised our view of these characteristics below:

Graphic 4: Taxonomy of token characteristics, Fabric Ventures

Store of Value (SoV) Tokens rely on their censorship resistant and peer to peer transaction features to ensure a store of value that is completely uncorrelated to any other market, commodity or currency. Examples include the likes of Bitcoin, Monero and Zcash which all have slight variations on speed of transactions, security of the network & privacy of the network. These come closest to being the equivalent of currencies and when considering the quantitative theory of money, their dynamics might be understood with the equation of exchange (MV = PQ).

Stablecoins aim to decouple the volatility from cryptoassets and provide a digital asset that is pegged to a fiat counterpart (e.g. USD) and mainly used as a unit of account & medium of exchange. The 3 large categories include:
- Centralised IOU Issuance - kept stable by an equal reserve of fiat that is centrally held.
- Collateral Backed - over-collateralised by cryptoassets such as Ether escrowed trustlessly.
- Seignorage Shares - recreating an algorithmic central bank that keeps stability with levers on supply and demand.

Payment Tokens have been the simplest and most iterated version - they’ve often been forcibly implemented into networks as the sole method of payment for the digital asset provided by the network. As a result, they come close to being currencies within a digital economy, without ever becoming investable, liquid or stable enough to become stores of value. Instead, at a future equilibrium, they’ll look closer to a form of working capital, which users will try to minimise due to the opportunity cost of capital. As a result, they are likely to end up with an extremely high velocity, but a low value accrual. Through the nature of open source code (copyable & forkable), these token models run at a high risk of being forked and replaced by equivalent protocols that enable payments in a proper SoV token.

Security Tokens are a tokenised representation of assets ranging from traditional commodities & equities, to pieces of art and all the way to pieces of virtual land in the form of crypto collectibles. The former rely on a strong guarantee of ownership of the underlying asset and can be valued by the worth of their underlying asset with a premium for liquidity, divisibility and accessibility. The latter often represents scarce digital assets that are valued like art or real estate - i.e. fame of creator, location in a digital landscape & overall demand for asset.

Governance Tokens give the holders a vote in how a network is run, where developers focus their efforts & when software upgrades should be implemented. As the value of a network goes up - via the number of companies running on top of it or the number...
of transactions it handles - the ability to influence its development will become a
scarce resource. The price of the voting power in such a network is in fact likely to scale
exponentially with the value it secures. This token feature is generally combined with
one the aforementioned token designs.

Discount Tokens give owners the right to discounts on purchases of an asset provided
by a digital network. Buying into a discount token can be equated to buying into a
coop, and getting the right to a set discount percentage of all economic activity within
the network. As the value and activity of the network grows, the holder of the token
can claim a larger value of discount - effectively modelling a royalty fee that can only
be claimed in terms of network services (no monetary payouts).

Work Tokens operate on the idea that service providers need to have ‘skin in the game’
to be incentivised to provide high quality work for the network. Whether it’s objective
work such as computational resources or subjective work such as qualitative ratings,

service providers are obliged to stake a certain amount of tokens into the network
in exchange of the right to provide profitable work. If the work is done ‘correctly’ the
service provider is awarded the fees paid by the user (not necessarily in the native
token). In contrast, if the service provider acts maliciously, their stake is slashed &
distributed to other service providers. As the network grows in usage, there will be an
increased amount of immediate and future profitable work to be delivered, leading to
a rise in service providers desiring to deliver this work. As a result, the demand for these
work tokens will increase and due to their fixed supply, the price of the tokens should
rise with usage of the network. We’ve further explored the value derived by work tokens
in a dedicated post.

Burn & Mint Equilibrium Tokens are architected on two simple characteristics: users of
the network pay for services with the tokens, but instead of paying fees, they burn their
tokens (denominated in USD) & at the same time there is a constant inflation process
of new tokens being minted (denominated in native token). As the service providers are
referenced by the users of the network for each burned token, they receive an allocation
of the newly minted tokens as payment. As a result, when the platform usage increases
and users burn more tokens than are issued through inflation, the supply will decrease
and push up the price per token.

What’s at Stake for Investors

The role of an investor investing in this plethora of token models must evolve from a
simple capital allocator to an active participant within the networks. From community
building, to token engineering, to actively running nodes, to actively managing liquid
positions, venture capital funds active in this space will soon be required to become
operationally involved within networks. This fulfills their fiduciary duty to maximise
the financial return on capital for their LPs, and also helps bootstrap the networks in
which they are invested. Ambitious founders who understand that the path to enduring
success will be one of twists and turns will initially turn towards patient institutional
partners, that inject both capital and work into their networks, and only once the
networks are live with a minimum viable number of nodes, will they start attracting
specific user groups or other relevant stakeholders through targeted sales or air-drops of
tokens.

The most active investors will continuously engage with networks on multiple fronts over
the duration of their investment:

Staking: As Proof of Stake (PoS) or Delegated Proof of Stake (DPoS) networks go live
on mainnet, token holders will have the ability to stake their tokens in order to provide
profitable work to the network (validating transactions, computing, arbitration,
transcoding or providing security) and be rewarded by the network (e.g. block rewards)
or by the users (e.g. transaction fees). In DPoS networks, operators within the network
can do the work as a service for a share of payouts, and token holders can delegate/

bond their tokens to the operators.

Voting: Numerous networks are using their tokens as a governance tool - whether
through simple token voting, quadratic voting or liquid democracy, the tokens give a
voice to their holders. Long term investors will participate in the governance process of
the network, and steer it in the direction of their best interest.

Curating: With Token Curated Registries (TCR), early investors in such networks will
need to actively participate in the curation process, simultaneously keeping the registry
at high quality, as well as signalling the quality of curators involved.

Running Nodes & Simple Usage of Network: As investors might also be users of
networks, they might actively build early iterations of use-cases for the networks.
From running nodes within the network for their own data-driven tracking purposes to
actively participating within the network’s economy (e.g. buying services/assets), these
investors will initially seed the ecosystems built on top of the networks.

Beyond simply committing to actively participate in portfolio networks, Fabric has
already begun setting up the infrastructure within certain testnets. Some of our early
experiments of running nodes within the Ocean Protocol testnet are documented in a
dedicated blog post.
Europe: a Prime Mover

Developer explosion & 100s of years of academic strength

The army of developers and technical talent stems from Europe’s legacy spawning 100s of years of technical academic excellence. Europe is home to 5 of the top 10 technical universities in the world and is year after year graduating twice as many STEM PhDs as the US\(^1\). According to Stack Overflow, Europe houses 5.5m developers compared to 4.4m in the US. The technical talent has always been present in Europe - but historically the banking sector was the dominant developer employer, and only after 2008 did the technical talent decide to flee its clutches. And now, for the first time, with this wave that’s democratising access to capital, the technical talent doesn’t need to migrate to the US to raise venture capital and build global companies. As a result, the value created by founders coming from different corners of Europe has significantly outraced any other geographic region: $4.1bn has been raised by European projects in 2018 alone - versus $2.3bn in Asia, and $2.6bn in the US\(^1\).

Distributed teams from the start

As a continent made of 50 vastly different countries, Europe is accustomed to working in distributed teams as well as building with a global outlook. Any nascent company in Europe has always recognised the need to build an international roadmap from day one to avoid the traps of small domestic economies. Diverse and multinational teams have become the standard and London, Berlin, Paris and Amsterdam have all consolidated as hubs for technical innovation. We call this the “Technaissance of the European City State”.

Entrenched Counter Culture

Europe’s largest advantage probably roots from its history spanning over the past centuries. While the centralised business model fit the Silicon Valley ideals of dense capital pools and narrowly aligned ideologies, the decentralised network model fits Europe’s entrenched history of political fractures and ensuing counterculture movements. Europeans have lived through two unhinkably disastrous world wars fought on home soil. Europeans have been brought up in families that lived through communist and/or fascist dictatorships. Europeans were split through the cold war for over 40 years. Europeans have lived through totalitarian regimes that annihilated the idea of privacy and freedom of speech and regularly seized personal goods and assets from their own citizens. Decentralised networks will certainly deliver tactical benefits to individuals but also hold the promise of keeping in check society-wide nightmares that Europeans have experienced directly and acutely over the past century.

Regulation:

From a regulatory perspective, the EU has been on the forefront by pushing directives such as GDPR to protect the digital data rights of the consumer, and PSD2 to open up the financial system to the benefit of the user. Beyond that, a race between countries has begun to provide the clearest and most welcoming regulatory framework for the new business models and governance structures of decentralised networks. France’s Minister of Economy has openly stated that France will not “miss out on the blockchain revolution” and will become a global hub for ICOs\(^12\). Switzerland has already issued a very clear regulatory framework for token based networks\(^13\). The UK Chancellor has announced a crypto asset task force to create a constructive regulatory framework for tokens\(^14\). Smaller countries like Malta and Lichtenstein have sprinted ahead with open regulatory approaches attempting to become global hubs for decentralised networks and related businesses. Throughout European countries, a competitive race has begun to provide the most founder friendly & forward thinking regulatory environment for decentralised networks and their native crypto-assets.

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\(^1\) Atomico State of European Tech 2017
\(^1\) Stack Overflow
\(^12\) https://www.ft.com/content/2e7b2778-2d22-11e8-9b4b-bc4b9f08f381
\(^13\) https://www.ft.com/content/52820f90-1307-11e8-940e-08320fc2a277
\(^14\) https://www.coindesk.com/the-uk-government-is-launching-a-cryptocurrency-task-force/
Conclusion
We have explored the thesis that we are at the start of a new era of computing resulting from the confluence of a number of megatrends (edge computing, AI/ML and decentralised data) and that value capture mechanisms for these cryptoassets are steadily turning from an art to a science. These new tokenised representations of ownership, when deployed in networks of users, machines and other stakeholders, have birthed a whole cadre of decentralised value accrual models in addition to today’s well understood centralised business models.

Just as Rome was not built in a day, we believe there is a long journey ahead to build a scalable, secure and private Web3.0 - starting with the technical infrastructure, developer tools and data management frameworks. To support this vision, Fabric Ventures is adapting the patient venture capital model to investing in decentralised data networks: backing the boldest technologists & communities at the earliest stages, supporting them throughout their journey and becoming active participants within the networks they are building.

In Part II we will share some of the nuts and bolts of how Fabric seeks to be selected as a partner by the most discerning entrepreneurs, deliver value to their networks and more generally push forward the Web3.0 vision.

Contributors
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TokenData
Token Data is a free platform tracking all publicly available data (qualitative & quantitative) on token sales. TokenData is unaffiliated to mainstream media, cryptocurrency news outlets or token sales. They distribute a bi-weekly newsletter that is read by a wide spectrum of people interested in the blockchain space, ranging from cryptocurrency hobbyists to prominent VCs and national regulators.

www.tokendata.io

TokenAnalyst aims to bring transparency for the decentralized economy. They process and analyse every transaction on the blockchain itself, using cutting-edge machine learning techniques, deriving data-driven insights and metrics that enable investors, developers, and other stakeholders in this growing economy to fundamentally understand and value the plethora of crypto-assets available today.

www.tokenanalyst.io
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If you notice any errors or omissions, please let us know!