Consensus Fund

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Abstract

The goal of our thesis is to provide investors with a generalized framework to use when evaluating potential distributed ledger token investments. The thesis is meant as a basic introductory framework, which is being greatly expounded upon in our upcoming book.

This thesis will remain free in perpetuity. If we prove to you we know what we are talking about, please support us by purchasing the book.

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It is possible you will lose all of the money you invest in distributed ledger tokens. These investments are not deposits or obligations of or guaranteed or endorsed by, any bank, and are not federally insured or guaranteed by the U.S. government, the FDIC, the Federal Reserve Board or any other agency.

Contents

BACKGROUND

Released in the depths of the global financial crisis, bitcoin quietly created a paradigm shift in how value can be created, transmitted, and stored.

World Economic Forum: The Future of Financial Infrastructure

Few realized this was the first time in human history two peers **anywhere on earth** could enter into a transaction to exchange value without the need for a trusted third party to provide settlement services.

Ten years later, we are on the cusp of an entire new internet running on a backbone of peer-to-peer distributed ledger accounting systems. The graphic to the right illustrates that payments and currency systems are just one small fraction of the total use cases a distributed ledger settlement layer can power.

Distributed ledgers pave the way for three profoundly disruptive mega trends. Keep in mind these three trends take an entire book (referencing many other books) to unpack properly.

Automation of the middleman value chain as pattern recognizing artificial intelligence programs will eventually be able to communicate and settle transactions across a web of interconnected distributed ledger protocols. As **data is inherently structured** when sent to a ledger (E.g. we know sender, amount, and other critical metadata) the ability to perform statistics on higher quality data-sets drastically increases.

The success of the FAANG stocks hinges on *destroying* the middleman value chain. Distributed ledgers conversely offer the chance to **return some of the value creation** automation brings to the ordinary people providing the data in the first place. In our current Siren Server world, 100% of value creation goes to data aggregators like Facebook and Google.

While this new form of digital feudalism can work in the short term, over the long term centralized software hollows out the middle classes by being so incredibly efficient at rooting out inefficiency. Of course Uber provides superior service to an individual taxi driver as they can aggregate all taxi drivers into the same commodity through software. Eventually the big data powered real estate company will far outperform an individual realtor when it comes to pricing and selling a home 10x faster for a 10x lower fee. Software eating the world sounds great in the short term, but what happens to the millions of taxi drivers and realtors eventually forced out of the middle class? By imbuing data with value, we have the chance to distribute wealth through market mechanisms rather than inefficient political mechanisms to ensure all people can participate as part owners in the system.

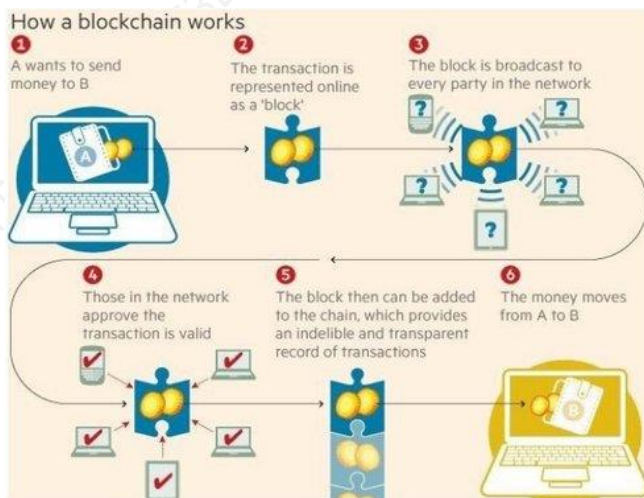**Open source makes MORE money AND checks monopoly power**. When you store your data inside of a FAANG black box, switching costs become enormous. How can a new social network hope to compete with Facebook when Facebook alone holds the keys to 1 out of every

7 people on earth? Instead, if we each owned our own data dossier on a lower level protocol instead of being hoarded in the application layer, we would be free to participate in whichever version of a social network we wanted. If a network became sufficiently large and successful, there would be a natural incentive to fork into a new project. Conversely, if the network continues to provide real value above and beyond mere rent seeking, the network will stay intact. This natural dynamic forces distributed ledger projects to share in the value creation with their users, as hoarding too much of the value created incentivizes users through low switching costs to choose a more equitable platform.

