

Blockchain: understanding the potential

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Bitcoin, heralded by many as the single biggest breakthrough since the arrival of the internet, has proved to be something of a moving target since its launch in 2009. However, it continues to be the focus of significant investment and innovation with the industry predicting that more than \$1 billion in venture capital funding will have been invested in bitcoin and its future by the end of 2015\*

Recent developments include BitPesa, a Nairobi-based start-up focusing on bitcoin remittances, which raised over \$1 million earlier this year and Earthport which agreed a partnership with Ripple Labs allowing real-time cross-border bank payments

But, it is becoming increasingly clear that bitcoin is part of an even bigger story: financial institutions, including Barclays, are now considering how the technology underpinning digital currency – commonly called ‘the blockchain’ or ‘blockchain’ – could in itself revolutionise finance. While many of these potential applications are medium term the development cycles in the industry mean that now is the time for companies to begin asking how this technology could benefit them.

## Challenging the misconceptions

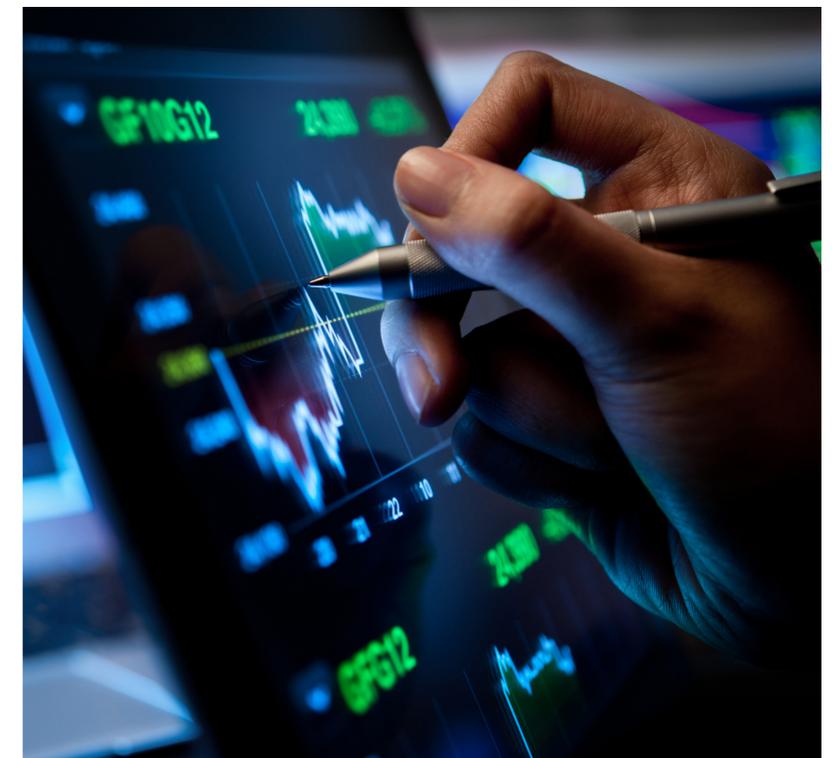
Bitcoin may have attracted significant attention around the world – but alongside all the hype, many

clichés and misconceptions have grown up around the digital currency and its underlying technology. These misconceptions can hinder discussions about the future direction of development and the way in which initiatives are presented in the media.

For one thing, its associations with Silk Road, the digital black market, have left some people with the assumption that bitcoin is linked to money laundering and terrorists. