Tokenization and Beyond

Vulpos Research

November 2019

Founders' Summary

''It will have blood, they say; blood will have blood." - William Shakespeare

So matures Shakespeare's ''Macbeth", and what a great expression is it observing the status quo. As we are entering a new era of finance and globalization, blockchain technologies and cryptocurrencies promise us the future. They have captured the imagination of all the greats of this time. Yet, as of today, 15 November 2019, all we see is blood in the streets.

''Blood will have blood." What does this actually mean in the context of crypto? You could say that the blood we see today is just a magnified version of the blood that has been flowing into the markets, blood dressed up as hype and irrational exuberance. In times where wide is the gate and broad is the way that leads to destruction, and those who enter in by it are many, we desire the exact opposite. And often, the greats will rise when the dust is settling — like we will experience the coming times.

Similarly observed in the cycles of nature, creation often follows destruction. They are intertwined like yin and yang. We believe there is a fundamental dual nature to explore in the current state of crypto. In a similar fashion to how ''blood will have blood" we believe ''value will have value". When value is created with the right intentions by the right people, it will spark a vicious cycle of value that will be unstoppable, just as unstoppable as the killing in Shakespeare's Macbeth.

We invite **you** to join us on that journey.

The New World of Value
In this research report, we dive deep into value. What is value? Where does it come from? How is it created? And more importantly: how do we capture it?

Blockchain technologies have the power to revolutionize many businesses across the globe, in some cases by disinter-mediating existing players and creating new and better businesses, while in other cases supporting the establishment, making them more resilient and efficient.

But in all cases, blockchain enables a new world of value, a world of value that is open to all parties, regardless of location, nationality or currency. These value based systems will be deeply and irrevocably interwoven in our societies, and with that comes with the need for extreme thoughtfulness and responsibility. The potential has never been greater than now, and the stakes are higher than ever.

Tokenization
Diving deep into value, we'll explore markets we believe are valuable. The focus is strongly held on tokenization of real world assets, such as real estate. We believe traditional financial systems will eventually all move to a blockchain based equivalent, to be traded on a global market versus a local one.

We believe many assets are being traded below or above real market value, because there is no marketplace at this time for them to find their true value equilibrium.

Enjoy the journey towards **value**. — **The Admo Brothers**

Why Choose Blockchain?

Our world is increasingly more connected by the second. We are able to reach anyone anywhere with the tap of a button. To get a ride from a stranger in seconds or call our family abroad in photorealistic quality. Yet when it comes to the fuel that powers our life: our finances, we do resemble the Flintstones more than we do the Jetsons.

In order to move our lives into the future we have been dreaming about, our financial system needs to ‘’connect”. The current system is not made for that. Bank of America does not talk to UBS the way people communicate nowadays: fast, effective and at a low cost. They are literally speaking a different language in their systems. Of course you can translate, but that comes at a cost of time effectiveness, in the end expressed as a monetary value.

Add developing countries in the mix, where internet is becoming fundamentally accessible, but many people still go unbanked. The system simply does not ‘’speak” their language and ‘’translating” comes at a too high of a cost.

Blockchain solves that.

By creating a new, global language for our systems, we allow them to speak freely, transact broadly, and connect globally. Just like we already do on the internet.

Case Study 1: Connecting Real Estate Markets With Tokenization

We believe tokenization has the ability to fractionalize, globalize & democratize local real estate markets around the globe by leveraging distributed ledger technologies also known as blockchain technology. Utilizing blockchain technology enables one to redesign the infrastructure we utilize nowadays that found its roots in the late 1800s. [1] The latest innovation that has been made within the field so far finds its roots in the beginning of 1975 when brokers started to 'computerize' their databases, currently known as MLS's. Blockchain technology has already begun to unleash industry disruption by the revolutionization of venture capital. Blockchain can revolutionize real estate markets by redesigning how resources are distributed and allocated within the real estate market and the parties that are involved. With a secure, tamper-proof, digitized system based on blockchain, entities can more effectively and efficiently enter and exit the real estate market. This could increase the volume of cross-border transactions, create a global real estate market and could open up real estate markets for groups of people that could not previously enter real estate markets or could not obtain ownership of real estate assets.

What are the pain points?

The real estate market is outdated. The real estate economy is riddled with predatory actors, middlemen and unexpected fees that emerge during the lengthy process of buying or selling a home. Real estate assets are generally illiquid. Another challenge the real industry faces nowadays are the **numerous conflicts of interest** among real estate transactions. Blockchain could **increase the efficiency and transparency, add liquidity, and ensure that proper evaluations are made and that the servicing parties which are involved in any process involving real estate transactions are not extractive in nature.**

Predatory actors that exploit the parties involved: Once a party tries to to sell a home, it will typically engage in the process of contacting a real estate agent, agents typically have access to a local MLS and the network of the specific agent of prospective home buyers and other real estate agents. This process has many flaws, especially conflicts of interest between the agent and the parties that need to be serviced. [2]

A frequently occuring conflict of interest is when an agent personally takes an option on a property they hold an agency listing for.

Another common **conflict of interest** is that agents leverage information and resources to their advantage in an unethical manner. A study conducted displays empirical evidence which proves that REAPs are closed at 4.0 % discounts. [3] However owner agent properties are sold at 3.5% premiums. It is remarkable that agent to agent transactions occur at market value. This implies that any value that could be added for a client by an agent is typically identified and leveraged to the agent's own benefit.

Illiquidity of real estate assets

Individuals or companies often have motives to conduct a "forced sale". Illiquidity in any market typically creates discounts.

Illiquidity is one of the biggest issues, which the real estate market faces. This ought to be the foundation that gives real estate agents an edge to exploit homeowners that are in desperation of selling their home for a significant discount.

This can be a result of incorrect assumptions made whilst purchasing a real estate asset. A common assumption made in purchasing property is that of estimating the marketing period for an acquired asset to be significantly lower than it would be in reality. [4] This assumption significantly increases the risk in owning a home risk many people do not account for.
This risk leads to the sell-out of real estate assets with discounts as real estate agents could identify an opportunity to exploit this situation.

Inaccurate traditional valuation methodologies

A direct result of illiquidity of real estate assets is the fact that proper evaluations are **nearly never made**. Illiquidity results in **infrequency** in the amount of transactions compared to traditional financial markets due to the high costs and human resources it costs to actually do a transaction. The current market is not designed to trade real estate assets frequently. Value of real estate assets is usually determined by considering the price of other properties that are in the same neighborhood and are of similar size.

The numbers are based on small datasets, as only a small amount of transactions occur and the time span in between transactions can often be multiple years.

What is the opportunity?
Tokenization enabled by blockchain-based systems is predicted upon fractionalizing and globalizing traditional asset-backed markets. The 2nd biggest asset-class globally is real estate. By becoming fractionalized, real estate markets would become more accessible. This is one of the factors that ultimately lead to more liquidity in a traditionally illiquid market. **By digitizing real estate titles and converting them to digital titles**, **the step to fractionalizing real estate assets becomes nearly effortless.** The value that this adds, however, is of significant value to all parties involved: homeowners, tenants, investors and corporations in the real estate industry.

Ultimately we see an opportunity for blockchain to streamline the existing way of conducting business by redesigning the way the real estate market is structured and operates now.

Through (1) disintermediating extractive intermediaries through redistributing existing markets and (2) by creating new markets that would previously not make sense to exist from an economic perspective. Blockchain enables various business operations to be executed at significantly lower overhead cost. This enables new types of operations within businesses.

Ultimately the parts of the current system that are not outdated will be excluded, while new systems that are able to better service the parties that are necessary in a real estate transaction will be included.

What is the current way of doing business?

Currently the majority of the real estate market is illiquid. There are various ways of selling a home, however it usually revolves around leveraging a real estate agent within an online platform to sell an **entire** property to another homeowner. Some individuals tend to choose to sell their property themselves.

The bottomline in nearly all current real estate transactions is that they tend to require a significant amount of resources to take place. More than what could be required, given the fact that technology is evolving at such a rapid pace, is that we now have the ability to leverage blockchain technology to make the process of buying, selling and utilizing property significantly less resource-intensive.

How could blockchain help?

Blockchain is predicted upon redefining the way real estate is perceived, traded and utilized. By digitizing trusts and/or deeds, numerous functionalities emerge and become economically sensible options to execute upon.

As the possibility emerges to tokenize real estate we see an opportunity for people to conduct business in a more fractionalized way.