With this macro narrative in mind, the rest of our thesis will describe how we select projects to include in our diversified basket of platform level distributed ledger technologies.

INTRODUCTION TO REMOVING THE MIDDLEMAN

There is a paradox that distributed ledgers are simultaneously the most and least secure form of ownership ever devised.

How a blockchain works

1. A wants to send money to B
2. The transaction is represented online as a 'block'
3. The block is broadcast to every party in the network
4. Those in the network approve the transaction is valid
5. The block then can be added to the chain, which provides an indelible and transparent record of transactions
6. The money moves from A to B

No third party is required for A to send a transaction to B.

As distributed ledgers remove trusted third party middlemen from the transactions process, each user becomes fully responsible for protecting their own investments (or must delegate this responsibility to a new generation of middlemen such as Coinbase, Kraken, Bitfinex, etc).

Existing assets such as cash in bank accounts, stocks, bonds, and real estate work off centralized ledgers where your ownership is entrusted to a centralized custodian. In the centralized world, custodians can reverse transactions in the event of an unauthorized withdrawal.

However, with this power they can also freeze access, steal from you, or be victims of theft themselves as proven time and time again with data breaches like the Target hacks, Equifax hacks, Playstation hacks, etc. More insidiously, they can use perfectly legal techniques like Rehypothecation to duplicate the same assets over and over again with multiple institutions laying claim to the same underlying asset.

PUBLIC AND PRIVATE KEYS

In the distributed ledger world, middlemen are replaced with two large strings of letters and numbers:

The first is the **"public key"** which functions just like a bank account & routing number.

The second is the **"private key"** which gives the possessor complete access to (and control of) any amount of value on that address.

In this new system, the private key is the key to your "physical bullion" vault.

Stretching this analogy further, if you were walking around with a gold coin in your pocket two things could happen:

You could lose it.

Someone could steal it.

There are security best practices that can practically eliminate this risk, but these techniques require learning a new set of skills unique to distributed ledger investing.

To prevent data loss have the private key physically written down in several dispersed locations. Potentially with your own cipher on top of the private key for further protection. More sophisticated solutions such as hardware wallets are available which are specialized USB drives designed specifically to securely store private keys.
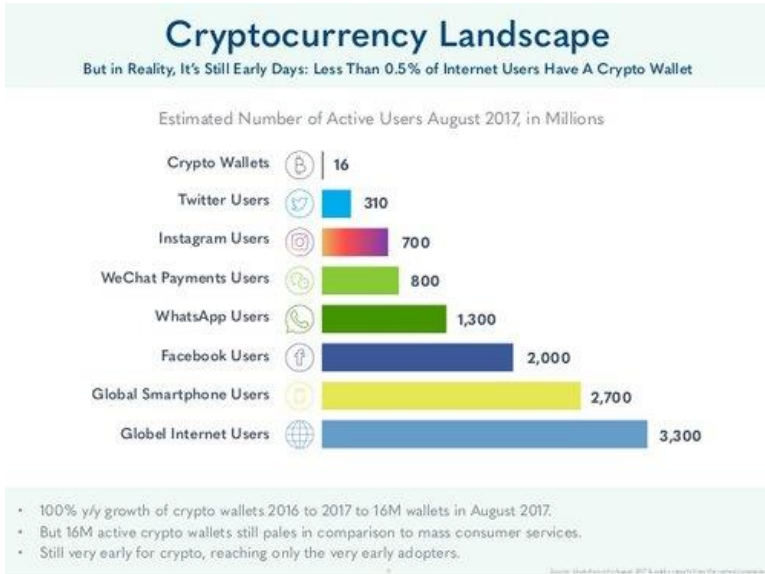
Solutions such as "multi-signature" addresses are available that require multiple private keys to unlock funds. This allows for trusted third parties to optionally be entrusted with part of the access to the account. As an example, a 2 of 3 multi-signature account can be created that requires 2 out of 3 signers to provide their private keys for a transaction to be sent.

