

# UNMASKING BLOCKCHAIN FINANCE

A network diagram with a dark blue background. It features a complex web of yellow lines connecting various yellow circular nodes. The nodes are scattered across the frame, with some appearing more prominent than others. The overall effect is that of a digital or financial network.

**BLOCK CHAIN**  
TECHNOLOGY

# BLOCKCHAIN TECHNOLOGY

## PARTICIPANTS



### FOUNDER

- visualise the concept
- own the technology patent
- raise capital to fund the project
- structure the development team
- seek strategic partnerships to bring in more adopters



### DEVELOPER

- design BT around a specific business model/ use-case
- build & launch the specific blockchain protocol/ currency
- implement/integrate latest improvement proposals
- document new solutions & maintain existing ones



### MINER

- solve complex algorithms- *Proof-Of-Work*.
- validate new transactions using solutions
- record transactions on the global ledger- blockchain
- receive BTC/ transaction fees as reward



### ICO INVESTOR

- provide seed capital towards a new coin/ token in the primary market
- add credibility to an ICO due to smart investor status
- participate in the price discovery process of the ICO



### POST-ICO INVESTOR

- trade coins/tokens on online exchanges (secondary market)
- HODL or exploit short-term market opportunity
- 'chart', analyse fundamentals or follow FUD/FOMO

## What is Blockchain Technology?

Blockchain is a decentralised<sup>1</sup>, peer-to-peer public electronic ledger that can be openly shared among disparate users to create an unchangeable record of their transactions and events each one time-stamped and linked to the previous one. Blockchain can also be used as a private electronic ledger, specific to a corporation, and representing a secure private network developed by the corporation's IT providers to meet a specific need<sup>2</sup>.

Blockchain can only be updated by consensus between participants in the ecosystem and once new data is entered it can never be erased. The blockchain, therefore, contains a true and verifiable record of each and every transaction and event ever made or ever occurred within the ecosystem. This allows it great applicability for just about any enterprise involved in record-keeping, transactions, documentation or registration.

Cryptocurrencies represent the finance side of blockchain technology and are the media used to transact business within the blockchain. Thus, while cryptocurrencies form a not-so-insignificant part of blockchain technology they are not its only constituent part. Indeed blockchain technology has applications in such diverse fields as manufacturing, supply chain, shipping, the legal system, government and governance, medicine (medical records) and the Internet of Things (IoT)<sup>3</sup>. The prime purpose of blockchain technology within this spectrum of industry is, therefore, to bring about greater efficiency, transparency and accuracy of data while eliminating the need for central administration and intermediation. Doing away with these latter two elements will prove disruptive going into the future and pose an existential threat to companies whose business model is that of a central source or an intermediary.

Some banks are already moving towards blockchain taking advantage of both its ability to create an open, cheaper, more efficient and exceedingly fast system for the clearance and settlement of financial transactions as well as its potential to improve back-office operations. These developments may eventually render banks and payment processors altogether redundant not least due to the distributed<sup>4</sup> and peer-to-peer<sup>5</sup> nature of the technology. The technology's ability to provide a transparent, tamper-proof and decentralised record-keeping system also makes it more appealing from a governance perspective as it is also more secure than any repository under the control of one entity.

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<sup>1</sup> Digital records are continuously updated in real-time across all of the computers using the blockchain ecosystem. This means the (updated) records cannot be tampered with or retroactively altered without the agreement of everyone using the blockchain. This together with the underlying encryption of data reduces the possibility of hacking while preventing occurrences of fraud. Further, no single party can control and use the network to push its own agenda.

<sup>2</sup> IBM is developing new shipment-tracking tools, based on blockchain technology, for both shipping giant Maersk and giant retailer Walmart Stores.

<sup>3</sup> IoT is a technology that uses the internet to connect everyday devices (including personal and household devices) as well as machines with one another to create a "machine-to-machine" economy. The interconnected devices are able to transact with one another without human involvement.

<sup>4</sup> The transactions ledger is distributed with identical copies maintained on each of the computers participating in the network.

<sup>5</sup> Peer-to-peer network refers to computer systems that are connected to each other via the Internet and which allow for transactions to take place between members within the blockchain ecosystem without the need for an intermediary.

