UNDERSTANDING INITIAL COIN OFFERINGS: TECHNOLOGY, BENEFITS, RISKS, AND REGULATIONS

STELLAR DEVELOPMENT FOUNDATION &
THE LUXEMBOURG HOUSE OF FINANCIAL TECHNOLOGY

SEPTEMBER
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TABLE OF CONTENTS

04

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About the Authors

STELLAR DEVELOPMENT FOUNDATION.

The Stellar Development Foundation (SDF) is a non-profit organization that develops distributed ledger financial technology to enable individuals, banks, and payment systems to move money quickly, cheaply, and reliably. SDF views initial coin offerings as a promising technological mechanism that has the potential to expand global financial access and inclusion. SDF's open-source technology is used to facilitate regulatory-compliant initial coin offerings.

THE LUXEMBOURG HOUSE OF FINANCIAL TECHNOLOGY.

The Luxembourg House of Financial Technology Foundation (LHoFT) is a public-private sector initiative that drives technological innovation for Luxembourg's Financial Services industry. Luxembourg is universally recognized as a leading financial center and one of the preeminent centers for digital financial services. The LHoFT promotes and incubates innovative financial technologies, including blockchain and distributed ledger applications.

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Introduction

Organizations have raised over $1.8 billion through initial coin offerings (ICOs) since January 2017.

Organizations have raised over $1.8 billion through initial coin offerings (ICOs) since January 2017.[1] The ICO has skyrocketed in popularity as a fundraising model for new businesses, particularly those in the blockchain industry. There is tremendous momentum in ICO launches as the ICO mechanism presents a relatively simple and fast alternative method of raising money for fledgling organizations. The success in fundraising through ICOs is driving more and more organizations and initiatives to use the model as a means to achieve their funding objectives;[2] many ICO campaigns have raised tens or even hundreds of millions of dollars.[3] However, the lack of regulation and control around ICOs gives rise to comparisons to the "Wild West" with risks in abundance, especially as the ICO model begins to increase in popularity with a broader set of investors.

ICOs raise issues for consumer protection, combating money laundering, and other regulatory compliance goals. Complications may arise from several sources, including the mechanism through which ICOs are conducted, the teams spearheading ICOs, the identities of contributors to ICOs, the quantity of money that is raised, the validity of ICOs' technology and processes, marketing claims, and the impact that ICOs have on the greater cryptocurrency markets. All these factors must be scrutinized so that the heralded benefits of ICOs are balanced against market and legal risks as the model matures and gains broader acceptance.

The goal of this paper is to educate regulators, academics, financial industry professionals, and the general public on the characteristics and risks of initial coin offerings. In particular, our goals are to:

1. DEFINE ICOS
2. EXPLAIN THE TECHNICAL ELEMENTS OF ICOS AND THE PROCESSES INVOLVED
3. DESCRIBE THE DIFFERENT ICO MODELS
4. DEFINE THE POTENTIAL BENEFITS OF ICOS
5. DEFINE SOME OF THE POTENTIAL RISKS OF ICOS
6. HIGHLIGHT KEY REGULATORY CONSIDERATIONS AND INDUSTRY BEST PRACTICES THAT COULD PROVIDE A REGULATORY CUSHION, TO ENABLE FURTHER DEVELOPMENT OF THE ICO MARKET

The authors hope that this paper will advance discussion regarding the best approach to regulate initial coin offerings in a manner that will promote innovation.

[1] «CoinDesk ICO Tracker.» CoinDesk. Accessed September 07, 2017. https://www.coindesk.com/ico-tracker/.

[2] Smithcrown. «ICOs and Crowdsales.» Smith Crown. June 09, 2017. Accessed September 07, 2017. https://www.smithandcrown.com/icos/.

[3] Barzilay, Omri. «Tezos' $232 Million ICO May Just Be The Beginning.» Forbes. August 14, 2017. Accessed September 07, 2017. https://www.forbes.com/sites/omribarzilay/2017/07/15/tezos-232-million-ico-may-just-be-the-beginning/#27eccbd84c52.

What are ICOs?

An initial coin offering (ICO), also known as a token sale, token generating event, or initial token offering, is an event in which an organization sells digital tokens for the purpose of obtaining public capital to fund software development, business operations, business development, community management, or other initiatives. A token is a cryptographically secured digital representation of a set of rights. Depending on the token, this could include the right to access and use a network or software application, the right to redeem the token for a unit of currency or a good, the right to receive a share of future earnings, the right to vote on decisions made by the organization, or more.

Tokens that offer a share of earnings and a percentage of ownership in an organization are similar to shares of stock. A fundraising ICO that offers stock-like tokens ("securities tokens") is analogous to equity crowdfunding, private placement offerings, or an initial public offering (IPO). However, most ICO tokens currently do not offer voting rights, ownership rights, or rights to a share of future earnings. Instead, they have utility: they convey rights to access, use, and/or consume the organization's service or product.

Organizations that conduct ICOs tend to be small blockchain-based startups who hope to grow significantly using the funds obtained. However, organizations with an established and validated technology and business may also distribute tokens, mainly to incentivize the usage and monetization of an online network.

Prior to the actual token sale, organizations issue white papers describing their plans and mission, as well as the technical characteristics of the token. White papers tend to include information about the team, the underlying technology, the economics of the proposed token, and how the proceeds from the sale will be used. Many organizations may also have an open-source code base that is available for review on Github.

During an ICO, token buyers generally contribute fiat currency (e.g., USD) or cryptocurrency (such as ether (ETH) or bitcoin (BTC)) to a specified cryptographically generated address. In exchange, buyers receive some number of the organization's native tokens. In a public sale, anybody who has the capacity to purchase, transmit, and store cryptocurrencies can be a token buyer. Buyers may have a diverse set of motivations: some may wish to use the token primarily for its underlying utility, while others may be speculators who hope to profit from trading gains.

A token is a cryptographically secured digital representation of a set of rights.

BLOCKCHAIN

A blockchain is a distributed digital ledger in which bundled records of transactions ("blocks") are chronologically linked and cryptographically secured.

A distributed ledger is hosted on a network of databases that are synchronized via a consensus algorithm. In public ledgers, the databases are usually controlled by independent parties, often with no verification of new parties in the network. Transactions inside most distributed ledgers are visible to anyone within the network.

GITHUB

Github is a web-based repository for code and collaboration. Organizations often use it to store the source code and the white paper of their project. If the project is public and open-source, experts can access the project on Github to evaluate the code's security and validity. Additionally, community developers may choose to contribute to the project's codebase.

CRYPTOCURRENCIES

Cryptocurrencies (sometimes referred to as virtual currencies) are digital assets that use cryptography to validate transactions. Cryptocurrencies are often public and decentralized, operating independently of a central institution. Anyone can hold cryptocurrencies, and any party may choose to validate transactions involving them (a process known as "mining"). Popular cryptocurrencies include bitcoin (BTC), ether (ETH), litecoin (LTC), and lumens (XLM).

The Path to an ICO: A Representative Process

Representative Steps for an ICO

1. **Idea:** A team has an idea for a decentralized blockchain application. After some research, they decide to execute on the idea and transform it into reality.

2. **Team & Research:** The team recruits team members and advisors. They research and make decisions regarding:

   – The substantive technology (i.e., what technology to build, technical infrastructure, technical resources needed)

   – The business problem (market, target consumer, business need)

   – Whether the team is capable of successfully executing on the business

   – Whether they need an ICO to launch their project successfully. if yes, they decide on ICO mechanisms: which token platform or blockchain to use, how to structure the sale, pricing of the sale, which model to use, and more

3. **White Paper:** They author a white paper that explains the vision, technology, team, business, ICO, development roadmap, and more.

4. **Marketing:** They market the ICO to a select audience, e.g., early investors, industry insiders, technical advisors. They obtain feedback and revise the technology, business, and ICO roadmap. Afterwards, they market to a wider public audience. They may evangelize the idea through attending meetups and writing public blog posts.

5. **Legal:** They consult legal counsel about investment syndicates, corporate structure, taxes, securities, money transmitter laws, and more. They may also obtain legal advice regarding issues associated with the substantive business. Based on this feedback, they revise ICO plans as necessary.

6. **Pre-sale (Optional):** They may have a token pre-sale. Organizations may need to raise money to pay legal, operational, and development costs while they prepare themselves for the full ICO. The pre-sale may be private or public.

7. **Work & Plan:** They continue to build-out the technology, business plan, and team.

8. **Marketing:** They start to market the ICO to a more general audience. They may evangelize the product on social media websites (Facebook, Reddit, Telegram, Slack, Medium), buy ads, write blog posts, give presentations, and more.

9. **Sale:** The ICO occurs.

10. **Build:** After receiving the proceeds of the token sale, the team liquidates some contributions and use the proceeds to build out the team, technology, and business.

11. **Launch:** The product is launched!

Getting started with an ICO

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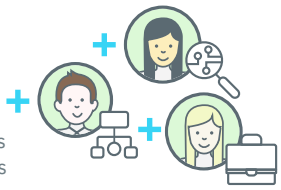
1. IDEA

A team decides to build a decentralized app.

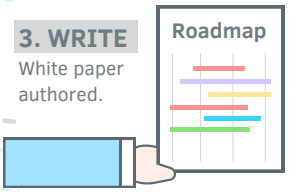
2. TEAM

The team finds team members and advisors.



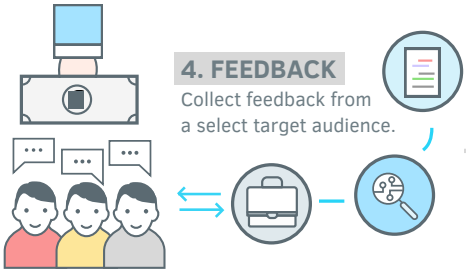
3. WRITE

White paper authored.



4. FEEDBACK

Collect feedback from a select target audience.



5. LEGAL

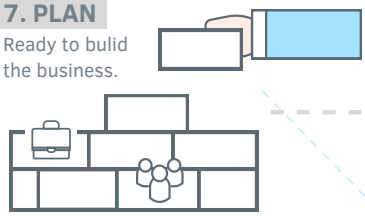
Time for some legal advice.

6. PRE-SALE

Sometimes it makes sense to have a pre-sale.

7. PLAN

Ready to bulid the business.

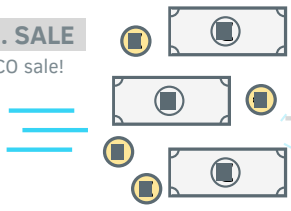


8. MARKETING

Let's market this!

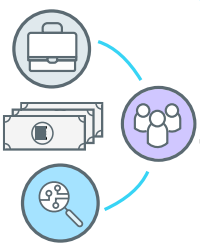
9. SALE

ICO sale!



10. BUILD

Funds collected. Proceed to build out the team, technology, and business.



11. LAUNCH

Product launched!

Technical Attributes of ICOs

Platform

An ICO platform is a software platform in which an ICO can be conducted and token transactions can be validated. Different platforms offer different technological features, and use different blockchains or distributed ledgers to settle transactions.

One popular ICO platform is the Ethereum blockchain. Ethereum offers «smart contract» facilities that effectively allow token issuers to program the behavior of their tokens into the blockchain. One technical specification, ERC20, has become a de facto standard for Ethereum ICOs. Other platforms include Stellar, Omni, Waves, Counterparty, Bitshares, Ethereum Classic, and RSK. Many ICOs, such as Tezos, also launch tokens from their own native blockchains.

Different platforms enable different token and transaction properties. For example, ERC20 tokens can take advantage of Ethereum's Turing-complete smart contracting language, which technically enables them to program anything they wish into their token. By contrast, Stellar's primary focus is on market-making and efficient order-matching, to support token liquidity and lower spreads in a decentralized exchange. Stellar restricts smart contract capabilities to lower transaction costs and achieve greater efficiency and security.

An ICO platform is a software platform in which an ICO can be conducted and token transactions can be validated.

ERC20
A technical standard featuring a list of software functions that tokens on the Ethereum blockchain should implement. It is important for developers to fulfill the ERC20 standard so that their tokens may function and have interoperability within the Ethereum ecosystem.

Turing-complete
A programming language is said to be Turing-complete if it can theoretically be used to express all tasks accomplishable by computers.

Smart contracts
An automatically executing program in a blockchain or distributed ledger.

Exchange
A marketplace in which cryptocurrencies and tokens are traded.

