GBBC Open-Source Ideas:
Special Report

Utility Tokens and ERC-20 ICOs:
Where are we now?

in research collaboration
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Utility Tokens: Do they have any utility?

A utility token gives the owner cryptographically secured rights to use a particular software, network, or platform and the ability to redeem the token for a currency or good. Utility tokens can also be used as an escrow bond to encourage certain behavior. While terminology and distinctions are not widely agreed upon in the blockchain and crypto community, tokens are generally said to fall into three groups: native tokens (used to secure the protocol), utility tokens, and tokenized securities/equity tokens. The most common utility tokens are those built upon the ERC-20 Ethereum standard, which was first used to develop smart contract functionality and inspired the proliferation of Initial Coin Offerings (ICOs).[i]

Utility tokens have a wide variety of applications. One example of a utility token's functionality is similar to that of a tradable gift card or pre-sold software license. Notably, while utility tokens can be used on an application to engage in transactions and earn rewards, they are not fundamentally intended to be relied on as a passive investment vehicle.

Since 2017, there have been more than 5,500 ICOs.[ii] These projects have come under intense scrutiny, with some estimating that up to 80 percent of ICOs were scams.[iii] More recently, research published in the Journal of the British Blockchain Association (JBBA), examined this assertion and discovered that the magnitude of ICO scams was dramatically lower than initially reported, and instead estimated the figure to be 2.2 percent.[iv] Rather than fraud, the high failure rate for these firms was attributable to their early stage, the speculative nature of new technologies,[v] as well as the cryptocurrency crash of 2018, in which tokens lost 80 percent of their value.[vi]

Appendix 1 of this report profiles seventeen token projects to illustrate the numerous functional examples of firms and projects that are building and making significant progress.

A Brief History of Tokens

Historical use cases of tokens date back as far as 8000 BC, when small clay tokens were used to count goods.[vii] The idea of a tokenized ecosystem has existed for centuries; one of the most well-known use cases comes from the world's first casino, Casinò di Venezia, established in 1638.[viii] Additional examples of tokens include trading tokens used in locations with shortages of coins from the 16th century onwards, staff tokens used by businesses to pay employees when coins were in short supply, and telephone booth tokens used in countries with an unstable currency.[ix] Finally, many will have experience with tokens in the form of frequent flyer miles or buying into a managed investment fund.

Five years after Bitcoin's release, the Ethereum blockchain provided additional functionality by adding contracting features within a token, as well as the ability for predetermined criteria and actions to be defined to create a record and transfer value. These contracting features are made by Ethereum's internal Turing-complete programming language, which allows anyone to write self-executing and trustless smart contracts.[x] Vitalik Buterin and Fabian Vogelsteller proposed the first utility token protocol, called EIP20 (aka ERC-20); today, most utility tokens are ERC-20 tokens.[xi] The reasons for creating the ERC-20 protocol included the ability to raise capital, retain and share the value of projects with its creators and users, and act as a limited supply license.

Following Ethereum's inception, it took two years for utility tokens to be released, of which Augur was one of the first.[xii] The increasing adoption of Bitcoin coupled with the emergence of the standardized ERC-20 contract led to the creation of thousands of utility tokens and the rise of a tokenized economy, as well as the rise of the ICO. ICOs are a mechanism for raising capital in which crypto assets are sold online to launch either a native blockchain (a blockchain built to house its own utility token or coin), a cryptocurrency, blockchain application or project, or to sell access to features of applications.[xiii] 2017 saw large amounts of capital flow into 5,500 ICOs, which, when compounded with the hype surrounding older cryptocurrencies (primarily bitcoin), created a bubble that would burst in 2018. Despite this, as of April 2020 there were approximately 250,000 different types of ERC-20 tokens being used in various blockchains and applications.[xiv]

Diamonds in the Rough

Since the ICO boom of 2017 and the subsequent failure of many projects, a small but important cohort of these projects have gained real traction. For example, Power Ledger has progressed from small proof of concept projects towards commercial deployments, with licensing partnerships in Thailand with BCPG, a leading renewable energy provider in the region, to projects with the Indian and Malaysian governments, and a partnership with Clearway Energy for energy certificate trading.[xv] Another project, Enjin, created a gaming multiverse where developers can allow players to use and level-up their gaming items and characters across different projects and worlds. Enjin is now available in over 30 games, a massive progression from its first in-game adoptions in 2018.[xvi]