Blockchain, ultimately, aims to supplant the centralised ledger systems we see today, be they those held by banks, lawyers, accountants, governments and government officials, etc with a distributed and shared ledger whose entries and updates follow a transparent, immutable and therefore robust process. Participants within the ecosystem are able to establish the current state of agreed-to transactions, balances, events and outcomes. Titles to assets, digital identities, electoral outcomes, financial disclosures, supply chain information, etc become traceable in real-time and in instantaneous detail.

‘Smart contracts’<sup>6</sup>, another feature of blockchain technology, automatically execute when certain conditions are met ensuring transactions and contracts entered into are immutable, irreversible and carry absolutely no counterparty risk.

### **What is an Initial Coin Offering (ICO) ?**



Initial coin offerings (ICOs) are a new way of raising funds for projects running on blockchain technology. Similar to the role venture capital (VC) plays in financing start-ups in traditional finance, ICOs are the future of venture investing in the blockchain world. However, while VC as an asset class has historically delivered good returns investor capital is locked up here for a long time- up to ten years.

With ICO start-up capital, on the other hand, exponential returns can be earned in a very short period of time<sup>7</sup>. When a decentralized application is created, the start-up behind it can sell the associated coin or token<sup>8</sup> early in the process for an amount based on what it thinks it's worth at that stage in order to fund its continued development. To help promote their projects, most

blockchain-based start-ups will produce a white paper that describes their background, project and business plan.

ICOs enable cryptocurrency founders raise capital from retail investors who can sell these cryptocurrencies for cash or for some other cryptocurrency on the secondary market rather than having their money tied up for years as is the case with traditional venture capital or private equity.

However, there has arisen intense debate as to whether these newly-issued coins and tokens represent currencies or securities and whether

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<sup>6</sup> Both the Ethereum Foundation and the IOTA Foundation are spearheading advances in ‘smart contract’ capabilities.

<sup>7</sup> IOTA had an issue (ICO) price of less than \$0.001 in December 2015. As at 27 June 2018, the coin was trading at about \$0.95- a Return on Investment (ROI) of 94,900%. Ethereum's issue price in the summer of 2014 was \$0.311. As at 27 June 2018 the coin's market price was roughly \$435- an ROI of about \$139,770%.

<sup>8</sup> The terms ‘coins and tokens’ and cryptocurrencies are used interchangeably here.

they should be allowed such non-regulatory latitude. Were they to be treated as securities, they would have to come under securities laws<sup>9</sup> in the various jurisdictions of their issue which would mean greater regulation and scrutiny from the respective industry watchdogs. From an investor perspective, this would take away some of the price volatility associated with cryptocurrencies but would also be viewed as a move to stifle innovation.

ICOs are also a way developers can demand compensation for what they do.

## Founders

Founders are effectively company or organisation builders. They visualise the cryptocurrency and its intended real-life application, create the initial program, articulate its business case in a white paper and proceed to implement the project as part of a larger development team. A founder will typically act as the lead developer in the cryptocurrency project.

Their role will also include that of recruiting the required expertise and hiring new talent as well as organising project funding.

Founders, therefore, play an active role in getting the cryptocurrency project off the ground and finding and investing resources to develop it.

## Miners

Miners validate new transactions and record them on the global ledger (blockchain ). They do this by competing to solve complex algorithmic problems in what is referred to as Proof-of-Work (PoW)<sup>10</sup>. This is proof that the miner has spent time and resources to solve the algorithm. Miners then receive a reward when they derive these solutions. This reward can be in the form of awarded cryptocurrencies (as is the case with bitcoin miners) or in the form of transaction fees.