Preventing theft is still problematic as all theft revolves around the attacker gaining access to your private key(s). There is a concept called "air gapping" where public key/private key pairs are generated on clean offline machines that are never connected to the internet. These air-gapped machines generate the key pair then are wiped or discarded leaving only the keys behind.

PATH TO LARGER ADOPTION

For the distributed ledger space to evolve into a multi-trillion dollar market, companies specialized in private key security will need to evolve for two main reasons

Cryptocurrency Landscape
But in Reality, It's Still Early Days: Less Than 0.5% of Internet Users Have A Crypto Wallet

Estimated Number of Active Users August 2017, in Millions

Crypto Wallets	16
Twitter Users	310
Instagram Users	700
WeChat Payments Users	800
WhatsApp Users	1,300
Facebook Users	2,000
Global Smartphone Users	2,700
Global Internet Users	3,300

- 100% y/y growth of crypto wallets 2016 to 2017 to 16M wallets in August 2017.
- But 16M active crypto wallets still pales in comparison to mass consumer services.
- Still very early for crypto, reaching only the very early adopters.

Most consumers will want the safety and security of outsourcing private key risk to a trusted intermediary. The promise of decentralization meets cold hard reality when thinking about issues like insurance and transaction reversals. As the space professionalizes, offloading private key risk from individuals to companies makes sense.

Institutional capital such as pensions, sovereign wealth funds, and private equity legally cannot enter the space unless a third party custodian manages their keys. If fund managers have access to the private keys they would in effect be "self dealing" which is illegal for sanctioned wealth management offices to do.

We predict vehicles such as exchange traded funds will continue to gain traction along with crypto-native services like Coinbase and incumbents reaching into the space like Fidelity Digital Assets that manage private key risk for consumers with an easy to use interface.

Biometrics could also offer a solution to this problem by encoding the private key inside of unique fingerprint, facial vein, or even DNA data so the end user would never see an exposed copy of the raw private key. This could pave the way to make verification as easy as looking into your cell phone camera for everyday transactions, or providing a cheek swab for more substantive transactions such as transferring a real estate title. Ultimately, biometrics alone cannot be used, as DNA can be as easy to acquire as a waiter swabbing a water glass in the back of a restaurant. To provide effective security, a combination of approaches must be used where this is always a trade off between security, theft/loss risk, and trusting others.

FRONTRUNNING THE CUSTODIANS

In the interim, the early stage investing paradigm has been flipped as institutions are limited in their ability to gain exposure to this new asset class, as many of the highest potential projects in the space lack the custodial solutions needed for institutions to hold them.

For the first time savvy retail investors, family offices, and forward thinking VCs have an advantage in establishing positions before projects gain wider acceptance and adoption (if they are willing to stomach considerable risks)

RISK PREMIUM FOR EARLY ADOPTION

Returns are greatest before a new technology has been "derisked"
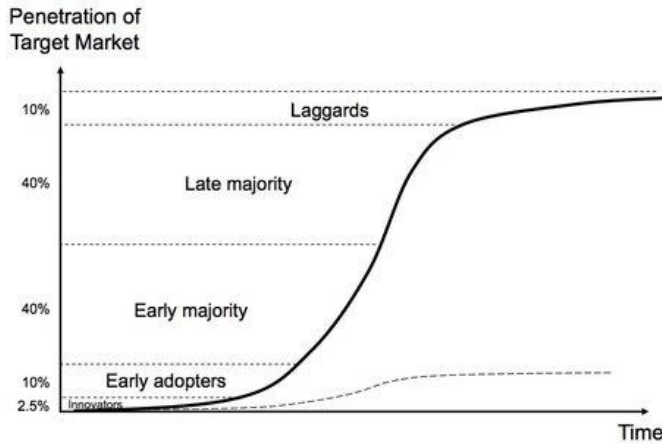
Looking the current cryptocurrency landscape (pictured above) compared to the S-Curve of adoption (pictured left) shows the distributed ledger space is still very much in the innovators phase in terms of adoption.

This means many of the most promising projects are still very hard to find and acquire, which creates a significant risk premium/knowledge premium.

DLT (distributed ledger technology) investors must not only be willing to risk suffering massive drawdowns, but also must be willing to learn how wallet software and trading platforms work to gain exposure to the space, as formalized products like ETFs and Futures do not exist yet in any meaningful way.

Even if such products existed, the ability for financial institutions to legally rehypothecate and commingle funds means they can only be trusted as much as the institution issuing them. This issue is not unique to crypto assets, but endemic to all legacy financial institutions until they switch to real time distributed ledger based settlement.

Unique risks to the distributed ledger space further driving risk premium to early adopters are:

Regulatory Risks: Any publicly accountable entity could potentially be barred from investing in distributed ledger tokens if laws are passed that prevent their use.

Market Risks: The total number of market risks are too numerous to name here. The two main risks we see are:

Illiquid markets with small order books. Many investments simply cannot be liquidated quickly in the event of a panic as the order books are not large enough to accommodate large sell orders.

Bitcoin as a reserve currency. The value of all distributed ledger tokens is for the time being tied to the value of bitcoin which sways the value of all other projects positively or negatively.

Exchange Risks: Trusted third parties that convert fiat currencies into ledger tokens are a source of risk as you lose control of your private keys when funds are sent to an exchange. Tokens on less reputable exchanges are subject to:

price manipulation such as trading bots artificially manipulating the order books or selling tokens the exchange may not even have (also known as fractional reserve banking) or simply shutting down and stealing all of the tokens on the exchange

For this reason, we recommend keeping funds on exchanges for as little time as possible and securing your own keys rather than trusting an exchange. We will mention again custodial issues are the single biggest difference between the legacy financial world and the distributed ledger world.

Knowledge Risks: When investors unfamiliar with a new asset class do not have enough information to make informed investing decisions. This risk can be mitigated by applying a rigorous valuation framework to guide investment decisions such as the one you are reading now.

VALUATION FRAMEWORK

Thus our fund is primarily focused on generalized "platform" projects as we feel these base level protocol layers will eventually form the monetized backbone of a new "tokenized" internet of value.

Blockchain
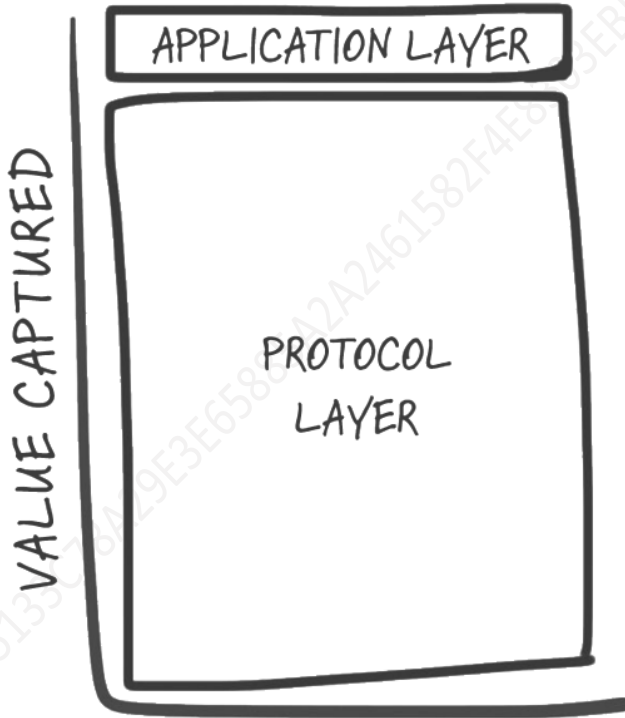
The Fat Protocols concept originally came from Union Square Ventures post. While overly simplistic, it captures the basic premise of value accruing throughout the network rather than only at the top.

In effect, our fund wants to have small percent ownership in many platform level projects that the next Facebook, Uber, or NASDAQ will be built on top of, rather than investing in individual companies.

This is a tricky continuum to operate on as pointed out in this Jake Bruhkman piece which makes the simplistic notion of one "fat protocol" capturing all of the value much more nuanced.

An analogy can be made to owning a small percentage of the TCP/IP network routing protocol a company like Facebook resides on. Except in the distributed ledger world, every interaction has a micro cost associated which each "post" "like" or "comment" that can be shared between peers rather than absorbed by a centralized intermediary.