Other companies making real progress include 0x, which currently has over 30 projects live around the world,[xvii] the Bancor Protocol, which has processed over USD$2 billion in trade volume since its inception, and the Basic Attention Token, which has over 3.3 million daily users.[xviii]

The project pipelines of the companies identified in Appendix 1 indicate that many notable blockchain technology and ICO-funded token projects have survived the so-called "crypto winter" and are prospering, with real applications being utilized around the world.[30]

Why the World Benefits from Tokenization

Democratization of Entrepreneurship and Innovation

The increased availability of capital in this sector has decreased barriers to entry for experimentation and entrepreneurship, thus allowing blockchain technology to create a new wave of innovation in numerous sectors and industries. Entrepreneurs who previously lacked access to capital can now create a blockchain project with tokens and sell those tokens to the public to raise capital. This allows entrepreneurs to retain their financial independence, support continued development, and compensate their core developers. ICOs are especially important as they empower entrepreneurs to have input in what is being developed and deployed, rather than venture capitalists (VCs) determining what is a fundable idea and what is not. For example, it has been well established in academic research that VCs introduce biases into entrepreneurial finance, as they typically aim to fund companies which have short commercialization periods, founders with a specific education background (typically in engineering and business),[xix] and are geographically close to their office (half of new ventures are located within 233 miles of their VC's office).[xx]

Many blockchain projects that leveraged ICOs would likely not have attracted traditional sources of capital. For example, Numerai crowd-sourced their hedge-fund and have since paid out millions of dollars to data scientists around the world who contribute information to their data science tournaments;[xxi] Basic Attention Token raised $35 million, sold out their ICO in under 30 seconds, and aided the creation of the Brave ecosystem.[xxii]

Disintermediation

Traditionally, third parties act as an intermediary in which they add value to the marketplace by reducing information asymmetry. An intermediary will usually charge a fee for its services and require some degree of disclosure to a third party, which can increase implicit and explicit costs: explicitly when they cannot efficiently verify the entirety of a transaction by themselves, and implicitly by virtue of the single point of failure they create, as well as the risk of the information being reused outside of the initial agreement. These costs are exacerbated when intermediaries gain market power, often because of the informational advantage they develop over transacting parties. Blockchain technology can remove the need for certain intermediaries and allow for cheaper verification, while preventing information leakage by allowing market participants to verify on-chain

transactions without the need for a third party. These efficiencies can be found by reducing the transactional friction points between all parties, which further increases speeds and decreases costs associated with errors or fraud. Examples can be found within Appendix 1 and include Power Ledger's TraceX product, which reduces the need for brokers for renewable energy certificates, as well as other finance-based blockchain projects like OmiseGO.[xxiii]

Data & Privacy

In 1992, Eric Hughes published *A Cypherpunk's Manifesto*, in which he defined privacy as the power to selectively reveal oneself to the world and stated that privacy is necessary for an open society in the electronic age.[xxiv] While blockchains are immutable by design, users are kept largely anonymous with cryptographically depersonalized records.[xxv]

Data and privacy benefits from using blockchain technology are the second-degree consequences of decreasing dependence on intermediaries, which disables intermediaries' ability to unreasonably charge higher prices and lock in contracts, while also removing the single point of failure, expanding opportunities for innovation, increasing privacy, and lessening censorship risks.

Creating Public Value

Blockchain-enabled projects force people to rethink how they divide responsibility to create public value, and disintermediation often has the ability to create value for the public.[46] In the long-term, significant efficiencies can be created from the business models of the companies profiled in Appendix 1, which aim to pass many benefits straight on to the consumer. For example, the Steem community has created a social media platform called Steemit where users are rewarded with a native token based on the quality of their content.

Utility Token Innovations to Watch

Finance

Blockchain technology can dramatically optimize the entire financial services industry by providing instant settlements, reducing counterparty risk, and increasing transparency.[xxvi] Blockchain offers much faster settlement and clearing times than traditional financial services, which reduces the risk that counterparties will default before settling a trade, while the immutable nature of the blockchain technology increases transparency.[xxvii]

Innovations within the finance industry can already be seen with companies such as Numerai, which developed a blockchain and artificial intelligence-based hedge fund,

Brickblock, which offers a platform that connects cryptocurrencies with exchange traded funds, and MakerDAO, whose smart contract platform backs and stabilizes the value of its stablecoin Dai.[xxviii] Stablecoins are cryptocurrencies which maintain their value by pegging themselves to an underlying asset, of which Tether (pegged to the USD) is currently the most popular.[xxix] Stablecoins offer tremendous value to both the crypto community, given the high volatility of many cryptocurrencies, and to individuals in countries with unstable currencies.

0x and OmiseGO are also amongst early movers within the financial services industry. Their missions are to create a tokenized world where value can flow freely to stakeholders by providing the open-source infrastructure that developers and businesses can build products upon,[xxx] and to enable people to securely access financial services everywhere, respectively. OmiseGO is building a global platform for open financial services, which includes both the OmiseGO network and eWallet Suite. Meanwhile, 0x has created the first tokenized real estate investment trust in the U.S.[xxxi] Most recently, in March 2020, the OmiseGO team announced the launch of OMG network version one testnet. The testnet launch will allow OmiseGo to gain valuable insights and data to continue building and testing their platform.[xxxii]

Energy

Energy management is one of the more interesting and complex applications of blockchain technology. Electricity markets have been identified as ripe for disruption given the low rate of investment and innovation.[xxxiii] In recent years, with the uptake of solar energy, many issues in legacy energy systems have emerged. As the next wave of innovation integrates these new sources into energy systems, companies using blockchain are creating marketplaces that provide new ways to trade energy to create resilient, low cost, and clean energy markets, with Power Ledger leading the way. Power Ledger's core offering includes products which facilitate peer-to-peer energy trading, virtual power plants, and TraceX, a renewable energy certificate marketplace. Most recently, in April 2020, Power Ledger announced a partnership with French green energy retailer ekWateur to roll out its energy tracking platform to 220,000 electricity meters.[xxxiv] Power Ledger's long term mission is the democratization of power, and they are positioned for significant growth as many of their projects scale up users and the amount of energy traded.

Identity & Privacy

In the past decade data security and privacy have become critical concerns, with whistleblowers uncovering the extent to which governments and companies are harvesting data and monitoring individuals. The erosion of privacy and the harvesting and

selling of data has reached such a point that data surpassed oil as the world's most valuable resource.[xxxv] However, companies like Civic and Basic Attention Token are working to protect data rights by reducing the needs for intermediaries within their respective fields. Civic aims "to revolutionise identity, [allow] for people to control the use of their identity information and their footprint currently spans across four countries."[xxxvi] Over the course of 2019, Civic continued building, testing, and tweaking their app, which now has a waitlist of over 120,000 people around the world.[xxxvii]

The Basic Attention Token (BAT) accompanies the Brave internet browser, which operates as a mini-economy and shares revenues with its publishers and users, who can choose to view advertisements and receive BAT. The Brave browser blocks advertisements and tracking features, in the process speeding up page loading times and protecting user data.[xxxviii]

Prediction Markets

There are currently several blockchain firms making progress in creating blockchain-based prediction markets, including Augur and Gnosis. Augur was the first to use Ethereum to create a token in September 2015, and has recently redesigned their app, decreasing settlement times from seven days to one.[xxxix] Gnosis set out to create an application that acts as a non-monetized prediction market for research firms to acquire feedback on stocks.[xl] Since their ICO in 2017, their strategy has evolved to a three pronged approach to create, trade, and hold cryptocurrencies.[xli] With the evolution of Gnosis' strategy the team has added another prediction market to their "create" product range, with two products under the banner of "trade," one of which is a fully decentralized trading protocol called Dutch X[xlii] and two products under the "hold" category.

Gaming

There has been enormous growth in the gaming industry. In the U.S., the video game industry currently supports over 220,000 jobs.[xliii] E-sports have also experienced significant growth: in 2019 there was over $1 billion of prize money available at e-sport events.[xliv] Blockchain technology has the ability to change the gaming industry in a variety of ways. Enjin released the Enjin Platform in February 2020 on the Ethereum Mainnet, offering a blockchain game development platform in which users can create blockchain-based assets. Enjin also released a marketplace in late 2019 for users to create, buy, and trade items for Enjin's utility token, ENJ.