In the case of Bitcoin (BTC) a block (the structure containing transactions) is *mined* every 10 minutes and every newly created block creates 12.5 bitcoins. When algorithms specific to



<sup>9</sup> The US financial services regulator- the Securities Exchange Commission (SEC) announced on 25 September 2017 that it will regulate and treat coins and tokens that 'look' like securities as such and, thus, set up a taskforce to investigate ICOs that act as a cover for scams and possibly Ponzi schemes. Recently, also, the SEC (14 June 2018) has provided much-needed clarity regarding the two top cryptocurrencies by market value- Bitcoin (BTC) and Ethereum (ETH) deeming these to be currencies (and not securities). Read the SEC's December 2017 public statement on cryptocurrencies and ICOs here: <https://www.sec.gov/news/public-statement/statement-clayton-2017-12-11>

<sup>10</sup> The Proof-of-Work mechanism also allows miners to agree on the order of transactions to be verified and added to the block while ensuring the security of the network is maintained. However, Proof-of-Work uses huge amounts of electricity. Mining one bitcoin using PoW, for example, consumes up to 300KWh of electricity, enough energy to run an average US household and everything in it for over a week.

the transactions contained in a block are solved, the transactions are considered *confirmed* and the bitcoins concerned in the transactions can then be spent.

## Developers

Blockchain is pure programming and different blockchains and cryptocurrencies can be built on different languages. Typical blockchain developers, therefore, possess standard software skills and experience in programming languages like Java Script and Python or specific skills in cryptography and machine-learning.

Blockchain developers focus on developing the fundamental technology and its protocols – the “core” of the blockchain and its implementation. This work is performed either on the public blockchain<sup>11</sup>, involving actual work with coins in ICOs and associated services offered to the public, or on private blockchains run for specific companies. For example, Barclays is looking into blockchain technology to improve operations specifically in regard to trade finance and identity integration.

As in the wake of the dot-com market implosion blockchain developers now, as software developers then, are continuing to work on what will become robust networks and foundations of the blockchain ecosystem and the cryptocurrencies that go with it.

## ICO Investors- the primary market

Initial Coin Offerings (ICOs) refer to and tokens (collectively known as time providing the platform for service or asset that utilises the public. The issue of these coins for open-source software projects via traditional structures. Retail in getting involved in this project the other hand, have largely shied with the lack of regulation.



the avenue through which coins (cryptocurrencies) are issued for the first founders of a use case product, blockchain technology to raise funds from and tokens, therefore, provides funds and other services that are hard to finance investors, in particular, have shown a keen interest financing phase. Institutional investors, on away from participation primarily concerned

By avoiding a drawn-out underwriting process and intermediaries that take fees cryptocurrency founders are able, therefore, through ICOs to take advantage of this disintermediation to raise funds to finance their projects. Indeed, there is a plethora of investors particularly keen on investing in cryptocurrencies used in blockchain-based transactions and activities. As an example the Ripple (XRP) project, which aims to make

<sup>11</sup> Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), EOS and Litecoin (LTC) represent cryptocurrencies run on public blockchains.

global money transfers more efficient and less costly, saw its associated cryptocurrency- XRP rise 36,000% in 2017 alone on the back of investor interest. It's technology- xCurrent (already being implemented by global banks like Santander and UBS) completes cross-border bank transfers in seconds compared to the traditional SWIFT technology which can take up to 3 days to complete similar transfers. At the same time, Ripple's RippleNet network is now able to process 50,000 transactions per second while the traditional VISA network currently processes a mere 24,000 transactions per second.

However, cryptocurrencies are a very nascent industry and investing in them is done at great risk to the investor although the opportunities for exponential returns remain.

As the technology and infrastructure around coins mature, cryptocurrencies with a genuine business case could find themselves rapidly increasing in value. This possibility is what makes them very attractive to early stage investors. Investors wanting to stake their claim in the future of a particular blockchain currency, project or token, can do so via these ICOs. Alternatively, they can trade the cryptocurrencies on several online exchanges and earn returns from short-term to mid-term price action.

*Amara's law states that "we tend to overestimate the effect of a technology in the short-run and underestimate the effect in the long-run."*

Clearly, the story of blockchain technology and its associated cryptocurrencies is yet to be written.

### **Post-ICO Investors- the secondary market**

Secondary markets are where investors buy and sell coins and tokens from other investors typically on online exchanges. It is up to individual exchanges to provide the necessary safeguards against hacks, scams and fraud in contrast to regulated stock exchanges where industry watchdogs keep a keen eye on market-makers. These online exchanges provide investors the platform to sell when the need arises or when return opportunities present themselves. As applications evolve and companies are set up to advance blockchain technology in other fields, a broader range of blockchain-related investment opportunities in public companies should emerge.