As the values of base protocols increase, the incentive to move as much transaction volume off the main chain as possible also increases to avoid high network fees. In the book, we follow this logic to its inevitable conclusion where a "fingerprint internet" is created that only stores small fingerprints guaranteeing the honesty of data, rather than replicating full copies of the data many times. We also discuss how this might happen through technologies such as sidechains, hashgraphs, and other esoteric terms which we try our best to explain in plain English.

FOUR PILLARS

Our framework has four main pillars we use to evaluate platform level projects. These pillars are meant as guideposts for evaluating the high level strategic vision each individual platform has for future development.

Specific security features we look for include the use of functional programming paradigms and "turing-restricted" transaction environments which do not allow for arbitrary computation to execute directly on the network, but instead through secure virtual machine environments. (Secure & Smart)

Innovations to within the consensus mechanisms to reach consensus between ledgers using the least amount of electricity possible while also deterring attacks on the network through proper game theoretic inventive models. (Efficient & Incentivized)

SECURE

Ensuring secure transactions is of paramount importance to the longevity of any protocol level project. As a distributed ledger functions to replace trusted third party intermediaries with a trusted network, users of the network must believe the protocol will flawlessly execute their transactions 100% of the time. This belief must come from the mathematics and logic that governs the network, rather than any individual(s) working on the network.

Basic protections to users such as multi-signature key creation support, and anti-screen capture/anti-keylogging features available within the core wallet can also not be overlooked. The critical junction between back end logic and simple user interface must make it easier (or at least possible without too much effort) to secure store and transmit value.

SMART

Smart and secure are two intimately intertwined concepts. As mentioned above, we look for protocols that support Turing complete programming languages, however only as an application layer that exists on top of a core non-Turing complete transaction layer. This introduces the concept of the ledger "stack" or the notion that to be truly robust, systems must separate the lower level transaction layer from a higher level application layer.

While we want the base level ledger to store an immutable distributed record of transaction data across the network, the applications or "smart contracts" that write to this protocol layer must be isolated to make the attack surface as small as possible. The ultimate value of a protocol level token project is that users believe the ledger is resilient and can be trusted with fingerprints of critical data such as the aforementioned birth certificates, stock exchange data, or even criminal databases.

The smart concept often overlaps with the discussion about which "virtual machine" the network employs to

EFFICIENT

If two given technologies offer the same security and scalability, the network that uses less energy per transaction *might* win depending on what the users of the network value more. Our fund is skewed towards tokens that do not use proof of work hashing to validate transactions which are inherently more power hungry, though we admit there is human psychology at play that wishes for "sacrifice" to prove value. Historical analogs of gold mining, the effort required to build a great skyscraper, or construct luxury yacht show the human desire to reduce entropy locally, especially when aesthetics are involved. It is possible a high brand value project like Bitcoin will enjoy a position of value storage, despite competing solutions offering more functionality at lower cost.

The relationship between efficiency and scalability can be summed up in how many watts of electricity it takes to validate a single transaction. The inherent nature of "proof of work" systems like Bitcoin require massive amounts of electricity to verify transactions through a process where machines compete to find a winning block that validates the transaction. Effectively millions of computers around the world race every ten minutes to find a random string of letters and numbers that will send transactions into the ledger. Currently, miners receive a 12.5 Bitcoin reward for winning the block, making the process of mining very lucrative if miners have access to inexpensive enough electricity.