As of this writing, over 51 million assets have been created.[xlv] Blockchain-based assets offer users and developers opportunities that centralized assets do not. Blockchain-based assets allow players to use and level-up their gaming items across different projects and

gaming worlds. Lastly, Virtue Poker and its utility token VPP are having a substantial impact on the online poker market. Their platform recently passed the 2 million hands played milestone, and they have announced that the winner of one of their tournaments will gain ntry to the 2020 World Series of Poker.[xlvi]

The Future of Tokens

The blockchain industry underwent a dramatic rise in 2017, in which money flowed into a variety of projects, some legitimate and some not. Just as some of the technology giants of today were born during the dot-com boom, it is not unreasonable to think that some of the tech giants of tomorrow were born in 2017 via an ICO.

The blockchain industry is still in its infancy globally, though progress from many projects suggests that blockchain has the potential to contribute to the Fourth Industrial Revolution, alongside technologies like artificial intelligence and Internet of Things.[xlvii] Whether it is transforming financial services, bringing the energy sector into the 21st century, or creating gaming multiverses, the complete benefits of a tokenized economy are not yet fully realized. Further progress is needed and expected, and these technologies will need to integrate with traditional markets and technologies to thrive.

Many incumbent businesses that do not develop their blockchain strategy are at high risk of watching their business models become uncompetitive.[xlviii] In the future, we will see more traditional processes embrace blockchain, or be replaced by blockchain-based processes. Trust will begin to shift from third parties and intermediaries to token-enabled blockchain systems. Though ICOs and utility tokens have received negative press over the years, it is entirely possible that some of the most significant technological advances will be enabled by ICOs or similar crowdfunding models.

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Appendix 1 - High-level analysis of global ERC-20 token environment

Company Information	Summary
Name: **0x** ICO: 2017 Token: **ZRX**	0x provides a decentralized exchange protocol, the exchange layer for the crypto economy. 0x Protocol is a free, open-source infrastructure that developers and businesses utilize to build products that enable the purchasing and trading of crypto tokens. 0x has a 40-person team with 30+ projects utilizing the 0x infrastructure for creating all kinds of decentralized marketplaces and 713,000 total transactions at the time of writing. Current players building on 0x include the ETHFINEX, Radar, and Paradex. In December 2019, 0x implemented a significant protocol upgrade to v3.
Name: **Augur** ICO: 2015 Token: **REP**	Augur was the first to use Ethereum to create a token and their vision is to become the world's most accessible no-limit betting platform. The platform allows users to trustlessly create prediction markets and their users stake their REP tokens on outcomes. Most Augur users joined after the mainnet launch in 2018 and there has been approximately 8000 ETH net profit generated. Vitalik Buterin has said, "I have been excited about the possibility of prediction markets on Ethereum for a long time, and I'm pleased to see Augur being a leader in releasing such a sophisticated system into the wild." While total volume has been down in 2020, Augur recently built a new app, which assists in decreasing the settlement from seven days to one. It is due to be released in June 2020.
Name: **Bancor Network** ICO: 2017 Token: **BNT**	Bancor is a commonly used solution for the liquidity of community currencies, tokens that are used locally to stimulate economic activity where access to traditional finance is challenging. For example, convertibility via the Bancor Protocol is a key building block in the Red Cross Kenya's recent pilots with Grassroots Economics, and other non-profit organizations, aiming to widen inclusion via blockchain-based currencies in marginalized areas. Bancor is an on-chain liquidity protocol that enables automated, decentralized conversion of tokens on Ethereum and across blockchains. The Bancor Protocol invented the "automated liquidity pool", a method which uses smart contracts to hold reserves of tokens and allow for peer-

	to-machine convertibility of any integrated digital asset with no counterparty. There are over 150 tokens across two major blockchains available for instant conversion within the Bancor Network. Anyone can add a token to the network by staking it and the network's hub token, BNT. BNT holders can keep their tokens in these "automated market makers" or liquidity pools in exchange for trading fees, BNT staking rewards, and voting rights in the newly announced Bancor DAO. The Bancor DAO will allow holders to vote on protocol upgrades and BNT inflation levels, and reward recipients grants and trading fees. In recent quarters, Bancor has partnered widely across the DeFi space and activated dozens of developers via hackathons and grants, including Consensys-backed Gitcoin and Chainlink. It also supports leading lending protocols, including Staked.us To date, Bancor Protocol has processed more than $2 billion in trade volume across thousands of token pairs and is a pillar of the growing DeFi ecosystem, with dozens of projects using the protocol to create decentralized liquidity networks, such as Uniswap, Kyber, EOS, Tezos, Tron and more. Total value locked in Bancor (USD$) YTD 2020 is up 84%.
Name: **Basic Attention Token** ICO: 2018 Token: **BAT**	The Basic Attention Token or 'BAT' is the native cryptocurrency of the Brave Browser. The BAT token is a unit of exchange that compensates users for their attention while protecting privacy. Recently the price of BAT has spiked due to an increasing number of partnerships and increase in monthly active users. Currently BAT can be redeemed by over 250,000 brands and merchants including Amazon, Apple and Netflix. Over the course of 2019, daily active users of the Brave browser tripled to 3.3 million and the number of verified creators increased 12-fold. The utility of the BAT token lies in that it provides an alternative source of revenue to internet browsers that do not want to sell users' data. It is a valid alternative for internet users that oppose the data collection of common internet browsers.
Name: **BrickBlock** ICO: 2018	BrickBlock is a platform to seamlessly and transparently connect cryptocurrencies with real-world assets. Individuals can invest out of crypto into ETFs and real estate funds with regular dividend payouts. It