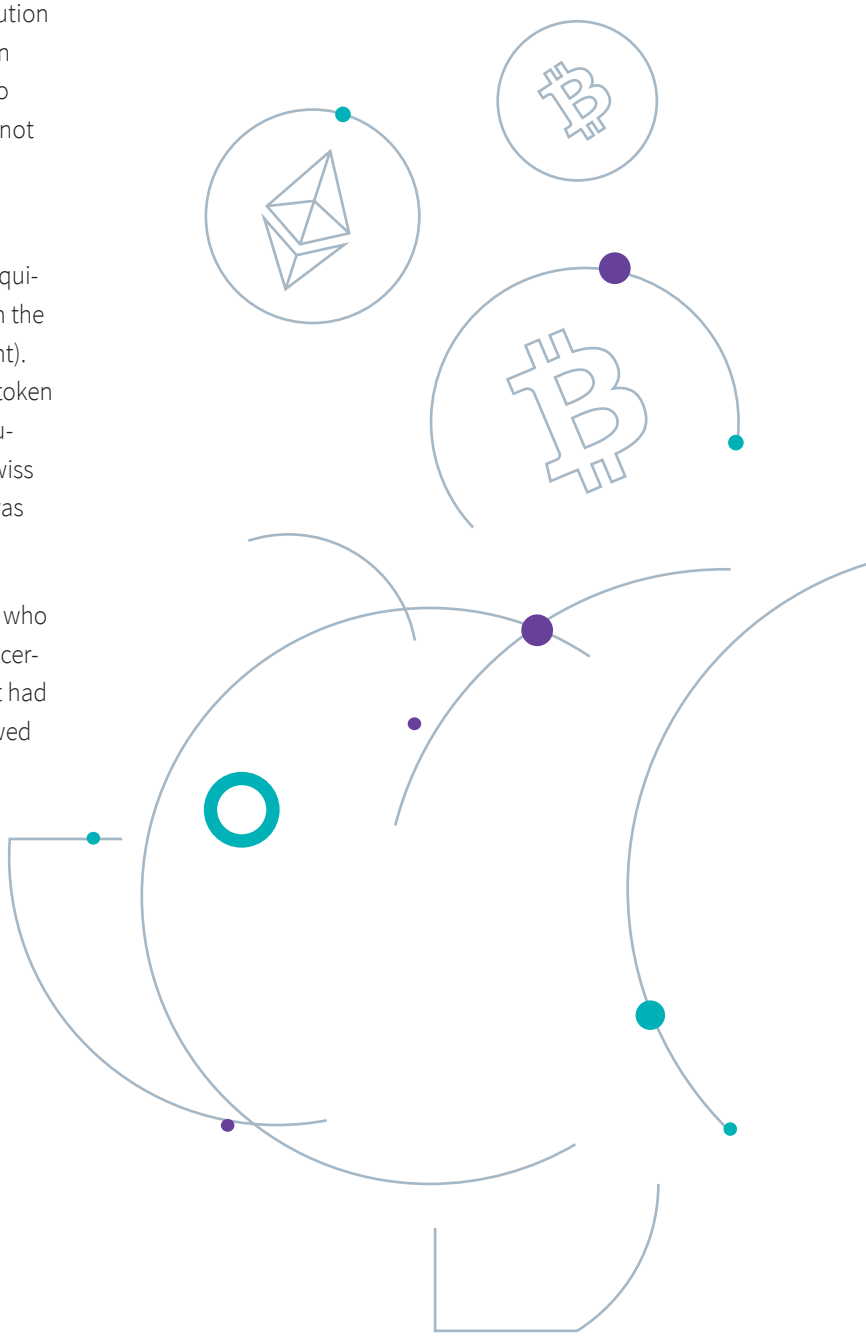
Decentralized exchange
A decentralized exchange is an exchange that does not rely on one central party to hold and transact the customer's cryptocurrencies. An automated software enables trades to occur directly between users in a peer-to-peer model.

Contribution Value Caps (Ceilings)

Some ICOs feature a “hard cap” or a “soft cap,” also known as a “hard ceiling” or “soft ceiling.” Hard caps are a limit on the total contribution value that will be accepted; the organization will refuse to accept additional contributions once it reaches the hard cap. A soft cap is a total contribution amount which, once exceeded, will trigger a time limit on the remaining token offering period. Some ICOs may also have “hidden caps,” which are hard or soft caps that are not disclosed to the public.

An example of a hard cap is in the Civic[4] ICO, where the maximum crowdsale contribution value was set to the equivalent of $33 million. The Civic ICO also set a hard cap on the maximum contribution amount per user ($25k equivalent). An example of a soft cap is in the Status[5] ICO, where the token offering period was set to end 24 hours after the contribution amount had reached the equivalent of 12 million Swiss Francs (or earlier than 24 hours, if the hidden hard cap was met).

Other ICOs may feature “uncapped” sales where anyone who wishes to contribute to the sale may contribute within a certain time limit. An example is Tezos, an organization that had no ceiling on the maximum contribution value and allowed anyone to contribute within the span of two weeks.[6]



[4] Civic is building an identity network that allows for on-demand, secure, and lower-cost access to identity verification. «Civic Identity Verification | Secure & Protect Identities.» Civic. Accessed September 08, 2017. https://www.civic.com/.

[5] Status is an Ethereum light client for Android & iOS that features encrypted messaging, a cryptocurrency wallet, and access to DApps. «Status, a Mobile Ethereum OS.» Status. Accessed September 08, 2017. https://status.im/.

[6] Tezos is a smart contracts platform that incorporates a process for upgrading the protocol over time through on-chain governance. «Tezos: a self-amending cryptographic ledger.» Tezos Crowdfunding. Accessed September 08, 2017. https://www.tezos.com/.

Token Sale Models

Organizations have varying approaches to pricing and allocating tokens. Some organizations have implemented auction mechanisms so that the price of the token can be wholly or partially set by community demand. Different auction mechanisms may feature different advantages in terms of (1) how efficiently the price of the token can reflect the economic utility of the token, (2) certainty about what percentage of tokens would be received for a unit of contribution, and (3) whether everyone who wishes to participate in the token sale will have the chance to participate.

The following models have been recently implemented in token sales:

1. **Fixed exchange rate:** A buyer exchanges cryptocurrency or fiat currency for tokens at a fixed ratio. The number of tokens received per unit of fiat or cryptocurrency could decrease over time to reward early buyers.

Example: Tezos had a token sale model in which buyers received 5,000 tezzies per bitcoin. Early buyers receive an early bird bonus of 20% additional tezzies.

2. **Dutch auction:** Bidders bid the max price that they are willing to pay and the quantity that they would be willing to buy at that price. All bids are collected and sorted from highest to lowest; the highest bids are accepted until the sum of the desired quantities is enough to sell all offered tokens. After the last bid is accepted, all bidders with an accepted bid will get the last bid's price for each token.

Example: Gnosis[7] emulated the Dutch auction mechanism with its token sale structure. Gnosis set a fixed contribution amount, and the percentage of total tokens that was given to purchasers in exchange for that amount depended on how long the sale took to finish. If the sale finished on the first day, only X% of total tokens would be distributed amongst the purchasers. If it finished on the second day, X+Y% of total tokens would be distributed amongst the purchasers, and so forth. X and Y are positive numbers in this formula. The goal of this mechanism is to create a scheme where purchasers who value the token at above 1/T would contribute before time T. All purchasers who contributed before T would receive the same number of tokens per unit of contribution.

3. **Hybrid capped sales:** The organization sets both a hard cap and a soft cap. Once the token sale meets the soft cap contribution amount, then the remaining token sale period is limited to a short period of time. If at any point the contribution amount meets or exceeds the hard cap, the token sale ends.

Example: Mysterium[8] had a 6 million CHF soft cap and a 14 million CHF hard cap. After the soft cap was reached there was a 72-hour limit on further contributions, provided that the total contribution amount did not exceed the hard cap.

Other proposed auction mechanisms include Vickrey (second-price) auctions[9] and proportional refunds.

[7] Gnosis is an Ethereum-based prediction market. «GNOSIS.» GNOSIS. Accessed September 08, 2017. https://gnosis.pm/.

[8] Mysterium is a decentralized marketplace for VPN services built on the Ethereum blockchain. «Mysterium Network.» Mysterium Network. Accessed September 08, 2017. https://mysterium.network/.

[9] The Vickrey auction mechanism is currently used to auction domain names through the Ethereum Name Service. «Ethereum Name Service (ENS).» CodeTract. Accessed September 08, 2017. https://ens.codetract.io/.

Mining

Mining is the process in which transactions are cryptographically validated and securely added to the blockchain. Miners can be rewarded with new units of cryptocurrency generated by the network, and/or with transaction fees paid for by the senders of the validated transactions.

The most common mining mechanism, known as **proof of work**, requires miners to expend significant computational resources to find a solution to a mathematical problem. When a transaction is made on the network, the event is propagated across the network and bundled into a block. Miners compete to be the first to find a mathematical solution that depends on the current block's transactions as well as the solutions of prior blocks. The first miner to find the solution publishes the block into the blockchain, receiving transaction fees and/or newly-generated cryptocurrency units as part of the transaction. The correct version of the blockchain is generally considered to be the version with the longest number of validated blocks in the blockchain. Since each block's solution depends on the entire history of blockchain transactions, a party who wants to alter a transaction will need to expend extraordinary computational resources to mine enough blocks to exceed the current blockchain's length. This makes it prohibitively costly for attackers to devise an alternate transaction history. Even those with extraordinary computational resources will have greater economic incentive to act as miners who secure the network, rather than attackers who attempt to alter history and steal coins.

The Bitcoin and Ethereum blockchains both currently use proof of work.

	No Mining (or "Completely Premined")	**Partially Pre-Mined**	**Mining**
Description	No new tokens are generated through mining. At the genesis of the network, the organization creates all the tokens that will ever exist. Alternatively, some organizations may add built-in inflation to the token pool. At genesis, the organization create all tokens that can exist at that moment in time. To increase the supply, they may instate fixed, predetermined rules for generating and distributing new coins.	All tokens are generated through mining, but a central organization has already "pre-mined" a significant percentage by using the mining mechanism at a point where mining is effectively free. In an ICO, the organization is distributing coins that they have pre-mined. People still have the ability to participate in the mining mechanism to obtain ownership of new coins.	All tokens are generated through mining. A mining mechanism is set forth to a community, and anybody has the chance to implement the mechanism to obtain new tokens. Since this model does not easily allow an organization to sell a significant number of tokens, it is generally not used by organizations for an ICO.
Example	Most ICOs generate all tokens at genesis and distribute a percentage of these tokens to token buyers. Those who participate in the organization's network may earn tokens by completing tasks: the organization may choose to use "mining" to describe this task completion process, but no new tokens are generated.	**Ethereum:** The Ethereum Foundation sold 50 million "pre-mined" ETH in a crowdsale, but people still have the ability to mine new ether.	**Bitcoin:** Satoshi Nakamoto proposed the initial bitcoin schema on an online forum. Anybody could participate in the proof-of-work mining mechanism to obtain new bitcoins.

Token Ownership Distribution

During an ICO, the organization normally does not sell all its tokens. Most organizations that launch ICOs reserve a certain percentage of total tokens to incentivize founders and early employees, pay back organizational investors, and enable future rounds of funding. The ratio of tokens that are distributed to tokens to those that are reserved for the organization varies greatly, depending on the ICO.

For example, Augur[10] pre-mined a total supply of 11,000,000 REP and sold 80% of the total supply to token sale participants. Of the remaining 20%, 16% went to the founders of Augur and 4% went into a non-profit Augur governance and development organization called the Forecast Foundation.[11] By comparison, Civic issued a total supply of 1 billion CVC, of which 33% was sold in the token sale, 33% was retained by Civic, 33% was allocated for distribution to incentivize participation in the Civic ecosystem, and 1% was reserved to cover token sale costs.[12]

Token Pre-Sales

To fund the marketing, legal, engineering, and operational costs of conducting an ICO and building out the product, some organizations conduct a token pre-sale (also called the pre-ICO) before a full ICO. In the pre-sale, the organization sells a predetermined number of tokens (often less than 10% of the overall volume of tokens reserved for the token sale) to early buyers, often at a discount.

In an effort to comply with U.S. securities laws, some organizations are participating in Simple Agreement for Future Tokens (SAFT) contracts, in which accredited investors invest money into an organization with the expectation that they will receive the organization's tokens in the future. For example, Filecoin[13] is utilizing the SAFT to do a SEC 506(c)-compliant private placement offering.[14]

During an ICO, the organization normally does not sell all its tokens.

[10] Augur is a decentralized prediction market built on the Ethereum blockchain.
«Decentralized Prediction Market | Augur Project.» Augur | Decentralized Prediction Markets. Accessed September 08, 2017. https://augur.net/.

[11] «Reputation (REP) Sale: Information Guide.» The Augur Crowdsale. July 29, 2015. Accessed September 07, 2017. http://augur.strikingly.com/blog/the-augur-crowdsale.

[12] «Civic Identity Verification Crowdsale.» Civic Identity Verification Crowdsale. Accessed September 07, 2017. https://tokensale.civic.com/.

[13] Filecoin is a blockchain-based data storage network. Protocol Labs. «Filecoin.» Filecoin. Accessed September 08, 2017. https://filecoin.io/.