Alternative consensus mechanisms function in a fundamentally different way by using network models to verify transactions without requiring a brute force lottery system to work. Instead, alternative mechanisms randomly elect owners of the protocol tokens to validate the transactions. To make this process provably secure, ingenious new solutions must be found drawing from game theory and other branches of mathematics to ensure malicious actors on the network cannot co-opt the ledger.
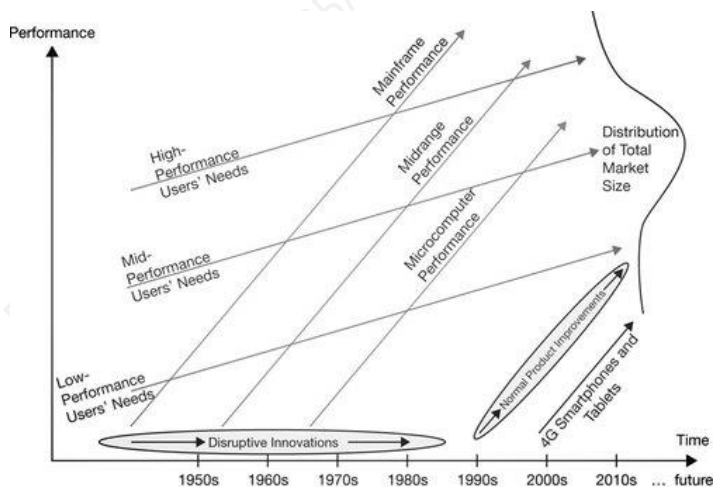
We feel scalability follows the disruptive innovation framework (pictured) as usage starts with low performance needs then quickly ramps to meet mid range needs (payment processing) then finally high performance needs (trading systems and internet of things)

17

INCENTIVIZED

Incentives are where game theory and psychology meet the underlying protocol. The genius of Bitcoin came from not just the invention of sharing a ledger of transactions lashed together by immutable hashing fingerprints, but also from a game theoretic breakthrough: the decreasing emissions curve. Satoshi tapped into a virtuous circle where miners were subsidized with mining rewards for finding blocks. While the value of transaction fees mined per block might only be a few dollars, the value of the mining reward early in the protocol life was vastly more. By halving roughly every 4 years, Bitcoin plays into human psychology where we instinctively want to hoard a resource that only gets more scarce over time.

Despite some ardent supporters who espouse Bitcoin as the only distributed ledger, 2000+ projects in the space are experimenting with different rules governing how ownership is distributed. There are three main strategies projects use to create tokens which can be used in any combination to calculate the inflation rate of a token project. Typically, projects opt for a decreasing rate of new token creation to incentivize early adoption that capitalizes on the scarcity mindset.

Emissions curve: The dominant flavor of token distribution has been this decreasing emissions rate approached pioneered by the Bitcoin network. Any token using proof of work to validate transactions become more computationally difficult to solve over time as more miners race to find the winning random numbers. As this happens, the inflation rate decreases based on both the emissions curve, but more importantly as a function of real world energy costs increasing to find the next trove of magic random numbers.

Bulk release: At the beginning of non work-based projects, some or all tokens may be issued at once. It is crucial to understand how this initial batch of tokens is divided between development fund, founders, and investors. Development funds and founder shares if issued properly can enhance the value of the project as there is a sustainable funding mechanism to support continued development. If

mishandled, like any business the treasury can squander precious resources chasing non value accretive ideas.

Staking & fees: This system rewards holders with additional tokens for supporting the network. What "support" constitutes is a crucial game theoretic question that must be understood before investing as knowing how network fees and new tokens are generated and distributed is crucial to understand the dynamics of the network.

The incentives category is so important we typically devote at least 40-50% of our ultimate investment decision towards vetting the incentive structure to see if it is sustainable and capable of generating network effects.

3 CATEGORIES OF ANALYSIS

Now that we have defined the 4 key areas we look for in platform level projects, we need to layer on a final investment checklist to guide our portfolio allocation strategy.

There is much overlap between traditional early stage venture style investing and token investing. After determining if the market size is big enough (which is almost always yes when pitching ideas like rewriting title insurance, stock exchanges, and social networks) basic due diligence common to all projects breaks down into two main categories:

- do the **people** in the company have what it takes to deliver (qualitative)
- does the **technology** actually work with metrics to back it up (quantitative)

Unique to distributed ledgers, a third equally important category called "token economics" is often the make or break when determining if an investment is worth pursuing. Token economics overlaps with our fourth Incentives pillar, but goes much deeper into asking the most important question in the distributed ledger space **"does your token really need to exist?"**

QUALITATIVE

As technical and data driven as the distributed ledger space is, we rely more on qualitative analysis as these projects are in effect early stage technology companies. The mantra "execution is everything" holds especially true in such a difficult and competitive space where much like traditional venture capital, the vast majority will fail. We look for founders who have the grit to stick through good times and bad to realize their vision. Digging deeper, competitive projects must excel in the following areas:

Focused Innovation: At the core of any value creation machine is a good idea. In the cryptocurrency world, this process can be highly technical though the value proposition should be explainable [in 25 words or less](). Successful projects like Ripple know what they want to do.. replace the SWIFT banking system, not necessarily act as a token platform to launch the next Uber or Airbnb competitor.

Team strength: An idea is only as good as the execution and perseverance of the developers and other professionals willing to stick with the founders long term. Great projects need equally great project management to effectively scale the team.

Partnership strength: Connections to existing industries show a path forward for how the new systems will integrate with the old. Even the most amazing new technology will die on the vine without a path forward to real world usage which involves effectively working with existing gatekeepers.

As trite as the hand waving language taken from venture capital seems, these intangibles provide significant insight into the longer term prospects of each project. Simply put, when the last developer quits the project becomes a defacto zombie, unless a new team is willing to come in and revive it. With the ease of creating a new project from scratch with more equitable ownership, keeping the team together is the critical factor in evaluating the long term prospects of each project.

QUANTITATIVE

A variety of metrics can be used to calculate growth and development rates for each potential investment using more existing methodologies from venture capital and corporate finance.

Developer growth: Analyzing Github commits, developer slack channels, and CVs of new members joining the project shows the project is gaining crucial traction within the development community.

More than raw numbers, insights into the culture of each project can be gleaned from data. Are commits being routinely rejected by an all powerful core cabal? If so new developers may be discouraged from contributing and move on to greener pastures.

Community growth: Use Metcalfe's law (the value of the network is the square of the active users) as a starting point while understanding projects naturally ebb and flow rather than always going up and to the right. Plot user growth and engagement over time. Was there an uptick in engagement without an uptick in price that can be capitalized on? Analyze Bitcointalk forum, slack channel, Reddit, news articles, or general sentiment analysis.

Ledger analysis: Use the blockchain explorers (or better yet centralized indexers like BigQuery) to calculate the velocity of money through the system. Analyze the transactions of top account holders to understand distribution on the network, though statistical analysis is needed to understand if automated transactions are attempting to obscure concentrated ownership. As information is public, knowing when accumulation or divestments by key wallet address occur can give valuable insight into the state of the project much like analysts watching stock sales of key executives in publicly traded equities.

Market analysis: Look at the number, size, and quality of exchanges hosting the coin. Know which countries are driving the most volume, and where the original token sales occurred. Especially relevant for platform projects, how many token projects are using their network to launch on, what the general quality of the projects are, what is the relationship between the parent network and the token projects including incubation services, hackathons, STO/ICO advisory services, network fees, etc.

Wallet testing: Download wallet and verify the technology functions as advertised. Transfer funds between wallets. Test network confirmation speed, ease of use, backups, and other key features. Similar to "eat your own dogfood" when vetting new startups.

Code review: Where resources allow a partial to full audit of the open source code to verify there are no elements of the core protocol that could jeopardize the project. (Eg. an event similar to the Ethereum DAO) Fortunately, many experienced 3rd party code auditors provide detailed reports of their findings which makes this process more achievable with limited time and resources. As a quality signal, projects that voluntarily submit to 3rd party code reviews show they are committed to improving their code bases, though low quality code reviews can be used to obscure underlying problems by presenting faux legitimacy.

TOKEN ECONOMICS

The essence of token economics is to determine how exactly value is captured on the protocol. In the book, we explore token economics in much more detail to answer basic questions like:

Did a special group of insiders get access to significantly discounted tokens before the general release?

Are there appropriate vesting schedules and lock up periods to ensure insiders are not incentivized to immediately liquidate their holdings onto the market?

Is the treasury supporting project development tied completely to the price swings of the overall market, or did they hedge themselves by converting some of their treasury holdings to stable coins or fiat currency?

What are the chances a contingent inside or outside of the project is incentivized enough to fork off into a new project potentially leaving token holders on the original project behind?

Does the token distribution strategy create accretive value such as giving developers token ownership in the project for making valuable code contributions? Or are giveaway tokens potentially being

absorbed by trading bots that immediately flip them onto the market for a quick profit?