Token: **BBK**	also offers diversification with many cryptocurrencies with just one transaction. In 2018, BrickBlock acquired 5 million Euros in Series A funding, entered into numerous partnerships, and gained regulatory consent. Partnerships included two institutional partnerships and a client who used their software to issue the first real estate fund with a blockchain-based registry. In March 2019, BrickBlock achieved a large milestone by tokenizing a real estate property in Germany worth over 2 million Euros.
Name: **Civic** ICO: 2017 Token: **CVC**	Civic is a digital blockchain-based, encrypted, and decentralized secure identity ecosystem. Civic's identity platform provides access to an array of identity verification services, which gives individuals and businesses the ability to control and protect their identity. Meanwhile, the Civic App is designed to give their users more control over when and where they share their personal data. The ecosystems token, CVC, is used as a form of settlement between participants for any identity-related transaction within the ecosystem. Over the past two years Civic has assembled over 90 partnerships, one of which is CardConnect, which partnered with Civic to deliver a mobile-first payment solution. The product offers an innovative security solution to keep your data safe via tokenization, point-to-point encryption, as well additional security features, such as PCI scope reduction. Additionally, in February 2020, Civic launched their wallet to their private list of over 100,000 people worldwide; it also offers insurance for cryptocurrency holdings worth up to $1,000,000.
Name: **ENJIN** ICO: 2017 Token: **ENJ**	Enjin's mission is to radically transform gaming by bringing real-life economies to virtual worlds. Enjin offers an ecosystem of integrated blockchain products. This ecosystem is fueled by Enjin Coin (ENJ), an Ethereum-based cryptocurrency used to directly back the value of blockchain assets created with the Enjin blockchain game development platform. Comprising the ENJIN Platform, Explorer & Marketplace, Wallet, Beam (QR asset distribution service), and other tools and services, the Enjin ecosystem provides users and developers with everything they need to easily mint, manage, explore, distribute, and integrate blockchain assets. Over 20,000 individuals are registered as users on the Enjin Platform

	(Ethereum Mainnet + Kovan Testnet versions) and 3,000 projects have been created with the Enjin Platform (Ethereum Mainnet + Kovan Testnet combined) ERC-1155 blockchain assets: • 51,985,678 have been created with the Enjin Platform • 12,550,951 ENJ (1.25% of total supply) has been locked in blockchain assets In late 2019, the Enjin Marketplace, a digital trading hub integrated with EnjinX and the Enjin Wallet, was launched. This allows users to easily buy and sell blockchain assets from their phone. In February 2020, they released the Enjin Platform publicly on Ethereum Mainnet. Developers can now use the blockchain game development platform to create blockchain-based assets backed with ENJ and integrate them with their games, apps, and websites. This launch also included the Mainnet release of the Blockchain SDK for Unity. Upcoming milestones for Q2 2020 include the launch of a Blockchain SDK for Godot Engine, Java SDK, and a blockchain plugin for Minecraft server owners.
Name: **Golem** ICO: 2016 Token: **GNT**	Golem is a cryptocurrency and P2P application platform that enables users to rent resources in the form of computational power and time. Users are compensated for their resources via their token GNT. Golem's most illustrative use case is CGI rendering; its software scales with tasks, which is all made possible with Ethereum blockchain. Their next milestone, announced in April 2020, is a completely new architecture known as New Golem. The new architecture will allow for new use-cases to be built on top of it, will see a new ERC-20 Golem token, and will possess greater transaction speeds and avoid network clogging.
Name: **Gnosis** ICO: 2017 Token: **GNO**	Gnosis originally started as a prediction market that allows for people to create arbitrary events to make predictions on a variety of events. Since its inception it has progressed to a three-product strategy of create, trade, hold and progressed to a dual token model using GNO and OWL, with the former being an ERC-20 token that was sold during their ICO. April 2020 saw the Gnosis team launch Corona Information Markets, a