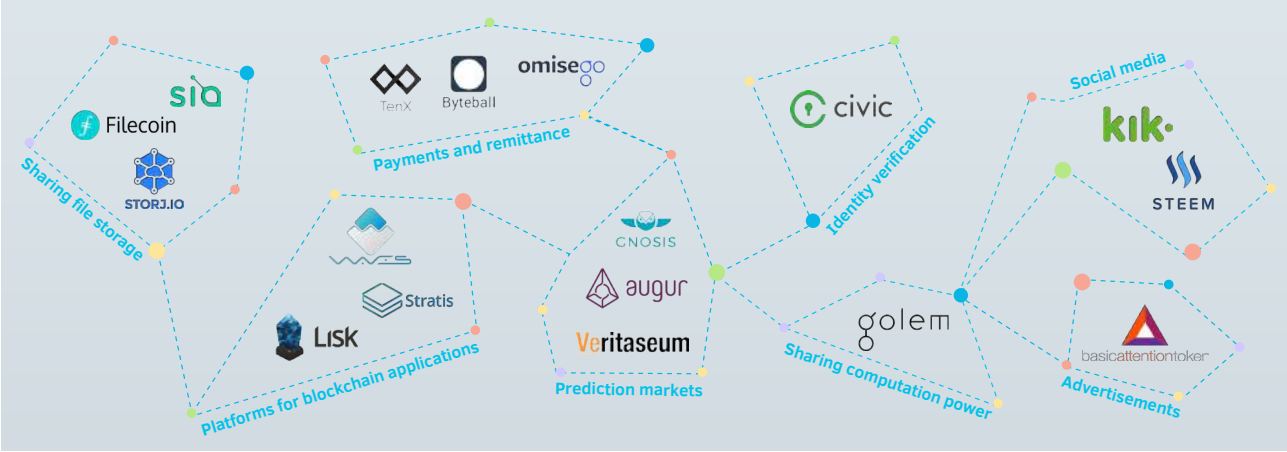
[14] «CoinList.» CoinList. Accessed September 08, 2017. https://coinlist.co/.

Decentralized Apps (DApps)

A decentralized application (DApp) is an application that is built upon decentralized network infrastructure, often a blockchain. The backend code that powers the DApp runs on the decentralized network, rather than on centralized networks such as Amazon Web Services (AWS), Google Cloud, or a company's own datacenters.

Many organizations are issuing new tokens to be used with their DApps. The tokens would play a critical role in the DApp, such as in the form of payment for a DApp product or service. DApps span a variety of use cases.

For some DApps, native application tokens are not necessary for the operation of the DApp. These DApps could be powered with bitcoin, ether, or another existing cryptocurrency. However, having DApp-specific tokens enables: (1) enhanced customization of token features; (2) creation of positive network effects, as token holders are incentivized to act to increase the value of their tokens; (3) a built-in customer base of token holders; and (4) a method through which DApp development can be funded (i.e., an ICO).



Decentralization

No locus of control is needed for operation. In the context of cryptocurrencies, decentralization generally refers to the concept that anybody could participate in storing, processing, validating, and transmitting data in the network. As the quantity of independent actors increases, the degree of decentralization increases.

Benefits of ICOs

ICOs have the potential to be a powerful catalyst for the development of open-source blockchain technologies. ICOs could also prove to be significant drivers for financial access and inclusion by democratizing access to investments.

ICOs are popular for multiple reasons.

FOR ORGANIZATIONS THAT ISSUE TOKENS:

1 **A built-in customer base.** Since tokens typically grant holders the ability to use the organization's product or service, a token sale is a way to gather a committed group of customers before the product or service officially launches. This effect is similar to how companies may use Kickstarter to rally a customer base prior to the official release of their product.[15]

2 **Positive network effects.** If the users are token holders, they will be invested in the growth and success of the network. The ICO model generates positive network effects that can vitalize and strengthen decentralized applications which require numerous users (or operational nodes). Decentralized applications often feature significant network effects wherein each user's experience improves upon the inclusion of additional users. When an organization conducts a public and open ICO for the development of a decentralized application, the process can automatically generate a large user base that can sustain the operation, security, and vitality of the decentralized network.

3 **A new model of financing for open-source projects.** Non-profit foundations can now finance open-source projects through token sales. This new model of financing can encourage growth in open-source development and innovation.

4 **Global and non-discriminatory investor/donor outreach.** Anyone can participate in an ICO, regardless of income level, country of residence, education level, social connections, or profession. However, some organizations exclude contributors from certain jurisdictions (i.e., the United States) due to uncertainty in the regulatory landscape.[16] Other organizations accept accredited investors only.[17]

5 **A fast and easy fundraising mechanism.** Anyone can initiate an ICO. Customized tokens can be easily generated through a number of platforms, including Ethereum, Stellar, Omni, NXT, Waves, Counterparty, Bitshares, and RSK. Transaction costs associated with marketing and contribution settlements are significantly lower than with traditional fundraising mechanisms.

a **Primarily online marketing.** Tokens can be marketed over the internet to a large, general audience. Potential buyers can learn about the ICO through the organization's website, online forums, online messaging applications, social media websites, and more.

b **Settlements over the blockchain.** Confirming contributions and distributing tokens simply requires monitoring and updating distributed ledgers. This requires lower effort and resources compared to the traditional fundraising process of accepting checks and wire transfers, sending out standardized contracts, managing contracts, and more. Additionally, a public ledger would enable the organization to easily track the reference of tokens.

6 **A warm reception from retail investors.** Retail investors and donors are currently enthusiastic about the ICO token model and have a large appetite for more tokens. Additionally, token issuance to small retail investors often does not involve relinquishing any ownership or governance rights. Retail token pricing generally reflects a liquidity and technology premium above the fundamental value of the rights associated with the token.

[15] «Kickstarter.» Kickstarter. Accessed September 08, 2017. https://www.kickstarter.com/.

[16] During their pre-sale, Dfinity advised visitors: "Due to regulatory uncertainty, you must not be a US person by citizenship or residency." Gobaud, David. «ICOs and the SAFT - Why, What, and How – Cryptos Today – Medium.» Medium. May 23, 2017. Accessed September 07, 2017. https://medium.com/cryptos-today/icos-and-the-saft-why-what-and-how-9dee58cc0059.

[17] CoinList.» CoinList. Accessed September 08, 2017. https://coinlist.co/.

FOR INVESTORS AND DONORS:

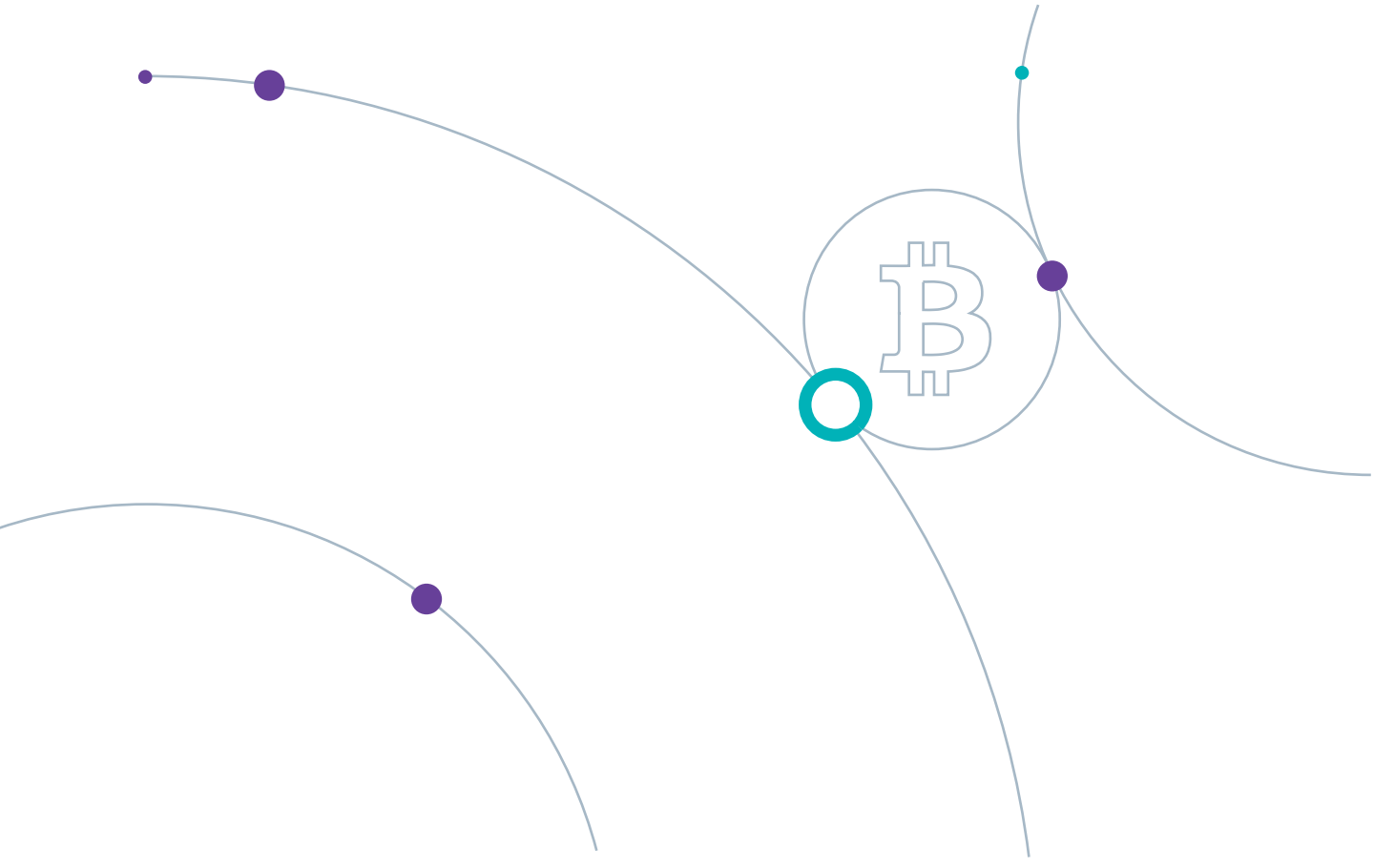
1 **Easily transferable.** It is frictionless to send and receive tokens since making a transaction simply requires input of the sender's private key (also known as secret key) and the recipient's cryptographically generated address. Some services, such as wallet applications and exchanges, manage users' private keys, so that sending tokens only requires the sender to input the recipient's cryptographically generated address. Because tokens are generally fungible, the seller and buyer do not have to negotiate on any token transaction details besides the price and quantity of the order. Tokens can be traded through over-the-counter transactions or on cryptocurrency exchanges. Ease of transfer incentivizes online communities of token holders, potential buyers, and cryptocurrency analysts to continuously track the progress of various organizations to make trading decisions.

2 **Liquidity.** Popular tokens have liquid markets on cryptocurrency exchanges. The most popular tokens could exceed over $100 million in 24-hour volume.[18]

3 **The network effect of value creation.** Most tokens can be seen as "gift cards" or "licenses" that enable the holder to consume some product or service from the organization. Widely distributing tokens incentivizes token holders to support the growth and development of the organization and network, since holders wish to maximize their token value.

4 **Democratizing investment.** Venture financing tends to be geographically concentrated in financial hubs like Silicon Valley, New York City, and London. The ICO method generally allows anyone in any geography to raise money. It also generally permits anyone to contribute.

5 **Potential for gains.** Cryptocurrencies can appreciate quickly in price. Ether traded in August 2015 for under $1 and was trading at around $250-$350 in early September 2017.[18] The price of bitcoin was around $100 in June 2013 and was trading at $4000-5000 in early September 2017.[18] Investors hope to find a token that can be "the next bitcoin" in terms of economic appreciation.



[18] «CryptoCurrency Market Capitalizations.» CryptoCurrency Market Capitalizations. September 07, 2017. Accessed September 07, 2017. https://coinmarketcap.com/.

Token Characteristics and Economics

To date, most organizations have sold tokens in exchange for bitcoin (BTC) or ether (ETH). These organizations subsequently liquidate some BTC or ETH to obtain fiat currency. Generally, anyone can purchase tokens.[19]

MOST TOKENS HAVE INTRINSIC UTILITY AND CARRY A VARIETY OF UNDERLYING RIGHTS. FIVE COMMON TYPES OF TOKENS ARE:

1. **Usage tokens.** Usage tokens can be redeemed to access and use a product or service provided by the organization. They could be analogized to "gift cards" or "licenses" to the organization's products and services. Filecoin, for example, is a decentralized storage network with a native token that is also called Filecoin. Clients buy Filecoins to pay miners to store or distribute data. Miners earn Filecoins by offering storage of clients' data.[20]

2. **Equity tokens.** Tokens that entitle the holder to equity-like benefits, such as profit sharing and voting. For example, Blockchain Capital (BCAP) tokens represent an indirect, fractional, non-voting economic interest in a venture capital fund called Blockchain Capital III, Digital Liquid Venture Fund, LP.[21]

3. **Work tokens.** Tokens that enable the holder to contribute work to an organization and earn revenue in exchange for their work. For example, users who hold Augur's REP tokens and accurately report the outcome of certain events are entitled to a portion of Augur's market fees.[22]

4. **Community tokens.** Tokens that have no purpose other than to give an organization the ability to enact monetary policy. For example, Steem is a social content publishing platform in which STEEM tokens are used to upvote user contributed content on the Steem website. The author of the content receives the tokens and can trade them on an exchange.

5. **Asset tokens.** Tokens that are backed by a real-life asset. For instance, each of Tether's USDT tokens represents a claim on one US Dollar that is held in the reserves of the Tether organization. The USDT can be redeemed for USD through the Tether Platform.