Although cryptocurrencies undergo incredibly high levels of volatility, with extreme price gyrations and constantly changing reports of bust and bubble, the reality is that no industry analyst or insider can state with any degree of certainty how this market will pan out in the near to mid-term. For some, current valuations still present an incredible value proposition given the long-term potential of some

of the cryptocurrencies leading these to pursue a HODL<sup>12</sup> strategy. These secondary markets help drive the prices of cryptocurrencies towards their genuine, fair market values although this in itself remains a topic of much debate. Despite not providing finance to issuing companies these markets present the opportunity to draw capital from the sale of a coin or token by the seller.

### Caveats



- A huge proportion of the 2,000-plus currencies and tokens issued thus far are yet to demonstrate any real practical use and may, therefore, never gain any mainstream adoption. Some countries have reacted to this by banning ICOs altogether<sup>13</sup>. Other governments, particularly in the west, have taken a less stringent approach.
- Only greater regulation can attract the scale of institutional investment needed for cryptocurrencies to reach their full potential. The conundrum the industry finds itself in, however, is that such a development would defeat the very purpose of building decentralised systems using blockchain technology.
- Regulators in the industry have been slow to provide clarity or intervene in a timely manner to instances of potential scams or Ponzi schemes. Some issuers are, therefore, unwittingly getting rich on the back of uninformed or overly-eager investors who are investing in coins and tokens of questionable value.
- The volatility surrounding prices of cryptocurrencies has attracted a large number of speculators who care little about their underlying use-case or that of the technology they propose to advance. This group of investors are in on account of the Greater Fools Theory—the idea that someone “dumber” than them will buy their tokens for more than they paid. This is a pretty good bet as such market herding could lead to a bubble in the cryptocurrency market. As earlier stated, however, this remains a subject of major debate.
- A lot of otherwise productive developers are devoting their effort and expertise to working on shallow, quick money ICOs rather than devoting their skills to developing the underlying blockchain infrastructure and its protocols.

<sup>12</sup> Acronym for ‘Holding On for Dear Life’ in industry jargon and a misspelling of the term ‘HOLD’ as applied in traditional finance. It refers to the strategy of holding a cryptocurrency for the long-term without giving consideration to existing price performance or market development(s).

<sup>13</sup> In April 2018, both China and India banned the buying and selling of cryptocurrencies by financial institutions.

- Constant 'Fear, uncertainty and doubt' (FUD)<sup>14</sup>, 'Fear of missing out' (FOMO)<sup>15</sup> and 'pump-and-dump' schemes leads to market participants basing their investment decisions on an irrational exuberance rather than on market fundamentals. As a result the price of coins and tokens overshoots to the downside on the back of FUD or overextends to the upside following FOMO.

### **Last word**

Blockchain's future lies primarily in its ability to positively influence our lives through its innate qualities of efficiency, immutability, irreversibility and disintermediation. Despite scepticism from many a quarter, this nascent technology is clearly revolutionary and so long as it contributes to greater governance and trust in both the real economy and in our domestic lives it is difficult not to see the case for its mass adoption.

For cryptocurrencies that are the backbone of blockchain finance, much will be determined by the approach governments and policy-makers adopt towards both their issue and use. Tighter regulation, although on face value appearing to prepare the ground for the entry of billions of dollars of institutional money into the market, such regulation defeats the very purpose of blockchain technology whose DNA is geared towards decentralisation and public consensus<sup>16</sup>. In the same vein, without regulation, overzealous investors stand the risk of being duped by unscrupulous issuers of "dodgy" cryptocurrencies out to make a quick buck. This is the conundrum the industry currently finds itself in.

*PK Mwangi Global Consulting are management consultants in the fields of finance, investment and cryptocurrencies.*

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<sup>14</sup> The practice of bad actors in the market driving the price of a coin down through misconstrued or blatantly incorrect news shared to convince holders of a coin to sell their holdings.

<sup>15</sup> A practice employed by market participants to drive the price of a coin upwards through hype and exaggerated sentiment rather than through an analysis of the coin or market fundamentals.

<sup>16</sup> As opposed to an over-arching central authority.

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For more information see below

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