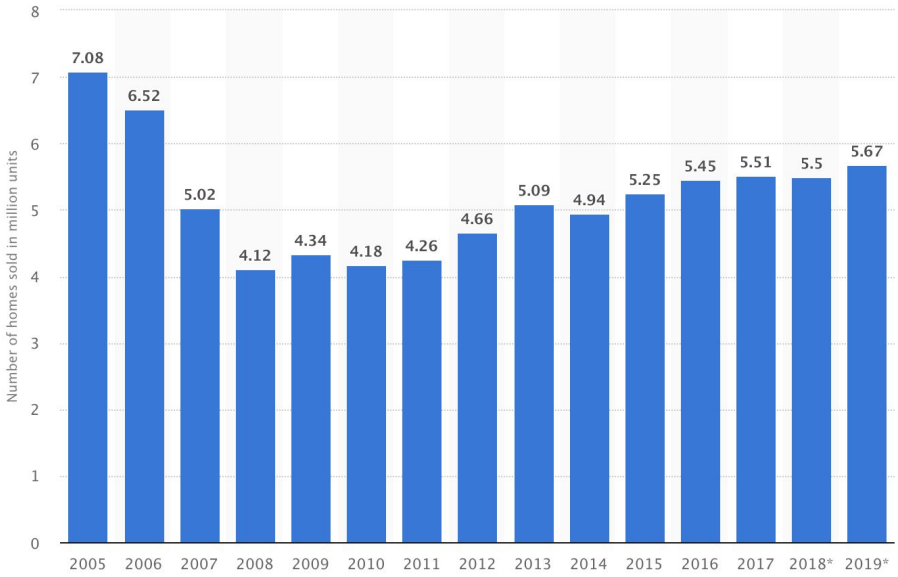
A possibility is to automate time-intensive and therefore often cost-intensive tasks such as on-boarding new investors or traders that want to be able to buy and sell shares of real estate by integrating the rules in a smart contract that would determine whether an individual or corporation can enter the exchange. Automating these type of initially cost-intensive tasks could drastically lower fees that had to be paid in the current infrastructure for buying and selling real estate. This could make it interesting from an economic perspective to buy and sell fractions of real estate in the form of security tokens as there is a significant decrease in fees. As this becomes interesting from an economic perspective, people will start to buy and sell those tokens. **Effectively, liquidity has been added to a previously illiquid market.**

By enabling more transactions to be executed, **more accurate datasets** in terms of what the market is actually willing to pay for a piece of real estate in a certain area at a certain moment in time is produced. This can be leveraged to conduct higher quality evaluations, based on larger datasets then what is are currently being utilized. Within the current infrastructure significantly less transactions are executed then there could be executed. Once real estate gets tokenized and therefore in some cases fractionalized more data points to determine value become available.

The opportunity in numbers

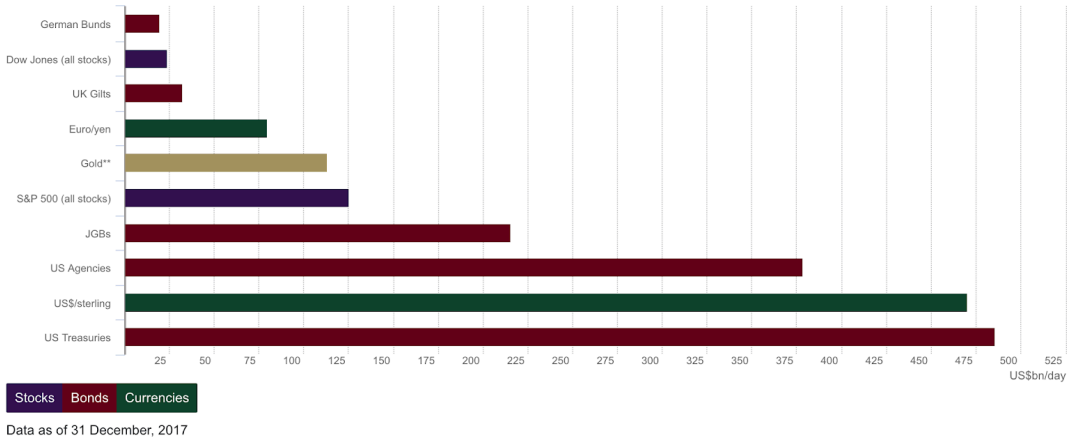
Adding liquidity in the real estate market is one of the biggest challenges to solve. Especially when compared to gold, which typically is perceived as a similar asset-class compared to gold. As we have seen with gold in history tokenization of real estate assets is predicted upon making the real estate market similar to the gold market. Analyzing the current state of these two markets shows us the growth potential for real estate.

Number of existing homes sold in the United States from 2005 to 2019



According to Zillow the median price of a home in 2018 is **$221,500.** [5] In 2017 **5.45 million units** of real estate have been sold. Thus the trading volume for real estate in 2017 has been **$1.21 trillion**.

Trading volume of Gold globally in 2017



[1]

As per the previous graph we can see that the daily trading volume for gold is **$112.50 billion**. Per year this makes up for **$41.06 trillion**. Note that gold is a global, liquid market.

The majority of real estate assets in the United states currently is part of a local, illiquid market.

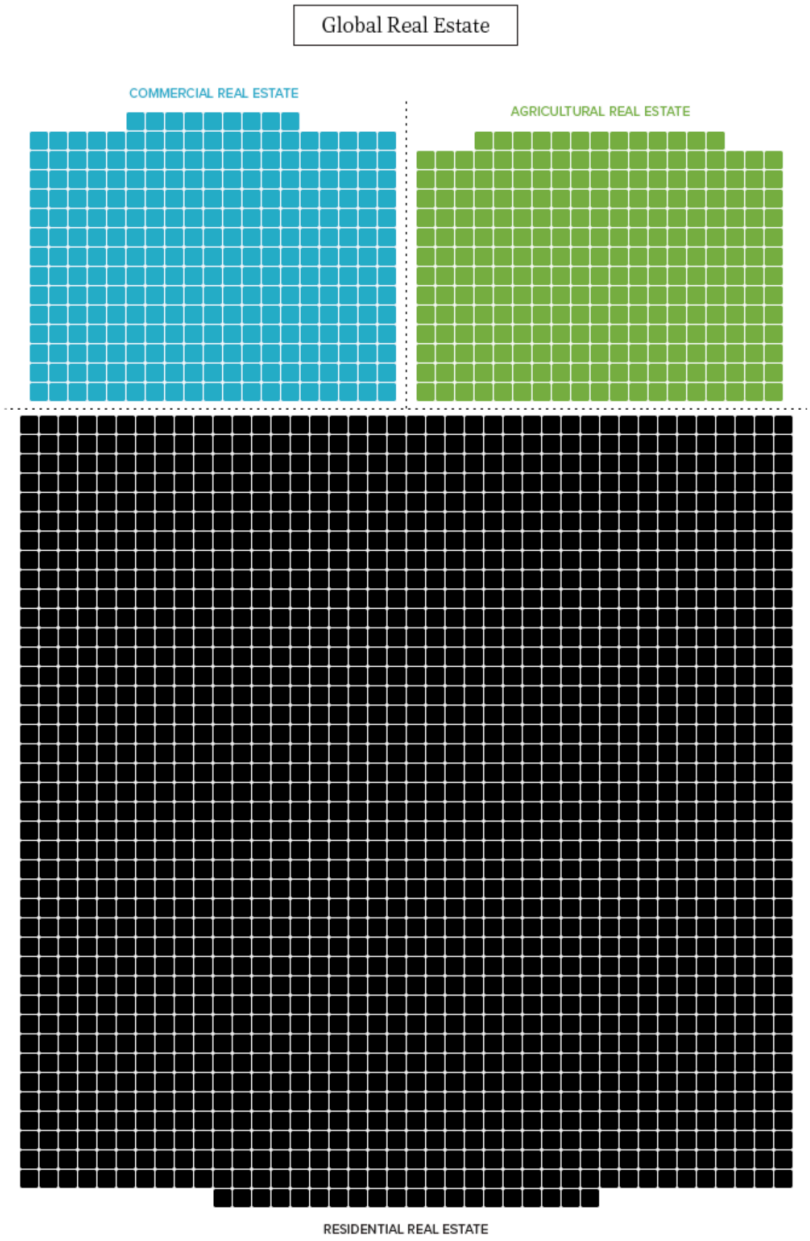
Real estate market USA: **$31.8 trillion**. [7]

Gold minted so far: **$7.7 trillion**

This shows us that the us real estate market is **4.13** times as big as the **global gold market**, however **the trading volume of gold is orders of magnitude higher** compared to the the trading volume of real estate.

The annual global trading volume of gold is **540.26% relative to the size of the total value of the market.**

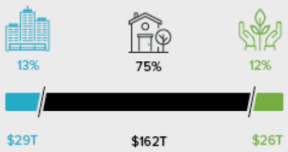
The annual global trading volume of real estate however, **is 3.81% relative to the size of the total value of the market.**
Thus we could state gold is **141.80 times** more frequently traded compared to real estate. This indicates the growth potential for the current real estate market in terms of added value that liquidity could provide.



Global Real Estate

The estimated value of all developed real estate in the world amounts to **$217 trillion**.