Tokens may have a combination of the characteristics above. Many tokens play an integral role in the function of the organization's blockchain applications.

It is important for the public to understand that most tokens do not have equity-like characteristics. Most tokens do not give holders a share of the profits of the organization, or the right to vote on the governance of the organization. Investors must scrutinize the terms and conditions of each token, as well as the code, to understand what value can be obtained from holding the token.

[19] However, some organizations prohibit U.S. residents from contributing, mainly to avoid the risk of U.S. regulatory agencies. Some other organizations require accredited investor status to avoid potential securities law implications (e.g., CoinList, https://coinlist.co/).

[20] Protocol Labs. «Filecoin.» Filecoin. Accessed September 08, 2017. https://filecoin.io/.

[21] «The First Digital Liquid Venture Fund: Blockchain Capital Fund.» The First Digital Liquid Venture Fund: Blockchain Capital Fund. Accessed September 08, 2017. http://blockchaincapital.tokenhub.com/.

[22] Kysar, Tom. «Reputation 101 - A Guide to Augurs REP.» The Augur Report. December 20, 2016. Accessed September 07, 2017. http://blog.augur.net/guide-to-augurs-rep/.

Risks of ICOs
Consumer Protection

ICOs may involve a variety of risks.

1 **Lack of due diligence.** There is no formal process for auditing organizations conducting ICOs. Many teams conduct token sales before making significant progress in building out a functional product. The team may document its technology and business plans in a white paper, but there may be little evidence that the technology can be built as specified or that the business will operate as expected. Flaws in certain technologies may not be discovered until significant amounts of money have already been invested.[23] Token buyers may also fail to conduct proper due diligence on ICO contractual terms; for example, some organizations have a clause in their terms and conditions that require contributors to accept the risk of project abandonment.[24]

2 **Smart contracts may have vulnerabilities which permit unexpected transfers.** Token transactions and usage abide by self-executing programs called "smart contracts." On Ethereum, smart contracts feature Turing-complete programming language that could be used to program any application accomplishable by computers. If a contract is not programmed correctly to match the plain-language higher-order specifications, this could lead to contracts executing in unexpected ways, including transfers of value without authorization from the tokens' owner.

For example, in June 2016, an organization called the Decentralized Autonomous Organization (DAO) leaked $50 million worth of community-contributed ether from a flaw in the smart contract that allowed unchecked withdrawals.[25] It is debatable whether the actions of the user who withdrew the funds should be construed as an "unauthorized" access event or not, given the philosophy of the project:

"The DAO's smart contract code governs the Creation of DAO tokens and supersedes any public statements about The DAO's Creation made by third parties or individuals associated with The DAO, past, present and future. The software code currently available at https://github.com/slockit/dao is the sole source for the terms under which DAO tokens may be created."

While the unchecked withdrawals were against the purpose of the DAO, the underlying philosophy of the DAO specified that the smart contract code itself is the preeminent source of governance.

3 **Uncertain basis for token valuation.** Token prices may not be based upon their fundamental value. Many buyers may be buying tokens for investment purposes on the expectation that market prices will increase. Therefore, they may value a token primarily based on expected resale profits instead of the underlying economic utility. This may perpetuate bubbles and Ponzi schemes wherein older investors obtain trading gains primarily through the capital inflow of newer investors, rather than from legitimate increases in the fundamental value of the token.

4 **Education.** Consumers are currently tempted to invest in ICOs as they promise high returns, but they may be uninformed of the technological and business risks and their legal rights as consumers and/or investors. Moreover, many mainstream consumers are not familiar with the technological attributes of blockchain technology and may be mislead by grandiose marketing claims.

5 **Unsophisticated token consumers may not be able to maintain or secure keys.** Consumers may lose control of their tokens by losing access or control of the cryptographic keys needed to transact with their tokens. If a consumer does not properly manage and secure her private keys, they may be stolen by hackers. Once a key is lost or compromised, the consumer permanently loses control of the tokens associated with the key. Unlike many websites that permit users to reset their account passwords if they forget them, a lost private key cannot be regenerated for the same tokens.

6 **Phishing scams.** A scammer may fraudulently impersonate an organization that is conducting a token sale and persuade buyers to send cryptocurrency payments to an address that is unaffiliated with the organization. Since cryptocurrency payments are irreversible, the scammer effectively steals all payments that are sent to the unaffiliated address. Scammers often operate on Slack and other social media sites; they hack into the organization's account or create a domain name or username that is similar to the organization's name, purport to speak on behalf of the organization, and then ask token buyers to send payments to the scammer's address. They also may hack into an organization's website and change the organization's payment address to their own.[26]

[23] See, for example, a blog post written by Cornell University professor Emin Gün Sirer regarding why the technology behind Bancor may have a fundamental flaw. This post was written after Bancor raised $153 million in its ICO. Sirer, Emin Gün. «Bancor Is Flawed.» Hacking Distributed. June 19, 2017. Accessed September 07, 2017. http://hackingdistributed.com/2017/06/19/bancor-is-flawed/. See, also, a post that exposes a hashing error in IOTA, a cryptocurrency worth over a billion dollars. Narula, Neha. «Cryptographic vulnerabilities in IOTA.» September 7, 2017. Accessed September 9, 2017.

[24] See, e.g., the Tezos Contribution Terms: "Risk of abandonment / lack of success: The Contributor understands and accepts that the allocation of XTZ and the development of the Tezos Network may be abandoned for a number of reasons, including lack of interest from industry and/or the public, lack of funding, lack of commercial success or prospects (e.g. ,caused by competing projects). The Contributor therefore understands that there is no assurance that, even if the Tezos Network is partially or fully developed and launched, the Contributor will receive any functionality through the XTZ held by him."

[25] Finley, Klint. «Someone Just Stole $50 Million from the Biggest Crowdfunded Project Ever. (Humans Can't Be Trusted).» Wired. June 03, 2017. Accessed September 07, 2017. https://www.wired.com/2016/06/50-million-hack-just-showed-dao-human/.

[26] For example, hackers altered the website of a company called Enigma and sent emails to Enigma's mailing list asking prospective token buyers to send funds to the hackers' address. Seals,Tara. «Attackers Scam $500K in Ethereum from Enigma Users.» Infosecurity Magazine. August 22, 2017. Accessed September 07, 2017. https://www.infosecurity-magazine.com/news/attackers-scam-500k-ethereum/.

Market Risks

1 **High price volatility.** The prices of tokens are highly volatile. For example, in the week ending September 3, 2017, 41 out of the largest 100 cryptocurrencies (by market capitalization) had a 7-day price change of greater than 5%.[27] The price changes ranged from an increase of 405.29% (NAV token) to a decrease of 54.12% (ICO token). High price volatility translates to high risk for token investors and could be a reflection of underlying market manipulation.

2 **Market movements attributed to ICO cash outs.** Organizations that have amassed large stores of ETH or BTC during ICOs will cash them out for fiat currency to pay bills and for corporate treasury management. This increase in market supply may create market price distortions.

3 **Market manipulation.** The market for tokens could be manipulated in multiple ways. Some possible ways are:

a **"Whales":** A significant percentage of tokens could be concentrated in the hands of a few holders. The actions of these "whales" (e.g., large buy/sell orders) could result in significant impacts on the market. For example, on June 21, 2017 there was a ETH flash crash where the price of ETH dropped from $320 to $0.10 on GDAX within seconds. Many believe this was triggered by a single large sell order.[28]

b **Pumping and dumping:** Token holders may generate price changes by releasing false or misleading information. Their intention is to drive the price up and then sell the tokens at the artificially high price. Pumping and dumping could also describe when a token holder successively buys a token with the intent to attract others to buy and push up the price.

c **Spoofing:** Spoofing occurs when a trader submits buy or sell orders with the intent to cancel the orders before execution. They place these non-bona fide orders in an attempt to induce other market participants to buy or sell in a manner that moves the market price. A "scare wall" describes a case of spoofing where a large token holder may put in a very large buy order at a certain price. This incentivizes others who wish to purchase the token to offer a higher price since they know that their orders cannot be fulfilled quickly if they offer a lower price. Scare walls help to establish a price floor.

d **Front running:** Some networks (e.g., the Ethereum network) allow users to pay higher transaction fees to obtain faster transaction processing times. Their transactions may then be processed before other transactions that were placed first with lower transaction fees. Since the market order book is accessible by the public, this may create opportunities where participants could "front run" the market.

4 **Network lag during large ICOs.** The Ethereum network is the most popular platform for ICOs. Large ICOs issued on the Ethereum network dramatically slow down the transaction validation speed of the network. This means that some token transactions may not be able to be confirmed in a timely manner at certain times. More generally, the Ethereum network may not function quickly and reliably during periods of high transaction activity.

5 **Token distribution mechanisms.** The methods through which tokens are distributed to contributors can be erratic, unpredictable, and exclusive. It can be difficult for ICO organizations to efficiently fulfill all these conditions: (1) accommodate all contributors who wish to participate in the sale, (2) give contributors certainty concerning what percentage of the total tokens one is receiving for a given contribution, and (3) set a maximum cap on the amount to be raised. This could lead to uncertainty in what the value of the token may be and unfairness in who is able to contribute to a token sale.

[27] "Historical Snapshot - September 03, 2017." CryptoCurrency Market Capitalizations. Accessed September 09, 2017. https://coinmarketcap.com/historical/20170903/.

[28] Watts, William. «What caused the ethereum flash crash?» MarketWatch. June 24, 2017. Accessed September 07, 2017. http://www.marketwatch.com/story/what-caused-the-ethereum-flash-crash-2017-06-22.

Regulatory Compliance

ICO organizations may be subject to the financial regulations of multiple jurisdictions.

1 **Anonymous or pseudonymous token buyers.** Since tokens are sent to and from cryptographically generated addresses, token buyers cannot be easily identified. These cryptographically generated addresses can sometimes be traced to a particular individual, but some blockchains purposefully obfuscate transaction tracing for privacy purposes. Cryptocurrencies such as Monero and Zcash allow fully anonymous transactions. This means know-your-customer requirements associated with anti-money-laundering and anti-terrorism financing regulations thus become more difficult to implement.

On the other hand, some platforms enable organizations to require and share personally identifying information when making a transaction (e.g., Stellar). The organization can choose whether or not they wish to enforce KYC requirements.

2 **Tax evasion.** Consumers may not know about the tax implications associated with buying and selling tokens (e.g., capital gains taxation). Additionally, token issuers may not understand and/or comply with the tax implications of their token offerings.

Many users may unintentionally evade taxes because of the complications of record keeping or confusion over taxation requirements. Other users may intentionally evade taxes by attempting to gain anonymity through the blockchain. They might use virtual currencies that enable full anonymity in transactions or "tumble" virtual currencies so that transaction identities are difficult to trace.[29]

3 **Uncertain regulatory schema.** Organizations conducting ICOs may be subject to the financial regulations of multiple jurisdictions. However, the regulatory landscape is still in a larval and ambiguous stage. Most governments have not issued a definitive statement on how ICOs will be regulated.

4 **Potential money laundering.** There is increasing concern that ICOs could be used to finance terrorist organizations, or to launder criminally-derived money and reintroduce it into the system. Since cryptographically generated addresses can hide the identity of the parties, token transactions could make it difficult to identify the true parties to a transaction. Criminal parties could also use privacy-focused cryptocurrencies to obfuscate public ledger transactions.

[29] «Tumbling Bitcoins: A Guide Through the Rinse Cycle.» Bitcoin News. December 21, 2016. Accessed September 07, 2017. https://news.bitcoin.com/tumbling-bitcoins-guide-rinse-cycle/.

[30] «CryptoCurrency Market Capitalizations.» 24 Hour Volume Rankings (Exchange) | CoinMarketCap. September 07, 2017. Accessed September 07, 2017. https://coinmarketcap.com/exchanges/volume/24-hour/.

[31] Wee, Rolando Y. «Biggest Stock Exchanges In The World.» WorldAtlas. July 07, 2016. Accessed September 07, 2017. http://www.worldatlas.com/articles/biggest-stock-exchanges-in-the-world.html.

ICOs v. IPOs

Initial coin offerings are sometimes analogized to initial public offerings (IPOs). Both offer mechanisms for organizations to sell a set of rights to a large public audience in exchange for value. However, ICOs and IPOs vary greatly in usage, legal implications, customer base, and risks.