Beyond the basics, each project must prove definitively why the token needs to exist. Common needs include:

Tokens as collateral: This idea has a wide range of uses where participants must stake tokens as collateral to back real assets such as real estate or even sports betting. If certain conditions are met, transactions happen with the safe knowledge that if things do not work out properly, there is collateral backing each contract.

Tokens as spam prevention: As many identical copies of the ledger must be made for the "distributed" in distributed ledger to work, transactions need to cost some de minimis amount to process. Without a token cost to prevent unlimited network usage, there is the ever present threat a bad actor will flood the network with spam transactions.

Tokens as shared computing resources: Projects such as the Ethereum "world computer" attempt to tie tokens to the cost of performing computation on the network. Many derivatives of this concept are being attempted to decentralize specialized functions of the internet from content delivery networks, to file hosting, to super computer cluster routing. As distributed networks inherently have some additional level of redundancy (re: inefficiency) beyond their centralized counterparts, investors in this class of token need to be particularly wary. Understanding the token economic value proposition behind choosing a less computationally efficient platform, as well as the technical development path towards closer parity with the performance of existing centralized systems becomes crucial.

Tokens as governance: Tying voting rights to tokens offers a chance to build governance directly into the protocol. More transparent voting mechanisms with lower barriers to entry than traditional methods like equity proxy voting are no guarantee for a better outcome. Building robust systems with adequate checks and balances is notoriously difficult, as different parties in the network will always

be subject to different incentives and the ever present risk of moral hazard.

Tokens as behavioral incentives: The holy grail of distributed ledger systems lies in finding an entirely new economic equilibrium where all participants in the system gain value from being members of the protocol. As an example, in a distributed social network different behaviors might be worth differing amounts of tokens. In such a system, a "like" might correspond with a micro payment to both the giver and receiver as the like indicates to the network one user values something and the other user is providing value. Just like current day siren servers like Facebook, both actions are added to the big data set dossier in the could. Unlike Facebook, both users now share in the value creation instead of all value accruing to a small group of social network owners and insiders.

FINAL THOUGHTS

The ultimate goal of a protocol based investment portfolio is to generate income from the new natively monetized internet. Each automated supply chain transaction, insurance policy, birth certificate, or security transacted on the network generates a micro fee when verified onto a public ledger.

Instead of relying on middlemen for trust, distributed ledgers now fill this role reducing "brokerage" fees from potentially hundreds of basis points, to tiny fractions of a penny per batch of transactions. As the owners of these new digital toll ways, each time a vehicle passes through the system, protocol token holders receive a small compensation for supporting the network. As supplies of the (winning) protocol tokens are limited, an increase in usage of the network thus increases the demand to own a portion of the protocol to receive fee income.

Distributed ledgers offer the first automated trust engine in history that allows for middlemen inducing friction in our economic system to trend towards zero, leaving only owners of protocol tokens as recipients of middleman income. Your investment in a distributed ledger protocol is thus a small insurance policy towards a future where these new systems are widely adopted.

This new decentralized way of organizing value gives the next generation of entrepreneurs and systems level thinkers new toolsets to more fairly share value between data providers and data analyzers.

It is possible decentralized Airbnb can build superior community funded home insurance products, and even better trust systems where all users (company owners, home owners, and renters) gain more tokenized value over time for being honest and productive members of the ecosystem. Rather than 100% of the service fee captured by a centralized data hoarder, fees can be shared among participants in the system with a distributed ledger backbone to keep everyone honest.

While the allure of *free* is strong and is preyed upon by the large technology companies of today, there is no reason we cannot rebuild our world with more transparent systems that return dignity to all participants. Pick your favorite use case... supply chains, loans, real estate titles, video games.. Anything that contains "value" no matter how esoteric is fair game for disruption. If we are successful, one day all of these applications will run on top of the platform level projects we own together.

If this basic overview has piqued your interest, we encourage readers to check out our book where we explore these topics in enough detail to hopefully do justice to this very deep and complex space. Finally, please do more diligence than just reading this thesis. We try our best to link to the relevant technical and socio-cultural issues to help readers become more versed in the space from multiple perspectives, not just our own.

"Competing in overcrowded industries is no way to sustain high performance. The real opportunity is to create blue oceans of uncontested market space."

— Harvard Business Review