	new prediction market for events related to the coronavirus pandemic.
Name: **Livepeer** ICO: 2019* Token: **LPT**	Livepeer provides scalable, secure video transcoding at a fraction of the cost of typical public cloud infrastructure solutions. The solution is highly reliable and delivers perfect quality with massive scalability while being both environmentally friendly and unmatched in affordability. There is a team of 15 people working at Livepeer and currently there are 44 infrastructure providers, 2569 delegators and approximately 65% of LPT is staked on a node in the network. Livepeer are reportedly close to several major milestones, including: 1. Launching an API service focused on the video community that abstracts the complexity of interacting with the tokens. This is to enable people who want cost effective, reliable, and secure transcoding to easily use Livepeer. The API is in beta now and there are a number of people currently trialing. 2. Launching a website focused on the video community to allow them to sign up for the API service mentioned above. 3. Moving their service out of beta and announcing our first commercial users of the service. The LPT token works via Ethereum and is the exclusive payment method supported by Livepeer. The token can be exchanged into other coins or fiat-based currencies via supporting exchanges.
Name: **MakerDAO** ICO: - Token: **MKR** & **DAI**	MakerDAO is an open-source project on the Ethereum blockchain and a Decentralized Autonomous Organization was created in 2014. Its tokens (MKR) holders manage the Maker Protocol, which enables users to create currency. Current elements of the Maker Protocol include the Dai stablecoin, Maker Collateral Vaults, Oracles, and Voting. Through the volatility of 2020 the total value locked in Maker in has increased 14 percent YTD. MakerDAO is the largest DeFi protocol to date and one of the founding blocks of the alternative decentralized finance system.
Name: **Numerai**	Numerai was launched in 2015 and is an AI-run and crowd-sourced hedge fund.

ICO: 2019 Token: **NMR**	The core idea of Numerai is to give away all their information for free and let anyone train machine learning algorithms on it, and then to submit financial markets predictions. In 2017, Numerai built their own cryptocurrency Numeraire (NMR). NMR is mined by data mining Numerai's data, and submitting predictions is the proof of work. The submission point of this data is Numerai's data science tournament. Following the submission of this data, data scientists are rewarded in NMR based on the accuracy of their data. If the predictions are poor, rather than being rewarded, their NMR is permanently destroyed. Following its release, Numerai has paid out millions of dollars and is one of the best paying data science tournaments in the world.
Name: **OmiseGO** ICO: 2017 Token: **OMG**	Founded in 2017, OmiseGO is a team of 50+ professionals working across 3 continents. They envision a future where anyone worldwide can transfer, operate, or build on a financial infrastructure that is safe, transparent, and affordable. OmiseGO achieves this mission via the OMG Network: the value transfer network for ETH and ERC-20 tokens. It uses one-of-a-kind, More Viable Plasma technology that individuals and businesses can use to transact and build on an infrastructure that offers comparable speeds, costs, and security to the Ethereum Network — all while retaining full autonomy over their funds and keys. In addition to the OMG Network, OmiseGO offers several products such as the OMG Block Explorer, as well as various libraries and SDKs that reduce the time to integrate with their services. Additionally, individuals can use Web Wallet to test network features.
Name: **Power Ledger** ICO: 2017 Token: **POWR**	Power Ledger's technology provides the operating system for new energy markets. The company has developed a world-first blockchain-enabled energy trading platform to make energy markets more efficient. Power Ledger platform helps people transact energy and trade environmental commodities. Their token, POWR, is the bond needed to use the platform. The company is rapidly scaling its business around the world, with partnerships with energy companies to develop distributed, democratized electricity markets. Currently, Power Ledger has more than twenty projects across nine countries and partnerships with large entities such as KEPCO