This covers residential property, offices, retail space, hotels, industrial land, agricultural land, as well as other commercial uses.



21% of the world's total residential asset value is in North America – despite the fact that only 5% of the population lives there.

Europe contains **24%** of residential assets by value but only houses 11% of the population.

Source: Visual Capitalist

Case Study 2: Innovating REITs With Tokenization

We believe tokenization has the ability to fractionalize existing REITs in an efficient manner. We believe new types of REITs, possibly, micro-REITs will emerge that will operate in a different way than REITs currently operate. The fractionalization of existing REITS and the creation of new micro-REITs that blockchain enables us to do is predicted upon enabling new markets. New ways of operating within REITs will become the norm as markets start adopting the utilization of those REITs. This brings with it many benefits, one of them could be the introduction of new governance models within a REIT. This will provide the people partaking in a REIT with more flexibility from multiple perspectives. For instance being able to only invest in a specific, preferred, type of real estate asset specific to what the individual that is partaking beliefs in and wants to support.

What is the opportunity?

The REIT market as a whole is predicted upon experiencing significant growth. In terms of what countries offer REITs, the amount of REITs and the type of individuals getting involved in REITs. Within the current infrastructure of how REITs operate we have already seen close to a **100% increase** of countries that offer REITs over the **past decade**.

This, while global capital raise and initial public offerings (IPO) have had a close correlation to the developments of REITs. However, blockchain technology could (partially) make an **IPO obsolete for a REIT.** A REIT could raise capital by conducting an **STO**. This could make the REIT market more accessible to a more diversified group of individuals and corporations. Especially by making the process of raising capital for a REIT drastically more efficient, as a result of the fact that raising capital is possible in a more efficient manner REIT investments become **more lucrative and therefore more interesting** investments due to the increase in the cost-effectiveness of a REIT by particularly reducing administrative overhead costs. For instance, blockchain could enable more transparency & reduced costs around the auditing process of a REIT.

Another benefit is that of enabling people to have more influence on what the REIT looks like and how it evolves by including new governance models in a REIT. The extent to what each individual investor is able to influence a REIT could depend on each specific investors' needs and resources.

Once the first REITs powered by blockchain technology start to function the REIT market is predicted upon becoming **more diversified** in terms of the type of REITs that will start to emerge.

Ultimately, there is an opportunity to **redefine** what it means to be a REIT and to restructure how a REIT could operate.

What are the pain points?

Investing in REITs is not flexible. As an investor you have no or very limited saying in terms of the specific type of real estate asset your capital will be allocated towards. You might want to invest in a specific type of building in a specific location, with a relatively small amount of capital. This currently would be a challenge as REITs typically consist of a large, diversified portfolio of real estate.

Public REITs are typically traded on major stock exchanges. There is a lack of transparency where third parties are hired to provide services. Overinvesting in those services for the wrong reasons is more of a rule than exception.

The market is predicted upon experiencing significant growth once regulations allow companies in the developing world to launch REITs that were not able to launch REITs before. This, as many private equity funds in those type of countries operate as “quasi-REITs”. The main difference with a traditional REIT is the fact that those “quasi-REITs” are not open to receive public investment. Therefore a lot of those “quasi-REITs” are predicted upon experiencing a significant influx of capital once they are able to operate as actual REITs by leveraging blockchain technology.

Within the REIT industry great concerns exist around cybersecurity. A recent survey [8] conducted by KPMG LLP of attendees in advance of the recent Real Estate Internal Audit Roundtable in Las Vegas on a number of topics related to third-party risks, data & analytics, (D&A) and cybersecurity, among others. The survey showed a **staggering 92 %** of survey respondents stated that the level of interest in cybersecurity risks from management, board members, and other stakeholders was increasing or significantly increasing.

This figure is based on the information people in the industry have and their perception of reality on the risk of a security breach merely based on their experience.

Interestingly enough, 29 % of respondents in the survey claimed their organizations have experienced a notable cybersecurity incident. In the same survey another 29 % of correspondents expressed they are simply “not aware of any”. This is exactly where an issue of significant size reveals itself.

Nearly all people that work in the financial services industry are not capable of identifying a security breach. This is primarily caused by a lack of awareness and expertise. This could lead to many risks as we are identifying an increase in cyber criminals using organizations such as REITs as a conduit to infiltrate the systems of those organizations’ business partners. As a result inherent trust between the REIT and its business partners is exploited. This issue is predicted upon significantly increasing as we are identifying a trend in companies increasingly outsourcing non-core tasks in an effort to focus on their core strengths.

What is the current way of doing business?

Companies that manage REITs have to comply with strict regulations both in the US and globally. Generally REITs are publicly traded on major stock exchanges, however REITs can also be traded by public but non-listed, or private companies.

There are various types of REITs, the type of REIT that is the **most common** nowadays is an **equity REIT.** As of November 2014 equity REITs were recognized as a distinct asset class. [9] This type of REIT is particularly the type of REIT that based on its properties would benefit significantly of tokenization.

Currently companies that manage REITs acquire incoming producing real estate that make up for the REIT. Investors can buy into stock that is issued by the company that is managing the REIT. The stock represents a fraction of the REIT. By owning stock that represents ownership in the REIT, stockholders earn a share of the income

produced through real estate investment. The benefit of investing in a company to earn this income is that individuals don't have to go out and acquire and finance property themselves.

It is also possible to participate in a REIT through private placement which happens a lot currently, as 44% of US REITs are unlisted REITs.

Investors that partake in REITs, consciously or unconsciously depend on numerous decisions that the company that is managing the REIT makes. One example is the decision as to what auditing company is chosen to do the auditing. It has been proven that capital markets reward REITs that overinvest in audit services with better liquidity as measured by bid-ask spreads. [10]Thus, REITs have unusually strong incentives to strive for security market transparency, **one of the key properties that blockchain can provide**.

How can blockchain help?

One could argue blockchain could help REITs with disintermediating actors that are required in the current infrastructure of how REITs operate, but do not add actual value for the end-user. Disintermediating will not be feasible in every case, **however blockchain offers us the ability to let the intermediaries that are in fact necessary better serve the end-user.**

One of the fields where this can be applicable is the previously mentioned example. Third-parties that are required to set up and operate a REIT could adopt blockchain technology to provide the parties partaking in a with REIT greater transparency as to how audits are made. What company is chosen? Why that particular company? Possibly the companies operating a REIT could include the votes of stakeholders as to what auditing company will be chosen.

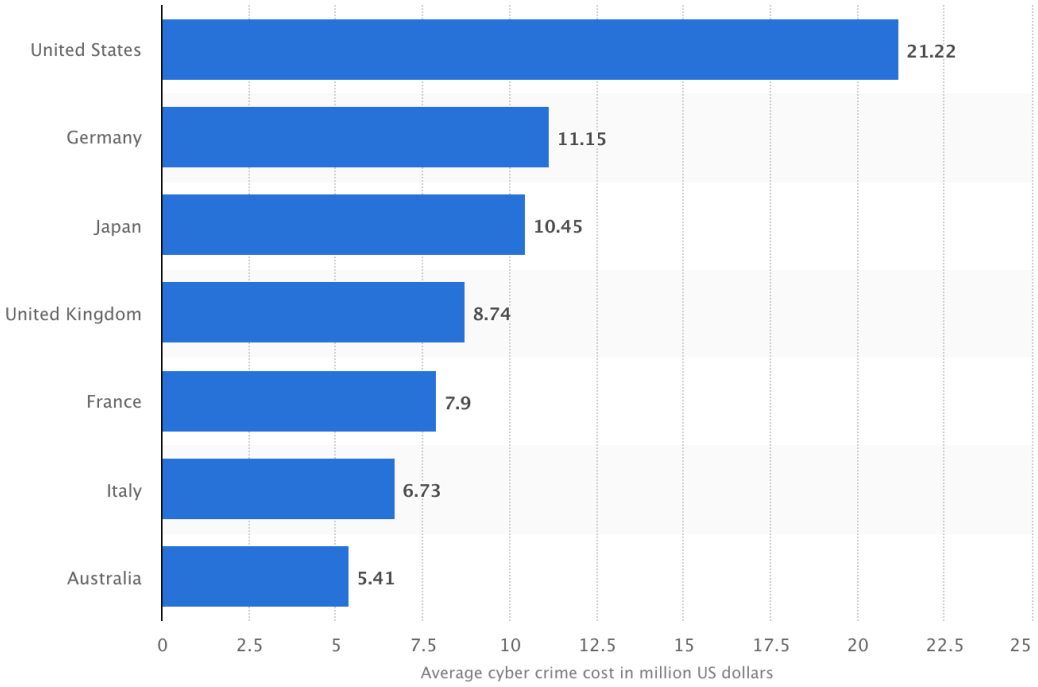
If governance models are included in a REIT, investors could engage in c**ollective decision-making** as to what auditing company will be utilized.

One could argue one of the most effective ways for this to happen is through the end-user and professionals in the industry demanding more transparency and security.

Security is especially a point where blockchain shows it added value. I**t is not acceptable to store sensitive data in a such way that could easily be disclosed with a cyber attack.** The definition of sensitive data may differ per REIT, however nearly all REITs retain information that is not meant to be disclosed publicly. Disclosing sensitive information could have disastrous effects on companies that manage REITs and it's investors. A security breach could in many cases lead to disruption of a REITs operations and damage it is business reputation. Therefore, operating in such an insecure manner as a REIT is highly irresponsible. In this specific case a private blockchain could drastically increase the level of security, which would would be a big step in preventing the possibility for a security breach to occur.

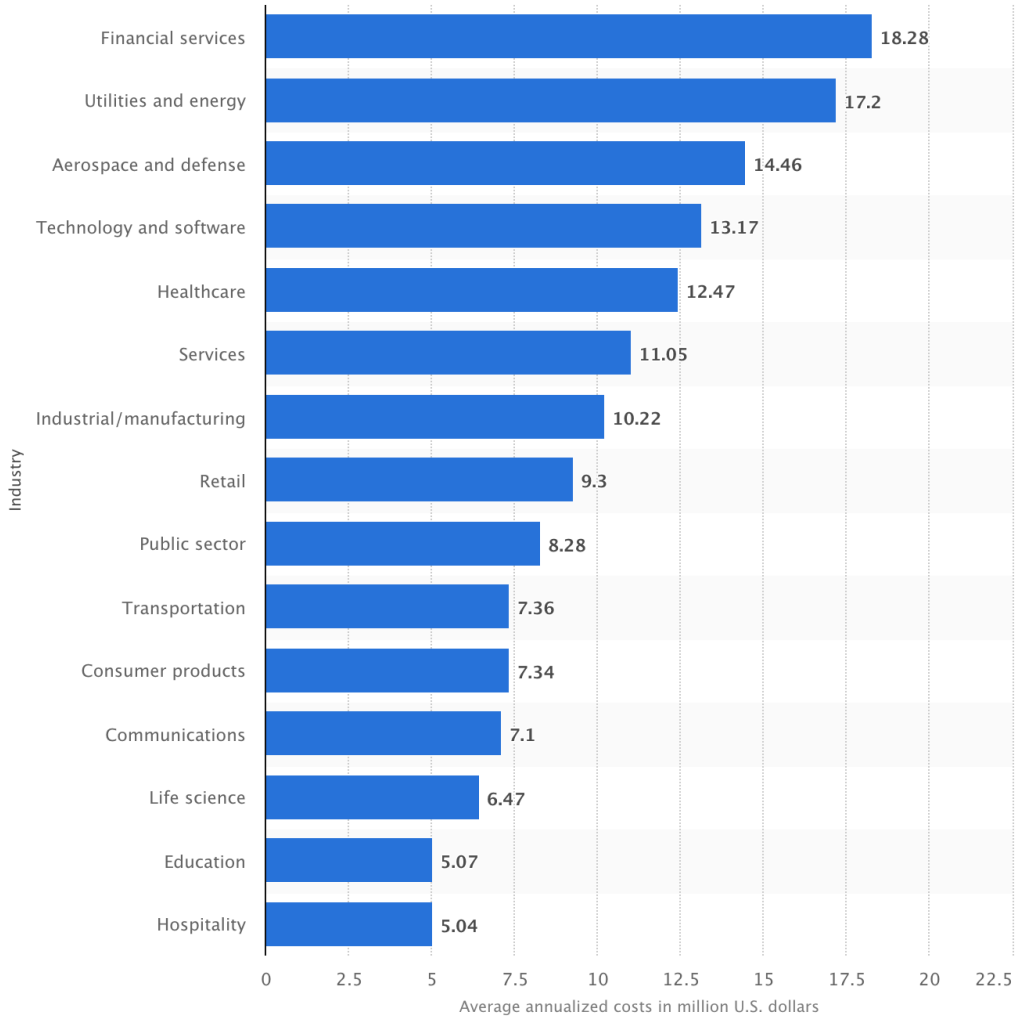
The graphs below show us the financial services industry will by far be the biggest beneficiary of implementing blockchain technology to create more secure systems. The biggest beneficiary will be the financial services sector in the US, followed by Germany.

Average annualized cost of cyber attacks on companies in selected countries as of August 2017 (in million U.S. dollars)



As of August 2017 the combined costs of the countries included in the graph amounted to a loss of US $71.6 million annually. Blockchain will be the core-technology that has the potential to drastically decrease this figure.

Average annual costs caused by global cyber crime as of August 2017, by industry sector (in million U.S. dollars)

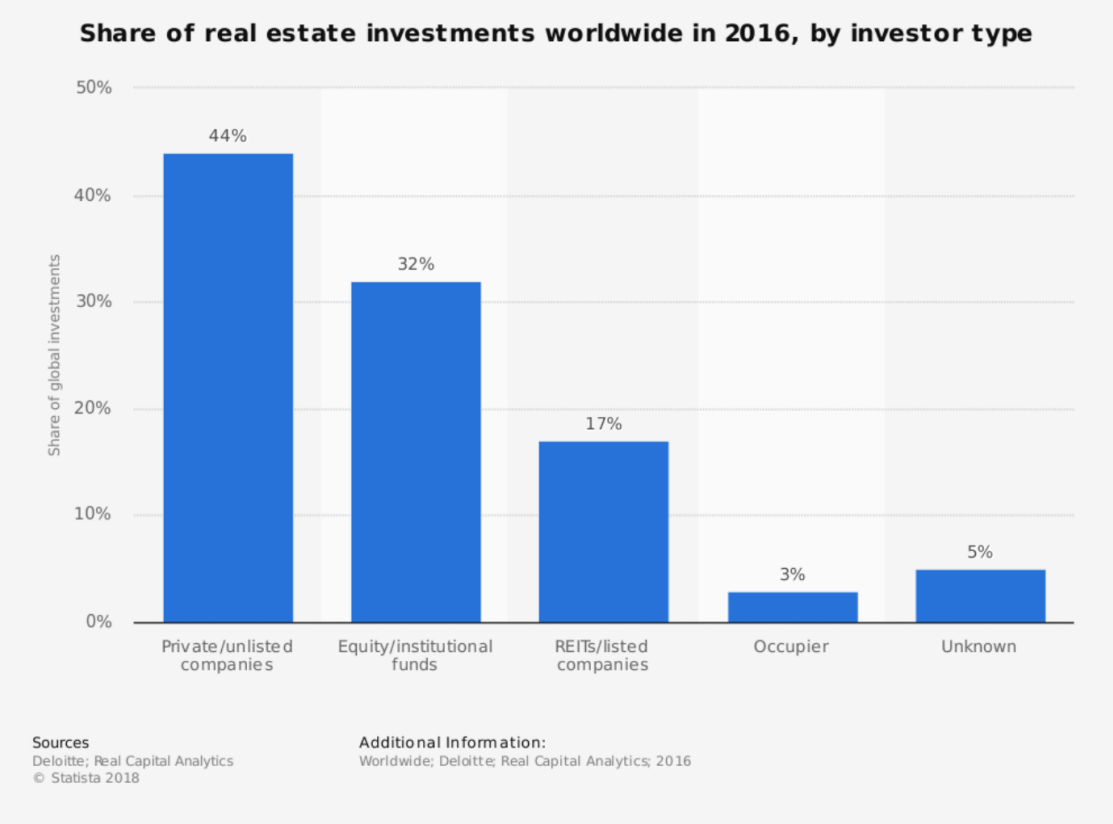


Quantifying the opportunity

In the United States only approximately 80 million Americans, representing 40% of American households own REIT stocks directly or indirectly through mutual funds, exchange traded funds or target date funds.[11]

Global real estate and investment trust (REIT) markets have continued to expand and now surpass a total market capitalization of approximately US$1.7t. This market capitalization consists of REITs operating in 37 countries. Seven new REIT regimes have been established since 2013 (Ireland, South Africa, India, Kenya, Bahrain, Vietnam and Saudi Arabia). According to “Investment DBS” China is likely to launch its first REIT this year. [12]

As we are noticing financial inclusion across the globe is occuring, more and more countries are predicted upon launching REITs, making the market even bigger in quantity. Besides enabling growth for the existing REIT markets, blockchain could also change the spread of type of investors in REITs.



As per the above graph we can see that the majority of the REIT companies are private companies. A majority of those companies that make up for 44% of the total global REIT market would benefit from attracting more investors

The size of the REIT market is approximately **$1.7 trillion.** [13] If all current private REITs, would utilize blockchain technology by doing an STO, that would make up for **$0.75 trillion** in **blockchain-based REITs.**

This number is not accounting for the previously mentioned “quasi-REITs” which are currently not part of the market, but that will enable relatively large influxes of capital into the existing REIT market. China will be one of the biggest utilizers & beneficiary if blockchain-based REITs become viable options to execute upon. This will require changes in regulations and a lower threshold to issue asset-backed securities. Blockchain enables the possibility to issue asset-backed securities in the form of security tokens. This can be done in an efficient and secure manner through an STO.

If this will be the case the Chinese REIT market has the ability to surpass the most established REIT market in the globe in a relatively short amount of time. Currently the most established REIT market is the the US REIT market, which is currently worth an approximate **US$1.01 T**.

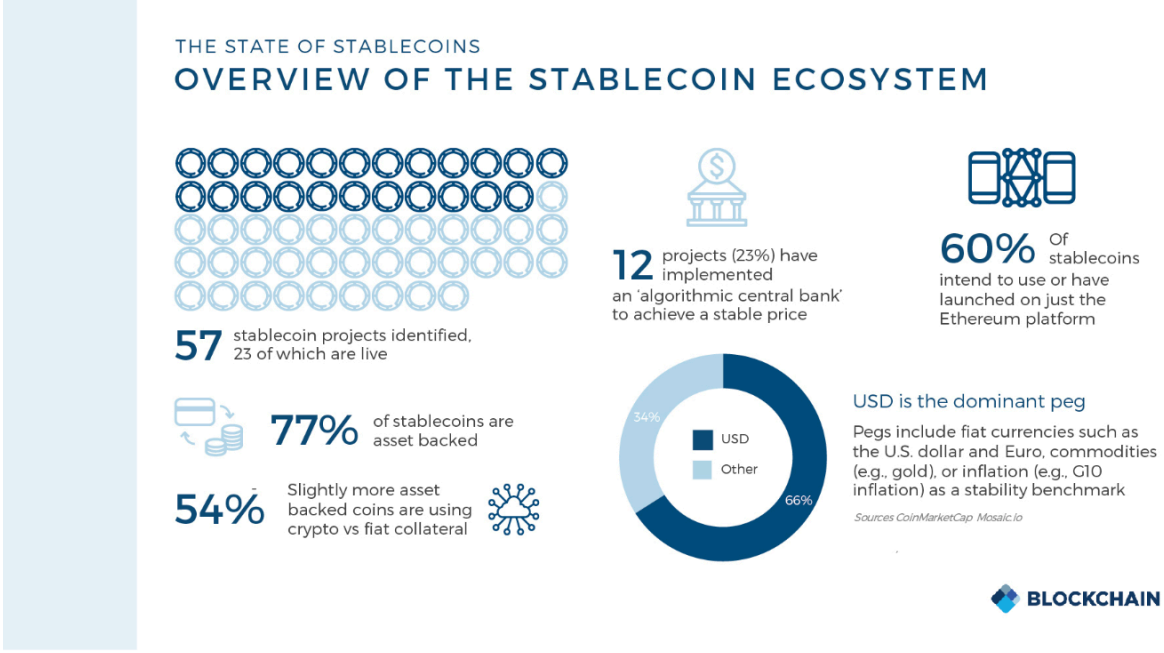
The Chinese REIT market could be worth between **US$600 billion and US$1.8 Trillion.** [14] This means the entire REIT market has the potential to experience a **100% increase in size** in a relatively short amount of time.

Throughout history, China's securities market has listed approximately **40 billion yuan, a mere US $ 5.83 billion** worth of quasi-reit products, in essence asset-backed securities or business trusts.

Case Study 3: Cryptocurrency Markets — Stable Coins

As long as cryptocurrency markets exist, there has been a need for stability in the market. Initially by cryptocurrency traders and speculators that required an efficient manner for exiting traditional, volatile cryptographic assets to hedge against the volatile nature of the rest of the digital assets in the cryptocurrency market. The ability to do this without the need to convert digital assets back to fiat money made it cost-effective and easier for traders and speculators to operate. As we see the cryptocurrency market mature and turn its efforts to securitize the world's largest asset classes, the need for a reliable stablecoin is predicted upon experiencing a drastic increase. This prediction is based on the properties of nonvolatile digital coins and how they could intertwine with financial markets. Stable coins could form an infrastructure layer required to enable the most sought-after blockchain applications. Among those applications are cross-border payments & smart insurance in the financial services sector. Another use-case for a stable currency is to function as a medium of exchange in the developing world.

What does the current market look like?
The most recent developments in terms of venture-backed capital flows into stablecoin projects, provide us with the following information.



[15]

We have identified a somehow remarkable trend, a**s only 23% of "stablecoin" projects that have implemented an "algorithmic central bank" represent a mere 60% of the 350$ million of venture capital that has been invested in the stablecoin ecosystem.**

The most noteworthy, among these new projects are structured as yet-to-launch coins commonly describing their stability mechanism as relient on **“algorithmic central banks”**. These types of stablecoins typically leverage algorithms to increase and decrease the supply of the stable tokens to maintain its peg in as many moments in time as possible. Ideally all the time. Doing so by increasing the supply of total tokens in circulation when the price goes above one dollar which results in a decrease in the price per token. Once the price per token goes below one dollar, the supply is decreased by, in the case of Basis, enabling the blockchain to auction of bond tokens.

We have studied the available documentation of the currently most prominent, yet-to-launch, stablecoin: Basis. We believe the Basis team has designed a novel solution for solving the stable-currency problem. Even though the available documentation does not disclose sufficient details to prove their claims, we have identified incentives that show the token-economy has been thought about thoroughly. Which could potentially indicate that Basis is making significant steps towards designing and launching a somewhat functioning and reliable stablecoin.

There are risks for a death spiral, however based on the fact that Basis has studied other stable-coin solutions and has thoroughly designed their token economy there might be a possibility that they have found or will find a novel solution.

The other stability mechanism for “stablecoins” is being asset-backed. Asset-backed “stablecoins” utilize collateral. This can be both on-chain and off-chain.

An on-chain collateral consists of having crypto assets like EOS in collateral. Utilizers and believers of on-chain collateral, back their beliefs by taking in the standpoint that this stability mechanism does not require dependence on third-parties. While this might be true, the volatile nature of crypto assets might make this type of “stablecoins” inoperative as they are incapable of remaining in fact stable at all times. Often times on-chain collateral would require a user to have cryptocurrency in collateral in a 1.5 : 1.0 ratio. Even this can be insufficient due to the extremely volatile nature of the most common cryptocurrencies. **Thus, we do not perceive on-chain collateral backed stablecoins as a solution at all.**

Of-chain collateral “stablecoins” are typically tokens that leverage fiat in a bank account as collateral, typically in a 1:1 ratio. In an ideal situation each token should be redeemable for one dollar. Currently the most prominent coin in the stablecoin ecosystem leveraging of-chain collateral is Tether. Generally, there exists a lot of skepticism about this type of stablecoin due to the fact that Tether is not fully audited. However, this is a more universal challenge in the cryptocurrency ecosystem as the auditing firms do not always want to nor are able to audit, partially due to uncapped and or unquantifiable liability. [16] This, as under U.S. law, auditors can be held accountable by third parties for financial information. The nature of the cryptocurrency industry, which from a regulatory point of view lacks proper oversight makes that the profesional auditing firms can’t take on the risk of auditing stablecoins like Tether.

What does the future of stablecoins look like?

As we are noticing traditional companies in the financial markets are adopting blockchain technology. Stablecoins are definitely a key component of integrating blockchain solutions in the real world. As the whole “stablecoin” ecosystem is fairly nascent we do think nearly all, possibly all stablecoins have their flaws that are preventing them from being used at the scale and in the industries where stablecoins could provide the most upside.

However, developments within the ecosystem so far show us that typically the majority of the new projects within the ecosystem are iterating on what is built already. This could lead into the creation of a reliable stablecoin eventually.

Recently [17], the Goldman Sachs backed company “Circle” launched a regulated and industry-backed virtual currency tied to the US dollar. Recently Circle showed support for the digital currency by more than thirty different companies. This particular crypto asset will be listed on several exchanges.

We are identifying that more and more similar “stablecoins” are being developed and deployed into several markets. Such as the Winklevoss twins, that recently launched their stablecoin, the Gemini Dollar (GUSD). This particular “stablecoin” has been approved by US regulators.

This shows us that we will most likely life in a world where more than one “stablecoin” will exist. Corporations and individuals will have to investigate the specific properties of each and every stablecoin and decide, based on the way they wish to operate their transactions which stablecoin will meet their needs in the best manner possible.

We also believe there is a compelling need for a reliable asset-backed stable digital token that can be utilized as a currency. Whether it will be necessary for such a digital token to reside on the blockchain will depend on the type of asset that is backing the digital token. Even though it might not be directly necessary for a new type of stablecoin to reside on the blockchain we do believe it will be useful in all cases. The gold standard that was internationally maintained for 50 years (1871 to 1914) was the last monetary system where a country’s currency had a value directly linked to an underlying asset. As this happened while that particular monetary system was not digitized, secure, tamper-proof nor possessed the possibility to properly execute on deflation and inflation. It is in fact a miracle that the system was functioning for 50 years.