	ICOs	IPOs
Stage	**Generally early stage.** Organizations often choose to ICO at the initial stages of product and business development. The ICO funds are meant to be used to build a team, develop and launch the product, and operate the business.	**Generally late stage.** Organizations choose to IPO after they have already developed a mature product and business strategy using private venture financing. The IPO funds are to be used to access capital to grow the organization.
Asset	**Tokens.** Consumers contribute fiat currency or other cryptocurrencies in exchange for tokens.	**Shares of equity.** Investors contribute fiat currency in exchange for shares of equity.
Legal/Regulatory Environment	**Ambiguous & developing.** Beyond general securities, consumer protection, and AML laws, there are no definitive statements on the legal treatment of tokens and token generation and transactions. There is very limited case law and precedent.	**Complex.** Securities case law has been developed over decades through case law, legislation, and regulatory guidance. Investors can expect a standardized set of rights for the shares of corporations that are incorporated in certain jurisdictions (e.g., shares of a U.S. Delaware C-Corp).
Underlying Rights	**Customized.** The organization issuing the tokens can specify a customized set of rights for the token. The token could grant holders the ability to use the token similar to a license or a gift card, or it could grant the holder other rights (see Token Characteristics section). The tokens rarely grant a share of equity, a share of profit, or voting rights.	**Share of ownership and/or profits.** Shares of stock are generally associated with a right to dividends/profits and the right to vote on significant corporate changes.
Organizations	**Primarily blockchain/distributed ledger organizations.** ICOs are primarily used by organizations who are building decentralized applications on a blockchain or distributed ledger.	**Companies in any industry.** An IPO is appropriate for companies in almost any industry.
Liquidity	**Centralized & decentralized cryptocurrency exchanges.** Tokens are tradable through cryptocurrency exchanges (e.g., Bithumb, Poloniex, Bittrex, Coinone, Bitfinex, Korbit, OKCoin.cn, Stellar [30])	**Securities exchanges.** Stocks are tradable through securities exchanges (e.g., NYSE, NASDAQ, LSE, JEG[31])
Filings	**White paper & blog posts.** ICOs are currently not compelled to file any information with any authority. However, most ICOs do issue white papers and blog posts to provide transparency into their technology, progress, team, and operations.	**Registration statement, annual & quarterly reports, & other disclosures.** In the U.S., in order to IPO a company must file a registration statement that discloses financial data, business information, risk factors, the identity and background of directors and officers, the management's discussion and analysis of financial condition, and other relevant information. After an IPO, a company is required to submit annual and quarterly filings (e.g., 10K and 10Q in the U.S.) and other disclosures.

Regulatory Considerations

Background

The ICO mechanism is increasingly being used by innovative blockchain organizations to raise funding. Given its popularity among more and more investors looking for the next gold nugget, regulators around the world are starting to monitor this phenomenon and are expected to take formal positions in the coming weeks or months. To ensure investor protection, many national authorities have begun to issue guidelines for investors seeking to invest in ICOs. More and more countries are starting to express concerns regarding the token instrument and the risks associated with token transactions, distributions, usages, and education.

Survey of Global ICO & Cryptocurrency Regulatory Treatment

Regulatory reception of ICOs varies across jurisdictions depending on how a jurisdiction perceives cryptocurrencies, securities laws, consumer protection laws, investor protection laws, AML regulatory frameworks, and on the jurisdiction's willingness to promote blockchain innovation. Given the global nature of most ICOs, organizations may be subject to the jurisdiction of numerous countries.

While ICO guidance is still in a nascent stage, numerous countries have expressed a basic position on cryptocurrencies and ICOs.

1 CHINA

Cryptocurrencies are perceived as non-monetary digital assets. On September 4, 2017, Chinese authorities issued a statement prohibiting organizations from launching ICOs and ordering organizations that have completed ICOs to refund their token buyers.[32] The authorities expressed concerns about financial crimes such as illegal fundraising, illegal issuance of securities, fraud, and pyramid schemes. The statement also prohibits financial institutions and non-bank payment institutions from operating businesses that deal with token fundraising, and, the statement prohibits token exchanges from exchanging fiat currency into tokens and facilitating the trading of tokens for cryptocurrencies. In response, many domestic cryptocurrency exchanges (e.g., Yunbi, BTER, Jubi, Yuanbao, Dahonghuo) have already delisted ICO tokens such as EOS, OMG, QTUM, and REP.[33]

2 EUROPEAN UNION

Each member of the European Union may have a different approach towards the regulation of cryptocurrencies. However, the forthcoming 5th Anti-Money-Laundering Directive helps to establish a European Union-wide regulatory framework for fighting money laundering in virtual currency businesses.[34] The draft of the 5th Anti-Money-Laundering Directive specifies that providers of exchange services between cryptocurrencies and fiat currencies and wallet providers offering custodial services of private keys may need to be registered or licensed in the European Union countries where they are established.

3 SINGAPORE

Cryptocurrencies are generally seen as assets, not securities. The Monetary Authority of Singapore has stated that some ICO tokens may be considered securities.[35] Exchanges must install an AML/KYC process to prevent money laundering and financing of terrorist activities. The Monetary Authority of Singapore is developing a regulatory framework called the Proposed Payment Framework that will provide licensing, regulation, and supervision of certain payments and remittance businesses, potentially including cryptocurrency intermediaries.[36]

[32] «China's ICO Ban: A Full Translation of Regulator Remarks.» CoinDesk. September 06, 2017. Accessed September 07, 2017. https://www.coindesk.com/chinas-ico-ban-a-full-translation-of-regulator-remarks/.
[33] «China's Crypto Exchanges Yank Token Listings Amid ICO Ban Fallout.» CoinDesk. September 6, 2017. Accessed September 9, 2017. https://www.coindesk.com/chinas-exchanges-yank-token-listings-ico-crackdown/.
[34] "Directive of the European Parliament and of the Council.» European Commission. July 5, 2016. Accessed September 13, 2017. http://ec.europa.eu/justice/criminal/document/files/amldirective_en.pdf .
[35] «Singapore Central Bank: Token Sales May Be Subject to Securities Laws.» CoinDesk. August 02, 2017. Accessed September 07, 2017. https://www.coindesk.com/singapore-central-bank-token-sales-may-be-subject-to-securities-laws/.
[36] «Singapore Proposes Changes to its Payments Framework.» OrionW. Accessed September 09, 2017. http://www.orionw.com/blog/news/fintech/singapore-proposes-changes-to-its-payments-framework.

4 SWITZERLAND

Switzerland has taken an innovation-friendly position towards cryptocurrencies. According to MME, a Swiss law firm, as long as a token is not directly linked to a debt or share, it is not classified as a security and is therefore not subject to Swiss securities laws.[37] Nevertheless, bitcoin commercial operators and 39 virtual currency trading and exchange platforms must still fulfill AML/KYC requirements and either become a member of a self-regulatory organization or apply to the Swiss Financial Market Supervisory Authority (FINMA) for a license to operate as a directly supervised financial intermediary.[38] Some commercial activities involving virtual currencies may also require a banking license. Swiss regulators have approved the operation of Bitcoin Suisse AG, a crypto asset manager, miner, financial service provider, and advisor based in Zug, Switzerland. Bitcoin Suisse advises organizations on launching ICOs.

Generally, Switzerland has a favorable regulatory environment for financial technology organizations, including cryptocurrency-related companies. The Swiss Ministry of Finance plans to introduce an innovation-friendly financial technology license by 2018 that would reduce barriers for market entry.[39]

Additionally, an ordinance entered into force on August 1st, 2017 that creates an innovation sandbox, wherein an organization could receive public funds of up to 1 million CHF without having to obtain authorization.[40]

On the international front, Switzerland has signed cooperation agreements with Singapore[41] and Israel[42] to create a cross-border environment that is conducive to innovation in financial technologies. The goal of the agreements is to provide regulatory certainty for financial technology companies, set international standards and regulations, and enhance regulatory and supervisory cooperation.

Additionally, Switzerland has approved the operation of Bitcoin Suisse AG, a regulated crypto asset manager, miner, financial service provider, and advisor based in Zug, Switzerland. Bitcoin Suisse is advising organizations on launching ICOs.

5 RUSSIA

Cryptocurrencies are considered financial instruments, not currencies. The Central Bank of Russia is more open to cryptocurrencies now than in the past, and is actively interested in monitoring transactions and taxing the capital gains related to ICOs. Cryptocurrency organizations must implement AML/KYC processes.[43]

6 UNITED KINGDOM

In the United Kingdom (UK), the Financial Conduct Authority considers cryptocurrencies to be private currencies. An AML/KYC process is mandatory to obtain access to cryptocurrency exchange platforms. The FCA offers a regulatory sandbox to blockchain and distributed ledger companies, so that they may begin building and testing innovative products without having to comply with all regulatory requirements at the outset.[44]

7 UNITED STATES

Each of the 50 U.S. states may have a different regulatory approach towards cryptocurrencies. Some states, such as New York, require a license to operate certain cryptocurrency-related businesses.[45] On July 19, 2017, the Uniform Law Commission approved the Uniform Regulation of Virtual Currency Business Act to be used as a model law for states seeking to adopt regulations for virtual currency businesses.[46] The goal of the act is to create a harmonized regulatory schema for all 50 states and have reciprocity amongst states for virtual currency business licenses.

The U.S. Securities and Exchange Commission has stated that some tokens may be considered securities, but has not provided clear guidance on the legality of different types of tokens.[47] The U.S. Financial Crimes Enforcement Network (FinCEN) and Commodity Futures Trading Commission (CFTC) have not yet made a statement on the legality of ICO mechanisms. On July 27, 2017, FinCEN assessed civil monetary penalties against a foreign located cryptocurrency exchange (BTC-e) for violating US anti-money-laundering laws.[48]

[37] Lyons, Tom. «Tell it to the judge: Examining the legalities of tokenization in Switzerland and the US.» Crypto Valley. July 27, 2017. Accessed September 07, 2017. https://cryptovalley.swiss/legalities-of-tokenization-in-switzerland-and-the-us/.
[38] «Bitcoins Finma.» Finma. June 25, 2014. Accessed September 12, 2017. https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/faktenblaetter/faktenblattbitcoins.pdf?la=en.
[39] "Federal Council initiates consultation on new Fintech regulations." The Federal Council. Feburary 1, 2017. Accessed September 12, 2017. https://www.admin.ch/gov/en/start/documentation/mediareleases.msgid65476.html .
[40] The Federal Council. Federal Council puts new fintech rules into force. Accessed September 07, 2017. https://www.admin.ch/gov/en/start/dokumentation/medienmitteilungen.msg-id-67436.html.
[41] «Singapore and Switzerland to Expand Cooperation on FinTech.» Monetary Authority of Singapore. September 12, 2016. Accessed September 9, 2017. http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/Singapore-and-Switzerland-to-Expand-Cooperation-on-FinTech.aspx.
[42] «Cooperation Agreement between the FINMA and CMISA and ISA regarding Cooperation for Innovation in the Financial Sector.» FINMA. September 4, 2017. Accessed September 9, 2017. https://www.finma.ch/it/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/20170904-mou-finma-cmisa-isa.pdf?la=it.
[43] «Russia Prepares to Legalize ICOs.» Bitcoin News. July 20, 2017. Accessed September 07, 2017. https://news.bitcoin.com/russia-legalize-icos/.
[44] «UK Finance Watchdog Adds More Blockchain Startups to Regulatory Sandbox.» CoinDesk. June 15, 2017. Accessed September 07, 2017. https://www.coindesk.com/uk-finance-watchdog-adds-blockchain-startups-regulatory-sandbox/.
[45] «BitLicense Regulatory Framework.» New York State Department of Financial Services. June 24, 2015. Accessed September 9, 2017. http://www.dfs.ny.gov/legal/regulations/bitlicense_reg_framework.htm
[46] «Uniform Regulation of Virtual Currency Businesses Act.» National Conference of Commissioners on Uniform State Laws. July 19, 2017. Accessed September 9, 2017. http://www.uniformlaws.org/shared/docs/regulation%20of%20virtual%20currencies/2017AM_URVCBA_AsApproved.pdf.
[47] «SEC Issues Investigative Report Concluding DAO Tokens, a Digital Asset, Were Securities.» SEC Emblem. July 25, 2017. Accessed September 07, 2017. https://www.sec.gov/news/press-release/2017-131.
[48] "FinCEN Fines BTC-e Virtual Currency Exchange $110 Million for Facilitating Ransomware, Dark Net Drug Sales." United States Department of the Treasury Financial Crimes Enforcement Network. July 27, 2017. Accessed September 9, 2017. https://www.fincen.gov/news/news-releases/fincen-fines-btc-e-virtual-currency-exchange-110-million-facilitating-ransomware.
Accessed September 14, 2017. https://www.coinbase.com/legal/securities-law-framework.pdf.

The Situation in Luxembourg

Luxembourg is a leader in the promotion of innovative blockchain applications. It was the first EU country to license a bitcoin exchange, having approved a payments institution license to Bitstamp in April 2016.[49] Thanks to the passporting system in place in the European Union, Bitstamp is now considered licensed in 28 European Union member states.

The Commission de Surveillance du Secteur Financier (CSSF), the financial sector supervisor of Luxembourg, has not yet assumed an official position regarding ICOs or investment funds in virtual currency. It is expected that the CSSF will state its position soon aligned with their consistent leadership in responding to new financial services innovations to date. Financial service providers, including organizations that issue or use virtual currencies, that carry out financial sector activities are under CSSF supervision and must receive authorization from the Minister of Finance.

Today, organizations that hope to launch an ICO in Luxembourg should understand that a white paper will be considered and reviewed as a prospectus. As a prospectus, the white paper should contain all necessary information for a potential token buyer. It is paramount for the supervisor and an organization to agree on the legal basis of the proposed ICO.