	in Japan, the Malaysian Government and NASDAQ-listed Clearway Energy. Power Ledger uses blockchain to provide an immutable audit trail of where and when energy was generated and consumed to ensure that energy sources can be validated efficiently and that electricity, energy services and energy certificates can be traded and settled in a low-cost and transparent way. The company is also using blockchain to enable new commercial and business models in the electricity sector such as cross-retailer and cross-battery trading via its virtual power plant feature, where households and businesses with batteries can derive passive income from stabilizing the energy grid with their batteries. In April 2020 Power Ledger announced the world's largest 'choose your own energy source' project in France with its Vision platform feature connecting to up to 220,000 electricity meters.
Name: **Steem** ICO: 2016 Token: **STEEM**	Steem is a blockchain-based social media platform where anyone can earn rewards by posting relevant content and curating content by upvoting and holding Steem-based currencies. Steem supports community building and social interaction with cryptocurrency rewards. The STEEM token is a reward tool earned by posting well-liked and valuable content. In March 2020 Steem announced its intention to create a new platform called HIVE, and users will receive their balances in a 1:1 ratio via airdrop.
Name: **Synthetix** ICO: Token: **SNX**	Synthetix is a blockchain-based payment network powered by a stablecoin aiming to combine all the benefits of a decentralized approach with the stability of traditional finance assets. Synthetix implements a dual token solution that consists of a stabilized Ethereum-based utility token (SNX) and a reserve token (Nomin) to back it. Nomin is pegged to the value of 1 USD and is used to make transactions on the platform. Additionally, Synthetix launched GrantsDAO to fund community projects. Synthetix is the second most utilized DeFi protocol to date.
Name: **Tether** ICO: None	Tether, a stablecoin, was launched in 2014 and is the fifth largest cryptocurrency by market capital. Tether offers a method for maintaining a one-to-one reserve ratio between a cryptocurrency token, called tethers,

Token: **USDT**	and its associated real-world asset, fiat currency.
	In 2019 Tether introduced loans to affiliate companies and in 2020 released Tether Gold, which offers a digital token backed by physical gold.
	Additionally, through April 2020, there was an additional $1 billion that flooded into USDT.
	USDT is the most popular stablecoin and is often used by cryptocurrency investors and traders.

*Venture capital raise

[i] Crosser, N. Initial Coin Offerings as Investments Contracts: Are Blockchain Utility Tokens Securities? (2018).

[ii] Lyandres, E, Palazzo, D, Rabetti, D. Are Token Securities? An Anatomy of Initial Coin Offerings. http://abfer.org/media/abfer-events-2019/annual-conference/corporate-finance/30-P1-Are-Tokens-Securities.pdf (2019).

[iii] Liebau, D. Cryptocurrencies & Initial Coin Offerings: Are They Scams? - An Empirical Study. (2019).

[iv] Tiwari, M, Gepp, A, Kumar, K. The Future of Raising Finance - A New Opportunity to Commit Fraud: a Review of Initial Coin Offering (ICOs) Scams. (2019)

[v] Liebau, D. Cryptocurrencies & Initial Coin Offerings: Are They Scams? - An Empirical Study. (2019).

[vi] Financial Post. The Great Crypto Crash of 2018: Cryptocurrency's 90% plunge is now worse than the dot-com crash. https://business.financialpost.com/technology/blockchain/cryptos-80-plunge-is-now-worse-than-the-dot-com-crash. (2018).

[vii] Michalowski, P. Tokenism. (1993).

[viii] Casinority. Who Created the First Casino? Were They Gamblers? https://casinority.com/created-first-casino-gamblers/. (2016).

[ix] Coinbooks. Telephone Token History. https://www.coinbooks.org/esylum_v05n41a08.html. (2002).

[x] Buterin, V. Ethereum whitepaper. https://github.com/ethereum/wiki/wiki/White-Paper. (2019).

[xi] The Next Web. The ultimate cryptocurrency explainer: Bitcoin, utility tokens, and stablecoins. https://thenextweb.com/hardfork/2019/02/13/bitcoin-stablecoins-utility-cryptocurrency/ (2019)

[xii] Au, S & Power, T. Tokenomics - The Crypto Shift of Blockchains, ICOs, and Tokens (2018).

[xiii] Twitter. Erasure Staked. https://twitter.com/ErasureStaked/status/1249621952580530176/photo/1. (2020).

[xiv] Etherscan. https://etherscan.io/ (2020).

[xv] Power Ledger, Our Projects. https://www.powerledger.io/our-projects/. (2020).