We see a possibility for another underlying asset class that could function as the basis of a currency. Essentially, currency could be a derivative of this asset class. An asset class that everyone is involved in on a daily basis. It is already one of the biggest asset classes on the globe.

The design of a derivative based on this asset class could be very powerful, however it should be designed in a simplistic yet fault-proof and tamper-proof manner.

We believe the asset class for such a new currency could be real estate.

If designed in a fault-proof manner it could meet all the requirements to be currency and it could be utilized as such.

Case Study 4: Cryptocurrency Markets — Utility Tokens

A major rise and fall of utility tokens have occurred thus far. Many projects have launched tokens that are worth a fraction of the ICO selling price now.

A majority of the currently existing utility tokens are predicted upon not recouping. We believe there is a place for utility tokens, however it will become more and more challenging to create a community of users. Building out a business from an ICO for projects' founders & team. Especially as the market matures and investors are becoming more and more educated. There are benefits to utility tokens, however there are few projects that have designed and build out a proper token economy that functions. Thorough efforts are required in the design and building phase of a utility token. Key elements can not be neglected for a utility token to succeed in the long run. We believe there is a very specific utility for utility tokens, which is more frequently not achieved than it is. In this section, we'll dive deeper into token economies and what makes a utility token create and capture value in a token economy. What are the trends and what blockchains will be utilized for the development and funding of the future's projects.

How capital raise is changing for utility tokens

The way of raising capital for a utility token currently is in a stage of experiencing drastic change. Initially the majority of capital raise for utility tokens was being done on Ethereum. It has brought the space as far as it is now. Ethereum enabled a lot of developments as hundreds of projects have launched an Ethereum based ERC-20 token. However it also has also shown to have it's flaws. Fortunately, Ethereum is also adapting the way it is operating to better serve the communities needs. However, the projections for the changes to be implemented are relatively far in the future. And there exist a vast amount of uncertainty around when exactly the changes will be implemented.

We believe that a recent introduction for the capital raising process of utility tokens will start to be utilized by a relatively large number of currently emerging projects. The recent introduction of the "airdrop" by EOS is starting to get utilized more and more and we believe an airdrop could be a novel, sustainable solution for raising capital for a utility token whilst simultaneously building a sustainable, real community that supports a project.

An airdrop essentially consists of airdropping tokens to EOS token holders under a predetermined set of conditions, depending on what a projects' founders believe is the best thing to do.

As every holder of EOS has different beliefs, some people will decide to sell the tokens they got dropped in their wallet. Other holders will possibly believe in a project and will decide to hold the tokens that were airdropped to their wallets. Again other holders of EOS that got the token airdropped in their wallet will believe so much in a projects potential that they will buy more tokens. Essentially a market is created for an airdropped token.

Anyone that does not own EOS and didn't get tokens airdropped of a specific airdrop, will have the possibility to still buy in into an airdropped token. Ease of acquiring an airdropped token will depend on each specific token as this depends on numerous factors. Such as:

- Whether an airdropped token is listed on an exchange or not.
- Availability of a specific token. Which depends on:
    - Airdropped supply.
    - Market demand.

These are essentially basic economics. The major difference is that supply initially is primarily made available through an **airdrop.**

Eventually the whole economy around a token will reach a condition in which all of the above and even more influences will reach a point that in several sciences is known as a point of balance and is defined as a point of **equilibrium.**

We believe the above manner of creating a market for a utility token could possibly be a solution to create a functional economy. Something that has not been achieved since the dawn of mankind.

What are the characteristics of a utility token?
Utility tokens are sold in many ways. They can provide users with future access to a product or service that the company that sells a specific token is developing. Another utility of utility tokens is to fund new companies, this has been proven to allow implications to emerge. The primary market through what utility tokens are typically sold is called an initial coin offering (ICO).

An ICO is the first time a token is sold, a company that issues tokens typically receives Ethereum or Bitcoin and in some cases fiat currency in exchange for the tokens a company is offering.

The ICO is comparable to the IPO in traditional capital markets. An important distinction to make between the two is the fact that in an IPO **securities** are sold in the form of stocks or bonds. **When we are talking about an ICO, we are talking about utility coins.**
The secondary market for utility tokens are cryptocurrency exchanges. Individuals are able to buy and sell utility tokens from one another on cryptocurrency exchanges.

A recent development within the cryptocurrency space is to airdrop tokens through the EOS blockchain to EOS tokens holders which we covered in the previous section.

What do utility tokens enable?
Utility tokens can be very useful if they are used for the right reasons, hereafter we will outline the most important advantages of utility tokens: (i) enable globalization and democratization of access to capital for startups (ii) enable globalized, democratized, early-stage access to startups (iii)reduce transaction costs within a network (iv) utility within a network.

(i) Utility tokens enable global and democratized access to capital for startups as the resources required to raise capital are drastically decreased. Any startup can raise capital directly from a somewhat open market, without the necessity of relying on intermediaries like underwriting firms to be able to issue their native token. This

could encourage entrepreneurship in low-income developing countries to develop new products and services and raise capital to develop their products or services.

(ii) A direct result of the first attribute utility tokens enable is the ability for individuals located all around the globe to access early-stage startups. As a result of the lower cost and resources required to launch a token startups can now also get more people involved at lower overhead cost. One example of this could be in the case of a startup conducting an airdrop. Enabling individuals to interact with startups at such an early-stage enables brings with it the benefit of getting signaling from the market in terms of consumer demand to occur. It also allows for bounties which are rewards for resolving tasks a startup has to conduct.

Lower transactions within a network(iii) are another benefit of utility tokens. Especially when compared to Bitcoin or fiat currency. This could especially be the case in a global network where users are distributed among developing countries where access to financial services brings significant overhead costs with it.

Lastly (iv) we want to point out, that utility tokens enable utility within a network. This can be very powerful if the token model has been thought about and designed in a thorough manner. In the case of a utility token being part of a greater network that is designed to scale, a utility token can be a projects' greatest assets. An example is to leverage a utility token to (economically) incentivize individuals and or entities to be part of a new network or ecosystem, in such a case a utility token contributes to the growth and adoption of a project. Another possible functionality for a utility token is to **enable collective decision** making within a network, by attaching voting rights to utility tokens.

As voting rights are attached to utility tokens a possibility emerges to classify utility tokens based on an individual or entities role in a network. Similar to how A/B shares are issued in common companies.

What challenges could the issuance of utility tokens bring with it?
As utility tokens are a relatively new type of cryptocurrency that is part of a greater, new type of economic model regulations can be a file for concern. New startups incorporating in the USA can experience issues with the security and exchange commission (SEC) due to the vast size of uncertainty regarding regulatory compliance. Not complying with the SEC could have significant implications for a projects adoption, or the lack thereof.

Another major issue that could appear, as utility tokens are designed to be part of a greater economic model, is that utility tokens that are issued by startups lack an incentive structure that prevents the issued tokens from **merely being used as a speculative asset.** This, typically due to a **lack of understanding** as to what the power of utility tokens is if issued, managed and utilized in a manner that makes sense for a system' intended users.

Without **thoroughly** thinking through what the needs of all the parties (that will be) involved are there is a rather high likelihood that what is being built will not achieve its intended goal.

How are utility tokens intertwined with security tokens?

"The more the merrier"

We believe one of the few ways for a utility token to succeed is to **be connected with the real world in some way form or shape.** This connection with the real world can be achieved in many ways.

It can be achieved by leveraging a utility token to incentivize miners in a network to produce blocks and verify transactions.

One could argue it could also be achieved by connecting real world assets to the blockchain. The real world in terms of physical assets, by essentially creating **asset-backed cryptocurrencies.**

As utility tokens get connected to the real world by being intertwined with security tokens a whole new ecosystem opens up to explore. We believe that it is in fact necessary for a utility token to succeed to be connected to the real world. Exploring this relationship of interconnectedness is very interesting and we believe that **it is an utterly symbiotic relationship.**

Especially if utility token economies are properly intertwined with asset-backed security tokens. For instance, suppose a thought-experiment where the more securities are created and are added to a network, the more utility tokens are utilized which leads to an increase of the value of the whole network. This allows for sustainable growth of both the value of a security token and utility token in a network or ecosystem.

We believe clearly and thoroughly investigating the properties and potential that security tokens and utility tokens can offer in a certain market, ecosystem and or token economy combined with thoroughly anticipating on the needs of the parties that are involved in a given market enable one to design systems that are able to scale. That exist to service the parties involved in the best way humanly possible. **Systems that ultimately need to exist.**

Once this intertwined relationship is achieved, there is a possibility and rather, a high likelihood for such an ecosystem, network and or token economy to flourish. **The more** the specific properties of those components: security token, utility token and needs of the market, are interconnected and supplement each other, **the merrier.** Extremely powerful token economies emerge where demand is created and addressed and addressing of existing demand is achieved, both simultaneously.

Creation of demand is one of the key components of a potentially successful ecosystem. If, for instance, in a token economy value is captured that is created. There is a closed loop system that has the ability to thrive, especially as more individuals or companies join a network and are enabled to create and capture value. Essentially becoming **incentivized** to be a part of the network.

Demand creation is the process that results in engaging new entities to be a part of a ecosystem that is being built or already exists, we believe having incentives in place to make this happen is a necessary component of a potentially flourishing ecosystem.

Case Study 5: Cryptocurrency Markets — Security Tokens

The security token landscape is predicted upon experiencing significant growth. We are identifying that tokenization of traditional securities is nascent. Slowly but surely the first STO's are taking place. More and more individuals are realizing what the potential of asset-backed cryptocurrencies are. This will drive the expansion of this new and nascent market. The issuance of security tokens is predicted upon experiencing a surge.

What are the characteristics of security tokens?
Security tokens are cryptographic tokens that represent some type of financial asset. This can be (private)equity, real estate, paintings, diamonds, gold or debt-based assets. Given the nature of the security tokens being cryptographic tokens, we can include security tokens in smart contracts. This is where significant utility and upside of tokenizing traditional assets reveals itself.

Once a crypto token passes the Howey test it is considered a security token from the SEC' perspective.

The Howey test is a test created by the Supreme Court to classify whether transactions do qualify as "investment contracts".

A security (token) is considered a security if it meets the following criteria:

- There is a capital investment;
- The investment is in a common enterprise [18];
- There is an expectation of profit from the investment;
- Profit comes from the efforts of a promoter or third party.

In the case of offering security tokens for sale in a primary market, we typically speak of a security token offering (STO). Secondary markets for security tokens are nascent as we speak due to the law and regulations adapting slower than the technology that is already available. This is not necessarily a bad thing as it is important for security tokens to comply with regulations before they are traded on a major scale.

What do security tokens enable?
As it is possible to integrate security tokens in a smart contract, one is now enabled to **program tasks that were used to be done manually.** Think of regulatory frameworks being (partially) integrated on a blockchain using smart contracts. This, for instance, enables the leveraging of programmable compliance within a smart contract.

This could mean that (near) real-time AML-monitoring will emerge. As the rules for entering an exchange as a new user are programmed in a smart contract, the smart contract
can automatically make decisions based on the provided documentation and the programmed rules that are based on regulation.

Security tokens could also be traded in (near) real-time. This would require the transactions that are (requested) to be done to be audited. As transactions are done on the blockchain the process of auditing a transaction could be done in (near) real-time by third-party auditors that function around the clock.

Leveraging blockchain in traditional securities by issuing security tokens makes the trading of securities a more streamlined process.

Leveraging blockchain technology in traditional securities enables one to f**ractionalize traditional securities to a greater extent**, as they get tokenized. This could incentivize individuals and institutions to buy and sell securities more often given the fact that the threshold of doing a transaction becomes lower and lower due to the lower transaction costs and higher speed of executing transactions. Over time this **could ultimately lead to more liquidity.** This could make the market **more accessible** for parties that couldn't afford to take the risk of illiquidity before which could increase liquidity even more.

What challenges could the trading of security tokens bring with it?
As the trading of securities brings a lot of opportunities with it, it simultaneously brings significant risks with it. If institutions or entities that issue securities or offer the ability for securities to be traded don't act accordingly on the risks that emerge significant implications
for the asset that the token is representing could be experienced.

The investor(s) buying into the token and the security token ecosystem as a whole as individuals could become afraid of risks that emerge.

One challenge that could emerge is the risks of a security token being bought up on a platform that does comply with regulations. The platform has proper AML monitoring working on the exchange itself or is integrated with a third-party solution. However, that token could in some cases be transferred to a decentralized exchange (DEX) that perhaps does not comply with regulations which means AML and KYC best practices are neglected.

This could lead to security tokens being abused. The trade of these type of securities could become an illegal activity according to US law.

Once the first decentralized autonomous organizations (DAO's) will start to emerge with their own constitutions, these kind of activities could be penalized.

An example of how this could work within, for instance, the EOS blockchain is to make it only possible to send and receive security tokens within a predetermined selection of verified exchanges. In the case of someone sending security tokens to an unverified exchange, the constitution of the EOS blockchain for this specific use-case could be designed in such a way that the transaction will not follow through and a message will be sent out to warn the individual or entity that attempted to make this transaction that the funds will be distributed to a community wallet in the case of doing another attempt of the same transaction.

Challenges to adoption
There are numerous major challenges that have to be solved to achieve the real-world adoption that is possible for security tokens. The security tokens that will be issued and traded in the next decade have the ability to disrupt the way securities are perceived and traded. This will open up the securities market for more people and make the thresholds to enter and exit the market lower, this will ultimately increase the impact this industry can make. Primarily due to the fact that more

individuals and companies will get involved. The people that are already involved in traditional financial markets are also predicted to be active to a greater extent.

We are identifying that the current security token market has numerous exchanges where security tokens could **technically** be traded, yet we see a significantly **lower amount of asset-backed cryptocurrency tokens than exchanges.** This implies that the development of the technology to enable tokenization of asset-backed securities **has been evolving, but the actual tokenization is lagging behind.**

This, partially due to the fact that there is a shortage of interesting investment opportunities, which implies there could be a lack of incentive structure to tokenize asset-backed securities.

This tells us there is a compelling need for interesting investment opportunities. We believe blockchain technology has the ability to enable creation of new investment opportunities as financing structures are redesigned in such a way that it is becoming drastically more interesting to engage in new investment opportunities as it becoming easier and increasingly more cost-effective for more people and corporations to be a part of creating, funding and utilizing the opportunities that will emerge.

We believe real world adoption will start to occur once people are enabled to effortlessly engage in new investment opportunities, are aware of the new opportunities that are being created. See the potential and most importantly are i**ncentivized** to engage in the new opportunities or are able to easily create new investment opportunities themselves.

Within the current market, we can conclude the majority of the individuals and or corporations are not even properly aware of the new opportunities that tokenization is enabling, thus the threshold to engage in the new opportunities that are starting to emerge is rather high. Which therefore is an explanation of the extent of adoption that has occurred thus far.

Regulatory uncertainty is part of the equation that can slow down user adoption as **asset-backed security tokens need to comply with regulations.** Often times, companies issuing asset-backed security tokens haven't figured out ways to make it actually interesting for vast sums of individuals or corporations to engage in the trading, utilization and issuance of tokenized (real estate) assets. As a result there are not many lucrative opportunities yet.

Three major components that are crucial to mass-adoption are:

- Refining what is already here in terms of technology and utilize what is actually useful in an effort to meet customer demand to the greatest extent possible.
- Define and communicate a vision that is understandable for the average person.
- Enabling individuals and corporations to engage in new opportunities in a user-friendly manner.

Those three components, among many others, will eventually enable the greatest part of real-world adoption. Therefore, it is very important to the cryptocurrency

space that companies take this into account when building new products, ecosystems, protocols and services. Only when this is executed upon properly we will see mass-adoption.

Quantifying the opportunity
We believe the tokenization of traditional financial markets ultimately could be a multi hundred-trillion dollar market to quadrillion dollar market.

We do believe this, taking into account the following breakdown:

Global real estate market: **US $217 trillion** [19]

Gold minted so far: **US $7.7 trillion**

Major stock exchanges combined: **US $73 trillion** [20]

Gross market value of the worlds derivatives contracts: **US $12.7 trillion**

All of the world's coins and banknotes: **US $7.6 trillion**

Global debt: **US $215 trillion**

Combined worth: **US $533 trillion**

As an example we could hypothetically state that the value of the real estate market will increase as liquidity is added to the real estate market. Including this appreciation combined with the fact that new markets will emerge.

As more and more individuals, corporations, communities and governments identify the added value that tokenization ads, they will tend to choose to tokenize their assets.

This will eventually lead to the first quadrillion dollar market. This could take over a decade and we are just seeing the first signs of what blockchain technology will do in the next decade as the first fractions of markets are starting to be tokenized. Think of the first companies that are now starting to sell equity in their company through a security token offering (STO) or the first pieces of real estate that are being tokenized and sold in the form of tokens.