Policy Considerations in Regulating ICOs

Benefits

Private legal causes of action: Buyers currently have limited and uncertain avenues for legal recourse due to an uncertain regulatory landscape and the absence of traditional legal contracts. Many ICOs purport to be "governed by code," which has undetermined legal ramifications.

Buyer certainty and security: Token buyers should have certain consumer and investor protection rights. ICO organizations should be liable for clearly defined duties and obligations.

Buyer education: Regulatory action would raise awareness on the risks linked to ICOs. It is essential that token buyers understand the product, underlying technology, and business and technological risks of cryptocurrencies and ICOs.

Regulatory certainty promotes innovation: Providing a framework for ICOs would encourage entrepreneurs to pursue opportunities with less legal uncertainty. Moreover, regulatory certainty would open opportunities for new investment products, such as the development of investment funds specializing in ICOs.

Anti-money-laundering and know-your-customer requirements: AML/KYC requirements must be extended to ICOs to avoid funding terrorist activities or money laundering schemes.

Defining the legal ramifications of smart contracts: There should be certainty regarding how smart contracts will interface with legal frameworks in the event of legal action. Code may be vulnerable to exploits and security breaches, which may go against the original intent of the software.

Governance of ledgers: The decentralized structure of distributed ledgers may lead to uncertainty in who is responsible for performance and who has input on how the ledger is managed.

Concerns

Impediment to innovation: Regulation should be used as a catalyst and not an inhibitor of innovative blockchain regulations.

Limitations on the democratization of investments: New investment products like ICOs offer more diversity to investors and limit reliance on venture capital to fund innovative projects. ICOs provide a way to reach to investors all around the world. Regulation may limit the eligibility of who can buy tokens, which limits the demographic of who can contribute to an ICO.

Supervisor education: Even with a thorough assessment of the industry, categorizing cryptocurrencies and quickly adapting to industry shifts may be difficult. Supervisors (i.e., policymakers, regulatory agencies, government authorities) may not understand and accommodate all innovative use cases.

Decrease in blockchain innovation: Excessive regulatory burden could create reluctance to buy and/or invest in tokens. This could lead to a chilling effect on blockchain innovation.

Impact on taxation: Blockchain technology may impede a country's ability to track and tax certain events, resulting in a potential loss of revenue for some countries. However, taxation revenue could also increase if the taxation requirements are clarified and imposed on specific token events.

[49] «Bitstamp Moves to Luxembourg, Becomes World's First Nationally-Licensed Exchange.» Bitcoin News. April 25, 2016. Accessed September 07, 2017. https://news.bitcoin.com/bitstamp-luxembourg-nationally-compliant/.

[50] For example, in China a consortium of developers, miners, organizations, and regulators have convened to discuss a suitable ICO framework. Young, Joseph. «As China Plans to Regulate ICOs, Blockchain Consortia Form Framework.» Cointelegraph. July 29, 2017. Accessed September 07, 2017. https://cointelegraph.com/news/as-china-plans-to-regulate-icos-blockchain-consortia-form-framework.

Best Practices

Regulation is not the only mechanism that can be used to ensure a safe ICO environment. A set of best practices, collaboratively developed by key stakeholders in the cryptocurrency industry, could help ensure a level of consumer protection.[50] Similar consortiums should convene to discuss, compare, contrast, and analyze practices across jurisdictions, and a global consortium should harmonize regulations across jurisdictions.

One advantage of utilizing "best practices" in lieu of formal regulation is the speed at which best practices can adapt to current events and continuous stakeholder input. These best practices can target the following areas:

Enhancing transparency in organizational technology, financials, and operations. It is important to strengthen information disclosure requirements for organizations that plan to launch an ICO. Potential token buyers should compel organizations to disclose the curriculum vitae of team members, fulfill technology and security auditing requirements, fulfill financial auditing requirements, and more. Organizations that have already completed ICOs should submit periodic filings containing updates concerning technology, financials, operations, and team.

Encouraging ICO structures that minimize risk. The community should research and adopt ICO structures that optimize for beneficial outcomes such as participatory inclusiveness. There should be token vesting schedules for all founders and employees to provide long-term performance incentives. Organizations should undergo phased ICOs with maximum contribution limits (e.g., one ICO per year with a maximum cap of $1 million per ICO) to give the market time to evaluate the organization's achievements before contributing additional capital.

[51]

ICO Best Practices	
Transparency	Publish a detailed white paper with a comprehensive description of the business case, technology, team, network, ICO structure, total token supply, proposed usage of funds, and development roadmap. Reference and cite existing research that could be used to support the validity of the technology and business.
Disclosures	Discuss current and anticipated risks of the ICO and business inside the white paper and on the website. Manage token buyer expectations by: communicating ICO details clearly, being honest and transparent about progress and setbacks, and clearing up community-generated misconceptions. Have third party experts review the white paper and conduct security audits on the technology. Post-ICO, draft and distribute monthly or quarterly reports on the progress of the business and technology. Have an open channel of communication with token buyers. Be responsive and communicative on social media and communication platforms such as Slack, Telegram, and Twitter.
ICO Mechanisms	To prevent irrational buyer behavior, use a pricing mechanism where the price of a token does not increase over time. Consider setting a hard cap on total contribution value. Consider a multi-phase ICO where a portion of tokens are sold at the beginning and other portions are sold after the achievement of development milestones. Consider creating a "whitelist" of contributors prior to the ICO and only permitting these contributors to participate in the ICO. These contributors could be asked to contribute KYC information to fulfill compliance requirements. To prevent mass token sell-offs after an ICO, consider creating a lock-up period for ICO tokens.
Technology	When possible, have software be open source and available for others to audit. When possible, use well-known and thoroughly researched cryptographic algorithms, smart contracts, and software dependencies. Periodically hire independent auditors to review new developments in the technology.
Development Planning	Create a development roadmap that sets out development milestones. For each milestone, include a time and cost estimate. Communicate this development roadmap with token buyers and update token buyers on the organization's progress.
Treasury Management	Post-ICO, liquidate some cryptocurrency contributions to prevent significant volatility on balance sheet value. Set aside funds for independent security audits and bug bounties. Consider creating an ICO smart contract that releases funds steadily over several months or upon the achievement of predetermined development milestones.
Founders and Employees	Clearly identify key team members on the website and white paper, and link to their credentials or LinkedIn profiles. To incentivize founders and employees to maximize the project's long-term success, create an equity and token vesting schedule for all founders and employees. For example, equity and tokens could vest monthly over four years and have a one year cliff.
Legal & Regulatory	Consult legal counsel about potential legal risks and implications regarding securities, tax, money transmitter, consumer protection, investor protection, broker-dealer, and investment management. Create a Terms and Conditions agreement with all token buyers to clarify the legal rights, obligations, risks, and implications of participating in the ICO. Create an open dialogue with regulators in case of regulatory uncertainty.

[51] Some "Best Practice" points are attributed to "A Securities Law Framework for Blockchain Tokens." Coinbase, Coin Center, Union Square Ventures, and Consensys. Accessed September 14, 2017. https://www.coinbase.com/legal/securities-law-framework.pdf.

The "best practices" approach should be encouraged by regulatory and supervisory authorities as a way to collaborate with stakeholders to leverage the expertise of developers, businesses, investors, miners, and other constituents who have direct exposure to the ICO process. In addition to adhering to best practices, any organization that is seeking to conduct an ICO should consult with legal counsel on the tax, securities, money transmission, consumer protection, and corporate structuring implications of its project.

Some organizations may wish to provide a third-party legal opinion within the white paper that discusses the regulatory compliance requirements of the scheme, as well as an analysis of the legal framework. Since many projects serve niche markets, obtaining a legal opinion would provide the organization with clarification regarding applicable laws and help facilitate dialogue with regulators. Additionally, investors would benefit from reviewing an independent legal opinion of the project in the white paper.

Beneficial Regulatory Measures

Regulations should not become an unreasonable burden for beneficial blockchain innovation. However, certain minimal regulatory measures could help to limit AML and consumer protection risks:

Assessment matrix. Governments should develop an assessment matrix for ICOs that: (1) identifies regulatory areas where ICOs may need to be compliant, (2) defines different token types and ICO structures, and (3) specifies different legal standards and implications for different token types and ICO structures. This matrix would help to clarify the legal and regulatory jurisdictions and frameworks that would be applicable to the ICO.[52]

Use of auditors and/or self-regulatory organizations. Authorities should support the establishment and operation of one or more organizations of dedicated ICO auditors whose mission is to assess, identify, and investigate the various risks linked to ICOs. These auditors could be part of a government agency, an independent industry watchdog, or a self-regulatory organization. The authority would communicate regulatory goals with the auditor so that the auditor can flag regulatory issues and advise organizations on how to conduct a compliant ICO. The auditor can provide the relevant authorities with updates on industry trends and ICO progress so that authorities are informed of the latest developments.

If the jurisdiction requires a license in order to conduct ICO activities or operate virtual currency businesses, authorities could permit organizations to be audited and approved by the government-authorized auditor instead of requiring the organization to directly obtain a license from the government agency itself. This approach could emulate the Switzerland regime in which financial technology companies have the option to either be a member of a self-regulatory organization or apply to FINMA for a license to operate as a directly supervised financial intermediary.

Collaboration & reciprocity. Governments should collaborate with jurisdictions around the world to harmonize AML and investor and consumer protection requirements so that there is a lower regulatory burden for organizations that operate globally. Collaboration would help to ensure that global consumers and investors have a baseline standard of protection, and that ICOs that are flagged as threats will be swiftly acted upon in all jurisdictions.

[52] For example, Coinbase and other stakeholders released "A Securities Law Framework for Tokens" to assess securities law concerns for tokens sold to U.S. residents. See https://www.coinbase.com/legal/securities-law-framework.pdf.

[53] «Singapore and Switzerland to Expand Cooperation on FinTech.» Monetary Authority of Singapore. September 12, 2016. Accessed September 9, 2017. http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/Singapore-and-Switzerland-to-Expand-Cooperation-on-FinTech.aspx.

[54] «UK establishes FinTech Bridge with the Republic of Korea.» Financial Conduct Authority. July 22, 2016. Acccessed September 12, 2017. https://www.fca.org.uk/news/press-releases/uk-establishes-fintech-bridge-republic-korea.

[55] Monetary Authority of Singapore. "Singapore and Switzerland to Expand Cooperation on FinTech.» Singapore and Switzerland to Expand Cooperation on FinTech. Accessed September 07, 2017. http://www.mas.gov.sg/News-and-Publications/Media-Releases/2016/Singapore-and-Switzerland-to-Expand-Cooperation-on-FinTech.aspx.

A harmonized regulatory schema will give organizations more certainty on applicable regulatory schemas and help them avoid redundancy in fulfilling regulatory requirements. One beneficial measure is the adoption of financial technology cooperation agreements between governments, such as the agreement between Switzerland and Singapore[53] and the agreement between U.K. and South Korea.[54] These cooperation agreements generally provide a coordinated framework to help financial technology companies reduce cross-border regulatory uncertainty and decrease time-to-market in both countries.[55]

Another beneficial measure is reciprocity in authorizations and licensing. In Luxembourg and in Europe, an organization authorized in an European Economic Area (EEA) state is entitled to conduct permitted activities in any other EEA state by providing cross-border services or by exercising the right of establishment. The exercise of this right is called "passporting," and it enables organizations to easily operate cross-border in EEA countries. Virtual currency businesses that conduct operations related to payment service providers, e-money, and contracts-for-differences may be eligible for EEA passporting.

Similarly, in the U.S., states could work to create common standards for virtual currency business licensing and agree to reciprocity amongst groups of states. This would significantly reduce licensing burdens, as reciprocity would reduce the number of licenses that a virtual currency businesses would have to obtain in order to operate in all 50 U.S. states. Other governments also should consider establishing reciprocity agreements with economically linked jurisdictions.

Regulatory certainty regarding investment funds. Governments should provide regulatory certainty by categorizing cryptocurrency investment funds within the framework of traditional investment funds. This would help to establish baseline responsibilities and obligations for funds. Moreover, regulatory certainty would help manage investor and consumer expectations and provide defined avenues for legal recourse.

> It is important to have regulatory certainty for cryptocurrency investment funds, particularly in jurisdictions such as Luxembourg that are leaders in the investment fund industry. Luxembourg is the leading investment fund center in Europe and second only in the world behind the United States.

Consumer education. It is essential to educate potential token buyers on the risks and attributes of token sales. To encourage widespread cryptocurrency literacy, authorities should initiate campaigns and issue documents to educate the public. Some areas of education could include: (1) the risks and benefits of ICOs, (2) tax implications of cryptocurrency transactions, (3) how to avoid fraudulent schemes, (4) how to secure and manage secret/private keys, and (5) how an organization can conduct a token sale in a compliant way.

Regulatory sandbox. Authorities can help ICO organizations comply with regulatory compliance requirements by providing a «regulatory sandbox» environment in which authorities can temporarily relax certain regulatory requirements while the organization is testing and scaling its business model. In the sandbox, authorities can actively monitor the organization's operations and provide swift feedback. This would provide regulatory certainty for ICO organizations and would help authorities track ICO activity.

Open communication channels with industry stakeholders. Authorities should establish an open line of dialogue with industry stakeholders. On the consumer end, they may set up a platform where token buyers can alert the government of potentially fraudulent ICOs. On the organization end, they may set up a formal discussion pathway so that organizations may provide comments on developing regulations and ask questions regarding areas of regulatory uncertainty. Authorities should aim to be as transparent as possible regarding regulatory plans.

User interface for government monitoring. Organizations with public blockchains can provide government agencies with a user interface to help them monitor the transaction activity of token holders. Since transaction records are already publically stored and maintained in the blockchain, this would cut down compliance costs and would not be a heavy burden or an invasion of privacy. If the organization collects information about token users, then the AML/KYC process would be simplified since there is personally identifiable information for tokens users. Privacy-focused tokens (e.g., Zcash, Monero) and organizations (e.g., EgaaS) using a private blockchain may be subject to different disclosure requirements to help maintain privacy attributes.

Latest Regulatory Developments in ICOs

Recent Regulatory Actions

THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION.

On July 25, 2017, the U.S. Securities and Exchange Commission (SEC) issued an investigative report that concluded that tokens offered and sold by The DAO were securities under the Securities Act of 1933 and the Securities Exchange Act of 1934.[56] The SEC decided not to pursue an enforcement action on this matter based on the known facts and circumstances.

The DAO tokens were sold in exchange for ether and distributed through the Ethereum blockchain. Each token entitled the holder to a vote on the activities of The DAO and a share of income from The DAO projects. SEC deemed the tokens to be securities primarily because: (1) the token holders could share in potential profits from The DAO, and (2) the profits were derived from the managerial and entrepreneurial efforts of The DAO's creator (Slock.it, a German corporation), the curators, and the creator's co-founders.

The SEC has stated that "whether a particular investment transaction involves the offer or sale of a security – regardless of the terminology or technology used – will depend on the facts and circumstances, including the economic realities of the transaction." Each transaction will be evaluated on a case-by-case basis. Whether a token is a security depends upon the characteristics of the token and is judged using traditional United States legal tests for determining whether an instrument is a security (i.e., the "Howey Test"). Tokens that provide a current utility and do not have traditional security features (e.g., a share of profits or revenue and dividends) are less likely to be deemed securities.

The main ramifications of this ruling include:

1. Issuers of distributed ledger or blockchain technology-based securities that are offered and sold in the U.S. must register offers and sales of such securities under the 1933 Act, unless a valid exemption applies.
2. Any secondary trading market that allows trading in tokens that are securities may need to register as a broker-dealer, securities exchange, or alternative trading system.
3. Tokens that are securities and that are sold outside of the U.S. may be subject to prohibitions on resale in the U.S., as provided in Regulation S under the 1933 Act. These tokens will also need to be offered and sold in compliance with applicable local laws.

The response to this report has been generally positive. First, U.S. lawyers who advise on token sales had been anticipating that the SEC would apply the Howey Test to judge whether a token would be considered a security. Therefore, the analysis conducted by the SEC was consistent with many lawyers' recommended ICO best practices.[57] However, the community has requested that the SEC issue more definitive guidance on how to evaluate the security implications of utility tokens.

[56] Securities and Exchange Commission. "Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO." https://www.sec.gov/litigation/investreport/34-81207.pdf.

[57] For example, see Coinbase. "A Securities Law Framework for Tokens." https://www.coinbase.com/legal/securities-law-framework.pdf.

On July 25, 2017, the SEC also issued an investor bulletin to educate investors on virtual currencies and investing in ICOs.[58]

CANADIAN SECURITIES ADMINISTRATORS

On August 24, 2017, the Canadian Securities Administrators (CSA) issued a staff notice regarding ICOs, stating that securities laws do apply to ICOs.[59] The CSA stated that in many instances, the issued tokens would constitute securities for the purpose of Canadian securities laws.

The CSA has stated that securities laws in Canada will apply if the person or company selling the securities is conducting business from within Canada, or if there are Canadian investors. Additionally, some of the cryptocurrency products may be considered derivatives and subject to Canadian derivatives laws. The CSA invites firms that are interested in launching an ICO to consider signing up for a regulatory sandbox in which financial technology companies can be operated in a limited setting.

MONETARY AUTHORITY OF SINGAPORE

On August 1, 2017, the Monetary Authority of Singapore (MAS) issued a statement on tokens, clarifying that some tokens may be considered securities subject to the Securities and Futures Act. If the digital tokens fall within the definition of securities, issuers would be required to submit and register a prospectus with the MAS prior to the offer and sale of the tokens, unless an exemption applies. Moreover, issuers or intermediaries of these security tokens would be subject to licensing requirements under the Securities and Futures Act and the Financial Advisers Act, unless an exemption applies. Platforms facilitating secondary trading would also have to be approved or recognized by the MAS as an approved exchange or recognized market operator. Requirements to prevent money laundering and funding terrorism must also be fulfilled.

PEOPLE'S BANK OF CHINA

On September 4, 2017, the People's Bank of China and other Chinese authorities collectively issued a statement prohibiting the use of token fundraising.[60] Citing concerns for illegal fundraising, illegal issuance of securities, fraud, and pyramid schemes, China's financial regulators stated that all current fundraising activities must cease. Organizations that have already completed ICOs are required to issue a refund to token buyers.

This statement also prohibited token exchange platforms from offering exchange services between fiat currencies and tokens, buying or selling tokens for cryptocurrencies, or acting as a central party facilitating the trading of tokens for cryptocurrencies. Additionally, financial institutions and non-banking payment institutions shall not operate services that deal with token fundraising. Prohibited services include providing account opening, registration, trading, and clearing and settlement services for token fundraising, in addition to underwriting insurance policies or providing insurance coverage related to tokens and cryptocurrencies.

Concurrently, China's Remediation Office of Risks in Internet Finance has ordered that all ICOs in the country be investigated by local regulatory authorities.[61]

HONG KONG SECURITIES AND FUTURES COMMISSION

On September 5, 2017, the Securities and Futures Commission (SFC) declared that, depending on the facts and circumstances of an ICO, digital tokens that are offered or sold may be «securities» as defined in the Securities and Futures Ordinance, and thus subject to the securities laws of Hong Kong.[62]

If an ICO token falls under the definition of a security, dealing in or advising on the tokens, or managing or marketing a fund investing in such tokens, may constitute a «regulated activity» that would require a license or registration with the SFC. Licensing and registration would be required for all organizations conducting business activities targeting the Hong Kong public, regardless of whether the parties involved are located in Hong Kong.

[58] «Investor Bulletin: Initial Coin Offerings.» Securities and Exchange Commission. July 25, 2017. Accessed September 07, 2017. https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_coinofferings.

[59] Canadian Securities Administrators. "Cryptocurrency Offerings." http://www.osc.gov.on.ca/documents/en/Securities-Category4/csa_20170824_cryptocurrency-offerings.pdf.

[60] «China's ICO Ban: A Full Translation of Regulator Remarks.» CoinDesk. September 06, 2017. Accessed September 07, 2017. https://www.coindesk.com/chinas-ico-ban-a-full-translation-of-regulator-remarks/.

[61] 独家丨地方急查ICO风险，60家平台被列入清查名单 - 21经济网. Accessed September 07, 2017. http://www.21jingji.com/2017/9-4/yMMDEzODBfMTQxNjQyMA.html.

[62] Securities and Futures Commission. "Statement on initial coin offerings." September 5, 2017. September 7, 2017. http://www.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=17PR117.

SOUTH KOREA FINANCIAL SUPERVISORY COMMISSION

On September 3, 2017, the Financial Supervisory Commission (FSC) announced that it held a joint task force meeting with digital currency institutions and regulators such as the Korea Fair Trade Commission and the National Tax Service, to discuss and plan digital currency regulatory actions.[63] The announcement stated that Korea's financial authorities intend to strengthen AML/KYC measures related to digital currencies by requiring institutions to perform tasks such as user authentication and suspicious transaction reporting. Regulators also plan to introduce regulations on domestic trading on digital currencies, and increase monitoring efforts for lower-value overseas remittance activities involving digital currency.

On the subject of ICOs, a representative from the FSC has stated that "[the FSC] will clearly state the foundations of the Act on the Regulation of Conducting Fundraising Business Without Permission for illegal fundraising impersonating digital currency investment, and strengthen levels of punishment. We will expand the application range of the Act on the Regulation of Conducting Fundraising Business Without Permission and come up with regulations on digital currency trading by establishing the law."

ISRAEL SECURITIES AUTHORITY

On August 30, 2017, the Israel Securities Authority (ISA) issued a statement announcing its actions to organize a committee to study the applicability of domestic securities laws to ICOs. The committee's mandate is reported to be to:

> **"1.** Evaluate the financial essence of ICOs and whether it overlaps with other financial activity under Israeli law;
>
> **2.** Make a comparative analysis of cryptocurrency regulations in various countries to evaluate the legitimacy of Bitcoin;
>
> **3**. Examine if cryptocurrency trading and ICOs should be watched by the ISA;
>
> **4.** Devise a new regulatory policy balancing between alternative funding channels and technological innovation while protecting Israeli investors from unsupervised investments; and
>
> **5.** Examine potential collaborations with fellow regulators and with the local Blockchain industry." [64]

The ISA is expected to release a report containing its recommendations before the end of 2017.

UNITED KINGDOM FINANCIAL CONDUCT AUTHORITY

On September 12, 2017, the U.K. Financial Conduct Authority (FCA) released a statement on ICOs warning investors about the risks associated with token sales.[65] In the statement, the FCA declared ICOs to be "very highrisk, speculative instruments" and advised the public to invest only if they are an experienced investor, are confident about quality of the ICO project, and are prepared to lose their entire investment.

The FCA stated that whether an ICO falls within the FCA's regulatory scope must be decided on a case by case basis. The FCA acknowledged that "[m]any ICOs will fall outside the regulated space," while some ICOs may involve regulated investments and activities.

[63] Sil, Yoon Yung. «Financial Authorities to Strengthen Regulations on Digital Currency Trading.» BusinessKorea. September 03, 2017. Accessed September 07, 2017. http://www.businesskorea.co.kr/english/news/money/19180-regulating-bitcoin-trading-financial-authorities-strengthen-regulations-digital.

[64] Magen, Dan. "Israeli Financial Watchdog to Evaluate Legitimacy of ICOs | Finance Magnates.» Finance Magnates | Financial and business news. August 30, 2017. Accessed September 07, 2017. https://www.financemagnates.com/cryptocurrency/news/israeli-financial-watchdog-evaluate-legitimacy-icos/.

[65] "Initial Coin Offerings." Financial Conduct Authority. September 12, 2017. Accessed September 12, 2017. https://www.fca.org.uk/news/statements/initialcoinofferings.

Conclusion

As regulators begin to issue statements on the legality of ICOs, organizations that were planning to launch an ICO are now rethinking their strategy. Many such organizations are consulting legal counsel to understand the securities, tax, money transmitter, consumer protection, investor protection, broker-dealer, and investment management legal risks and implications associated with token sales.

In the U.S., more and more organizations are considering issuing tokens under the presumption that they may be considered securities.[66] These organizations are exploring issuing tokens under securities exemptions such as Regulation A+,[67] Regulation D,[68] and Regulation S[69] in the U.S.. The U.S. cryptocurrency community is still waiting on a more definitive statement from the SEC, FinCEN, and CFTC on regulatory requirements for ICOs.

ICOs created in Europe could benefit from a harmonized regulatory treatment within the European Union, especially regarding AML/KYC regulations and the protection of investors. As such, a clear position from national regulators as well as the European Commission would be beneficial. In the coming months, individual countries are likely to release more detailed statements on the regulatory requirements needed to launch a compliant ICO.

On the consumer end, token buyers are becoming more cautious about buying and trading ICO tokens. The cryptocurrency community is launching efforts to self-regulate token sales and conduct due diligence on behalf of the public. For example, over 70 blockchain and cryptocurrency-focused organizations have joined the Chamber of Digital Commerce to launch Token Alliance, an initiative that aims to create best practices for companies interested in ICOs.[70] Additionally, an organization called the ICO Governance Foundation was launched by industry experts to establish best practices and standards for ICOs, starting by providing and maintaining a public filing and registration protocol.[71] In the past few months, many bloggers have published articles that teach the public how to evaluate token sales.[72]

There are multiple benefits and risks to ICOs. Despite movement in the regulatory space, the technology community sees strong potential in blockchain technologies, and there is strong demand for tokens. We hope regulators can structure flexible requirements that reduce risks while accommodating innovation in this young but burgeoning industry. We also hope that industry executives can explore and leverage blockchain technology for applications in their respective industries.

[66] «Reg D on the Rise? Investor-Grade ICO Products Are Coming – and Soon.» CoinDesk. September 07, 2017. Accessed September 07, 2017. https://www.coindesk.com/reg-d-on-the-rise-investor-grade-ico-products-are-coming-and-soon/.

[67] «SEC Adopts Rules to Facilitate Smaller Companies' Access to Capital.» SEC Emblem. March 25, 2015. Accessed September 07, 2017. https://www.sec.gov/news/pressrelease/2015-49.html.

[68] «Regulation D Offerings.» Securities and Exchange Commission. December 02, 2009. Accessed September 07, 2017. https://www.sec.gov/fast-answers/answers-regdhtm.html.

[69] «Final Rule: Offshore Offers and Sales(Regulation S).» Final Rule: S7-8-97. Accessed September 07, 2017. https://www.sec.gov/rules/final/33-7505.htm.

[70] Shin, Laura. «Token Alliance Launches to Promote Best Practices for ICOs.» Forbes. September 18, 2017. Accessed September 18, 2017.

[71] «The ICOGovernance Foundation.» ICO Governance Foundation. Accessed September 08, 2017. https://icogovernance.org/.

[72] See, e.g., «Evaluating Tokens and ICOs – Hacker Noon.» Hacker Noon. August 27, 2017. Accessed September 07, 2017. https://hackernoon.com/evaluating-tokens-and-icos-e6c22c1885bb?source=false---------0.

About the Stellar Development Foundation

The Stellar Development Foundation (SDF) is a non-profit organization that supports the Stellar protocol, a distributed ledger protocol that enables banks, payment systems, and people to move money quickly, cheaply, and reliably.

The mission of the SDF is to promote global financial access, literacy, and inclusion. SDF accomplishes this by expanding worldwide access to low-cost financial services through the development and maintenance of the Stellar technology and partnership ecosystem.

SDF's vision is an open and affordable financial system where people of all income levels can access simple-to-use, secure, and low cost financial services. SDF also aims to empower developers with technology to create financial products and services for their communities.

In 2017 SDF has engaged with financial institutions and governments from around the world including Luxembourg, Nigeria, India, Bahrain, Singapore and China. Apart from supporting financial partners in adopting the Stellar protocol for low-cost and seamless global transactions, SDF also strives to educate and build local technical capacity.

SDF recently created Lightyear with the vision of allowing SDF to continue its focus on its primary mission of managing the Stellar open source software while Lightyear supports global partner activities for the Stellar network. Lightyear focuses on a broad range of activities, including support of global partner integrations and marketing of the Stellar network.

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Thanks to David Mazieres and Jeremy Rubin for comments and edits.

About the LHoFT Foundation

The LHoFT (Luxembourg House of Financial Technology) Foundation is a public - private sector initiative that drives technology innovation for Luxembourg's Financial Services industry, connecting the domestic and international FinTech community to develop solutions that shape the world of tomorrow.

The LHoFT initiative is supported by Luxembourg Ministry of Finance, Ministry of Economy and Ministry of State.

The LHoFT initiative is also supported by 13 private partners. The distinguished members of the LHoFT's Leadership Circle are: BCEE, BGL BNP Paribas, Clearstream (Deutsche Börse Group), Deloitte Digital, Foyer Group, KPMG, POST, PwC, Six Payment Services, Société Générale, State Street, Telindus (Proximus Group), and Temenos.

The broad mission of the LHoFT is to drive Financial Technology innovation within Luxembourg's financial services community to ensure the future competitiveness of the industry, to foster a comprehensive and collaborative globally connected FinTech ecosystem across all sectors and to position Luxembourg as a leading FinTech centre within Europe with global recognition for cutting edge innovation developments that progress financial services forward and as an attractive centre for innovative financial services businesses to establish their main EU offices.

To achieve this goal the LHoFT Foundation is building a soft-landing platform that draws in a wider range of foreign FinTech participants for collaboration/ partnership with the Luxembourg financial community, offering private offices, hot desks, as well as membership options.

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Appendix: ICO Insights From Entrepreneurs

Below is a series of interviews with entrepreneurs who have chosen to ICO. The interview discusses why the entrepreneurs have chosen to conduct an ICO, what their experience has been, the benefits of the ICO, and their opinions on regulation.

INTERVIEW WITH MOBIUS (MOBIUS.NETWORK)

MOBIUS IS MAKING DECENTRALIZED COMMERCE A REALITY BY CONNECTING BILLIONS OF PEOPLE AND DEVICES TO THE BLOCKCHAIN ECOSYSTEM. MOBIUS PLANS TO LAUNCH AN ICO ON NOVEMBER 8, 2017.

1. Why did you decide to do an ICO to raise money?

We're not raising money. We are selling our product, which are protocol tokens that are used in the Mobius DApp Store (http://mobius.network/store) or Universal Proof of Stake Oracle Protocol that is part of the Mobius decentralized data exchange for real world data.

2. Under which jurisdiction did you perform your ICO?

We are currently working with our lawyers to finalize our corporate structure.

3. How is your relationship with the regulator from this country?

There should be more clarity from regulators around the world. However, the recent Chinese pronouncement on token sales seems overly restrictive and will stifle innovation. The US SEC appears to be taking the correct approach, which is to draw a distinction between utility and security tokens. Utility tokens in some cases are similar to arcade tokens and should not be over regulated or seen as a security.

4. Was the ICO a tool to raise awareness on your project and serve as a marketing campaign?

No - the Mobius tokens started selling after developers started using our DApp Store and API. People saw the DApp Store and the DApps in it and then they bought tokens to use in the DApps.

5. Do you think the regulator should take a position on ICOs? What would be your recommendations?

Yes, regulators should clarify their position on tokens. Broadly speaking, utility tokens should be treated as products. Security tokens should be treated as regular securities subject to all security laws.

6. Do you think ICOs pose a threat/risk for some investors?

Yes. Currently some people are using tokens to obtain investments that bypass security laws. This can pose a risk to investors. This is significantly different from product tokens with a launched service or platform that people can use. In these cases, people can evaluate the service or platform as a product today to figure out how many tokens they want to buy and not buy out of speculatory interest.

7. Are you in favour of the creation of best-practices for ICO, developed by experts from the field, who already performed ICOs?

Yes, it would be good to have a publication of best practices covering how to sell tokens and structure token sales.

8. We've seen ICOs performed on the Ethereum blockchain and on other dedicated platforms. Would you recommend one compared to another? What did you use and why, what is the rationale behind it?

We are using Stellar because it is faster, cheaper, and more secure than Ethereum. Ethereum only runs at ~7 token transactions per second so it cannot support our transaction volume. In addition, transactions are now costing 20 to 30 cents, which rivals or exceeds credit card fees. Ethereum also supports running Turing complete programs which means its security attack surface is very broad. Stellar, on the other hand, can process 1000+ transactions/second for negligible fees. It has smart contracting capabilities but is not Turing complete so it is much more secure.

9. Any other point worth mentioning on ICOs?

Bitcoin and blockchain were fundamental innovations upon which amazing technology is being built. Tokens are a small but key part of the picture and it is important not to overregulate and stifle innovation. Broadly, blockchain and tokens enable decentralized groups of people to self-organize and disintermediate powerful and rich central institutions and people. Therefore it is clear why powerful governments may overregulate in an attempt to preserve their power and the status quo.

INTERVIEW WITH HUMANIQ (HUMANIQ.COM)

HUMANIQ CONDUCTED AN ICO IN APRIL 2017 AND RAISED MORE THAN $1.5 MILLION IN THE FIRST HOURS AFTER THE LAUNCH. HUMANIQ AIMS TO BUILD A BANKING SOLUTION FOR THE THIRD WORLD TO BRING BANKING TO THE UNBANKED. HUMANIQ SEEKS TO SOLVE THE ISSUE OF PEOPLE FROM EMERGING ECONOMIES NOT BEING CONNECTED TO THE POWER OF THE GLOBAL ECONOMY.

1. Why did you decide to do an ICO to raise money?

The ICO is a more flexible solution than traditional funding and can be considered as a creative crowdfunding. The ICO also enables participants of the project or those supporting it to really be a part of it.

2. Under which jurisdiction did you perform your ICO?

The ICO was performed in Luxembourg.

3. How is your relationship with the regulator from this country?

The regulator is approachable but we did not really have to discuss the ICO with them as we created the ICO as a crowdfunding event more than an ICO related to securities. We are of the opinion that it is essential to have a clear position from the regulator.

4. Was the ICO a tool to raise awareness on your project and serve as a marketing campaign?

ICO has been used as a tool to create awareness of the project, on the mission and the business model. More than a financial tool, ICOs are an excellent marketing tool driving increased visibility.

5. Do you think the regulator should take a position on ICOs? What would be your recommendations?

It is critical for numerous projects to have a clear view on the position of the regulator. ICOs are becoming the preferred way to raise money for new innovative projects.

The creation of token is often perceived as a security. Projects seeking to perform ICOs need guidance from the regulator, who we feel should consider creating a specific law on the topic.

Luxembourg has a big opportunity to welcome more ICOs.

6. Do you think ICOs pose a threat/risk for some investors?

Like for any other investment, there is a risk similar to when you invest in a stock. This is part of the nature of the investment. Investors should make sure to educate themselves about the disclosed risks, similar to homework. However, there may be organisations that could use ICOs in the wrong way.

7. Are you in favour of the creation of best-practices for ICO, developed by experts from the field, who already performed ICOs?

Yes, this is a must, an obligation and the only way to unify and lessen the risks on ICOs. The sooner these guidelines are created the better. A clear definition of an ICO is essential to determine whether they qualify as financial instruments or securities.

8. We've seen ICOs performed on the Ethereum blockchain and on other dedicated platforms. Would you recommend one compared to another? What did you use and why, what is the rationale behind it?

We've used the Ethereum framework because it is the biggest in the World. Every company should ensure to use the right technology and avoid duplication of information.

9. Any other point worth mentioning on ICOs?

Luxembourg should create its own guidance on ICOs. It should open a direct channel to deal with ICOs, such as creating a dedicated department with the regulator or via an association or organisation.

INTERVIEW WITH ETHLEND (ETHLEND.IO)

ETHLEND PERFORMED THEIR PRE-ICO AT THE BEGINNING OF AUGUST 2017 AND ARE LAUNCHING THEIR ICO IN THE COMING WEEKS. THEY ARE USING THE ETHEREUM NETWORK TO DEPLOY THE TOKEN SALE SMART CONTRACT. THEY'LL CREATE THEIR OWN TOKEN CALLED LEND.

1. Why did you decide to do an ICO to raise money?

Being decentralized and blockchain based, the project couldn't be the same without ICO as we don't accept VC money, unless they decide to buy our token during the ICO of course.

2. Under which jurisdiction did you perform your ICO?

Hong Kong.

3. How is your relationship with the regulator from this country?

ICOs are unregulated in Hong Kong.

4. Was the ICO a tool to raise awareness on your project and serve as a marketing campaign?

It is both funding and marketing. It appears that an ICO can be an useful tool to raise awareness in the ICO communities that we see on social media and create interest from investors in the crypto world.

LEND token is used in our platform.

5. Do you think the regulator should take a position on ICOs? What would be your recommendations?

Yes, soft regulation which is more procedural in nature. These procedural regulation could be related to disclosure of information and complaint procedures.

Of course, blockchain based start up need a clear legal framework to evolve in and as the awareness around it is growing, we need institutions to have a clear position on it to allow traditional investment and trade to fully move to blockchain.

Internationally agreed lean regulations written with the involved stakeholders (Foundation,Start up, institutions).

There should also be clearer standards, especially to differentiate serious projects and scams.

6. Do you think ICOs pose a threat/risk for some investors?

ICO is share without ownership, so investors have to take into account that they have no ownership of the project besides being able to participate in the related market.

So investors need to be careful about the team and the potential use of the token they buy in order to see them as a reserve of value. (eg. If you have 10% of a token that allow any holder to pay less fees on a specific platform that can be widely used later). Some ICO, like us, try to reward the investors buying back tokens and burning them, thereby increasing the share for token holders. We also offer a discount benefit for using our token on our DApp.

7. Are you in favour of the creation of best-practices for ICO, developed by experts from the field, who already performed ICOs?

Like CSR, ICOs should follow best practices build and mutually agreed within the community and institutional stake holders. It's technically impossible to have a state or regional entity having influence on what happens on the blockchain besides pushing for best practices and self regulations or restricting access to its citizen (though most of them will continue to use VPN's and store their token on private keys as we recently saw with the volume of ICO's investment related talk from US citizen although most ICO's didn't comply with their regulation). Regulators and Start up both can only push to follow the rules but not enforce it. So of course best practices should be the focus of international discussion.

8. We've seen ICOs performed on the Ethereum blockchain and on other dedicated platforms. Would you recommend one compared to another? What did you use and why, what is the rationale behind it?

We used the Ethereum blockchain as our Decentralized Application Protocol (DApp) is built upon it and our token follow the ERC20 Standard. Moreover, using the Ethereum blockchain allow us to have a trustless ICO where investors send their ether to the address of a smart contract that was independently audited and published on github before the ICO. Once the Smart Contract receives the funding, it automatically send the corresponding amount of LEND. So using Ethereum was a matter of logic and security.

9. Any other point worth mentioning on ICOs?

- LEND loan is operational on our platform as a proof of concept.
- Our DApp was online before the ICO.
- Some ICOs appear to be more dependent on smart marketing than actually offering a good product.

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