[xvi] ENJIN. https://enjin.io/. (2020).

[xvii] 0x. https://0x.org/why. (2020).

[xviii] Basic Attention Token. https://basicatntiontoken.org/brave-passes-10m-mau/. (2020).

[xix] Adindza, g, Astebro, T, Yong, K. Decision biases and entrepreneurial finance. (2016).

[xx] Cumming, D & Dai, N. Local Bias in Venture Capital Investment. (2010).

[xxi] Twitter. Erasure Staked. https://twitter.com/ErasureStaked/status/1249621952580530176/photo/1. (2020).

[xxii] Au, S & Power, T. Tokenomics - The Crypto Shift of Blockchains, ICOs, and Tokens (2018).

[xxiii] OmiseGO. OmiseGO Blog. https://omisego.co/blog/learnings-omg-testnet-ropsten. (2020).

[xxiv] Hughes, E. A Cypherpunk's Manifesto. https://www.activism.net/cypherpunk/manifesto.html. (1993).

[xxv] Politou, E. Blockchain Mutability: Challenges and Proposed Solutions. (2019).

[xxvi] Abbatemarco, N, et. al. The Blockchain Journey: A Guide to Practical Business Applications. (2018).

[xxvii] Tapscott, D & Tapscott, A. Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World. (2016).

[xxviii] MakerDAO. https://makerdao.com/en/. (2020).

[xxix] https://coinmarketcap.com/

[xxx] 0x. https://0x.org/why. (2020).

[xxxi] Campbell, R. 0x Launches Instant, Delivers An Easy And Flexible Way To Buy Crypto Tokens. https://www.forbes.com/sites/rebeccacampbell1/2018/12/06/0x-launches-instant-delivers-an-easy-and-flexible-way-to-buy-crypto-tokens/#47ce60884356. (2018).

[xxxii] OmiseGO. OmiseGO Blog. https://omisego.co/blog/learnings-omg-testnet-ropsten. (2020).

[xxxiii] Pentland, W. Why The Pentagon Should Worry About Lack Of Innovation In Electric Utility Sector. https://www.forbes.com/sites/williampentland/2017/03/19/why-the-pentagon-should-worry-about-lack-of-innovation-in-electric-utility-sector/#1f4365ea4f88. (2017).

[xxxiv] Power Ledger. Power Ledger reveals world's biggest 'choose your own energy source' project in France. https://www.powerledger.io/article/power-ledger-reveals-worlds-biggest-choose-your-own-energy-source-project-in-france/. (2020).

[xxxv] Economist. The World Most Valuable Resource Is No Longer Oil But Data. https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data. (2017).

[xxxvi] Civic. https://www.civic.com/wallet/. (2020).

[xxxvii] Civic. Civic Blog. https://www.civic.com/blog/civic-2019-year-in-review-and-2020-update/. (2020).

[xxxviii] Balakrishnan, A. Is It Better to Earn Brave's BAT Token, or Invest in it? https://cryptobriefing.com/is-better-earn-braves-bat-token-invest/. (2020).

[xxxix] Augur. https://www.augur.net/. (2020).

[xl] Blockchain WTF. Gnosis: Another Decentralized Prediction Market. https://blockchain.wtf/cryptocurrency-blockchain/erc20-tokens-projects/gnosis/. (2020).

[xli] Gnosis. https://gnosis.io/. (2020).

[xlii] DutchX. https://dutchx.readthedocs.io/en/latest/. (2020).

[xliii] Venturebeat. https://venturebeat.com/2017/02/14/the-u-s-game-industry-has-2457-companies-supporting-220000-jobs/. (2017).

[xliv] Hay, R. Japan is looking to break into esports competitions by 20025. https://www.dailyesports.gg/japan-is-looking-to-break-into-esports-competitions-by-2025/. (2020).

[xlv] ENJIN. https://enjin.io/. (2020).

[xlvi] CryptoNinjas. Ethereum-powered Virtue Poker holding final test round; winner gets entry to 2020 WSOP. https://www.cryptoninjas.net/2020/03/12/ethereum-powered-virtue-poker-holding-final-test-round-winner-gets-entry-to-2020-wsop/. (2020).

[xlvii] Lee, J. A decentralized token economy: How blockchain and cryptocurrency can revolutionize business. (2019).

[xlviii] Beck, R. Beyond Bitcoin - The Rise of Blockchain World. (2018).