Conclusion: Current Markets and Anticipated Course — ABC's and Beyond

We believe asset-backed cryptocurrencies will experience the highest amount of growth of all cryptocurrency assets in the next six to twelve months. We believe asset-backed cryptocurrencies are at the forefront of enabling the greatest amount of mass-adoption as humanly possible for cryptocurrency and blockchain technology in the real world. We do believe so as we identify the potential for asset-backed cryptocurrencies to benefit the greatest amount of people in the shortest amount of time, through fundamentally changing the way how (financial) markets operate. Asset-backed cryptocurrencies incentivize individuals and corporations in many great ways to start utilizing them as people will often times be economically incentivized to utilize asset-backed cryptocurrencies. This has been proven to be one of the greatest incentives in the modern-day economy to drive growth of any type of new technology or business. As soon as something has the ability to make something an order of magnitude(s) cheaper, quicker or easier one can frequently, throughout history, across multiple industries, identify significant growth in levels of user-adoption.

We believe nearly all people will be active within the asset-backed cryptocurrency-space in the next decade. This could either be a direct, conscious decision or a more indirect, unconscious decision. A direct, conscious decision could be to buy a piece of tokenized real estate on a decentralized exchange. A more indirect, unconscious decision could be applying for a loan at a bank that leverages blockchain technology to issue loans that runs on blockchain technology to provide a better service for their clients and partners. Another example is that of using a SaaS without knowing as a client that the software runs on the blockchain to ensure security of the data that is used within the software.

The client doesn't have to explicitly know that the bank or the company is leveraging blockchain technology and how it exactly works. Similarly to how very few people know how the iOS software exactly works, yet still billions of people own Apple products. The end-user will primarily identify and experience the added value.

We do believe that once blockchain technology starts to get implemented in corporations and therefore in (financial) products and services that people use everyday, asset-backed cryptocurrencies will really show their added value.

This, as practically all people on the globe could benefit from (cheaper) financial services. Asset-backed cryptocurrencies are a major contributor to the enablement of financial inclusion on a global scale. Imagine previously unbanked individuals that are now able to obtain ownership of for example real estate assets in their local economies.
Empowering individuals to obtain ownership of those assets is a big part of the development of a country or region as financial inclusion can be a major contributor to drive economic growth.

A major factor in the developing world that is one of the reasons why minorities are exploited is the fact that there is no transparent property register. When asset-backed cryptocurrencies become ubiquitous, the land and property that exist around the globe will slowly but surely start to run on blockchain technology this will also allow the ability for blockchain-based property registries to emerge.

All in all we do believe asset-backed cryptocurrencies have the ability to evolve the planet as a whole. All by leveraging blockchain technology to offer the ability for systems to become more transparent, becoming tamper-proof and therefore do a better job at serving it's users across the whole globe. From creating new micro-REITS for a portfolio of mansions in LA with more transparency for it's investors all the way to ensuring it is clear that a farmers' piece of land in Ecuador belongs to the farmer and enabling them to finance their business is a trustworthy manner.

A very important idea to understand is that tokenizing an asset and thus creating an asset-backed cryptocurrency does not directly fundamentally change what type of asset it actually is. Tokenization does not necessarily change the properties of the tokenized asset.

Even though things can be done to the underlying asset that were not possible before, for instance, selling a fraction of a piece of real estate, the real estate asset itself did not change.

A company doing an STO is still a company. It is simply raising capital in a new, different manner. Tokenizing a traditional piece of real estate, doesn't fundamentally change the way the piece of real estate will actually look like or what type, or how (many) tenants will be staying in the property. The user-experiences essentially remains the same.

Businesses and assets that are in the business of changing their business model fundamentally by leveraging blockchain technology, and simultaneously also tokenize their asset or business are in fact a different type of business and or asset and should be recognized for it. It is important as we see that more and more companies are starting to leverage blockchain technology that this distinction is very clear to individuals and companies.

We believe that real-world adoption starts to occur once it offers individuals and companies clear benefits. Businesses and assets that are in the business of changing their business model fundamentally by leveraging blockchain technology often times show very clear benefits and usually have incentives in place for its intended users. When this is the case, decisions are easy. Once better decisions are easily made, mass-adoption will occur at an unprecedented pace. Growth attracts people, which will lead to more growth.

Glossary of terms

Asset-backed cryptocurrencies: Cryptographic tokens that represent ownership of real-world assets.

Blockchain technology or DLT: A means to securely transmit currency without the need for traditional banking networks, as well as a means to store and transmit data in a transparent and unalterable way.

A blockchain is secured by a distributed, decentralized network of servers confirming the transactions or data that need to be stored and transmitted securely.

Private blockchain: A blockchain that is only accessible to a predetermined set of individuals and or organizations. Anyone that is not a part of this predetermined selected group can not see what is happening inside that blockchain.

Fractionalizing: Dividing something into separate and or more groups or parts.

Tamper-Proof: Made so that it cannot be interfered with or changed.

Options contract: An options contract is an agreement between two parties to facilitate a potential transaction on an underlying security at a predetermined price.

Resource-intensive: A process is called resource-intensive when it requires a lot of resources. Resources are typically defined as time & money.

REIT: A real estate investment trust is a company that owns, and in most cases operates, income producing real estate.

Reaps: Real estate agent purchases. Purchases of real estate assets made by real estate agents.

Security breach: A data breach occurs when a cybercriminal successfully infiltrates a data source and extracts sensitive information.

Audit: Conduction of an official financial inspection of a company or its accounts.

Collateral: Something pledged as security for repayment of a loan, to be forfeited in the event of a default.

Tokenization: The process of dividing an asset and representing that asset in the form of digital tokens that reside on a blockchain.

Security token: Digital token residing on a blockchain that represents real-world assets and may represent rights to capture dividends, profits or royalties.

Utility token: A digital cryptographic token that is issued in order to fund development of a cryptocurrency and that can be later used to typically purchase a good or service offered by the issuer of the utility token.

Globalizing: The process by which businesses or other organizations develop international influence or start operating on an international scale, hence making something globally accessible.

Smart contract: A digital contract residing on top of a blockchain that is intended to digitally facilitate, verify, and or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties. These transactions are trackable and irreversible.

Proponents of smart contracts claim that many kinds of contractual clauses may be made partially or fully self-executing, self-enforcing, or both. The aim of smart contracts is to provide security that is superior to traditional contract law and to reduce other transaction costs associated with contracting.

STO: A security token offering is the process wherein security tokens are sold.

Token economy: Economy in which cryptographic tokens are utilized to distribute & transact value. Each token economy has its own native token which is not issued by a government but conversely issued by a company, organization or even an individual.

DEX: A decentralized exchange is an exchange that allows the peer-to-peer trading of cryptocurrency. A DEX does not have a central authority.

DAO: A decentralized autonomous organization (DAO), is an organization where agreements are typically encoded & represented in smart contracts. A DAO is controlled by shareholders and not influenced by a central government.

Network effects: Network effects are, in economics and in business, effects that occur when additional users join a product or service. Value of the entire network increases as more individuals start to make use of a product or service. Value of the network, product or service increases exponentially according to the numbers of others using it. So each customer (N) is able to capture more value (X) as the numbers of users (U) in a network increase. The cost grows linear, but the value of the network grows exponentially.

References

[1] https://en.wikipedia.org/wiki/Multiple_listing_service#Origin

[2] https://www.commerce.wa.gov.au/publications/conflicts-interest-real-estate-transactions-real-estate-bulletin-issue-101-november

[3] https://www.aeaweb.org/conference/2016/retrieve.php?pdfid=696

[4] http://lusk.usc.edu/sites/default/files/working_papers/wp-2006-1001.pdf

[5] https://www.zillow.com/home-values/

[6] https://www.gold.org/goldhub/data/trading-volumes

[7] https://www.housingwire.com/articles/42176-value-of-us-housing-market-climbs-to-record-318-trillion

[8] https://assets.kpmg.com/content/dam/kpmg/pdf/2015/11/reit-internal-audit-survey-report.pdf

[9] https://en.wikipedia.org/wiki/Real_estate_investment_trust#Creation

[10]https://www.researchgate.net/publication/46537567_REIT_Auditor_Fees_and_Financial_Market_Transparency

[11]https://www.reit.com/sites/default/files/media/PDFs/Research/NumberofREITShareholders2018_2_19v4.pdf

[12]https://www.reuters.com/article/china-property-reit/china-likely-to-see-first-real-reit-this-year-dbs-idUSL3N1QV3E9

[13]https://www.ey.com/Publication/vwLUAssets/ey-global-reit-markets/$FILE/ey-global-reit-markets.pdf

[14]https://www.scmp.com/business/companies/article/2120900/chinas-reit-market-could-surpass-us-if-barriers-were-removed-says

[15] https://www.blockchain.com/static/pdf/StablecoinsPPTFinal.pdf

[16] https://tether.to/wp-content/uploads/2016/06/TetherWhitePaper.pdf

[17] https://usethebitcoin.com/more-stablecoins-goldman-circle-launches-usdc/

[18] http://www.businessdictionary.com/definition/common-enterprise.html

[19] http://fortune.com/2016/01/26/rea-estate-global-economy/

[20] http://www.visualcapitalist.com/all-of-the-worlds-stock-exchanges-by-size/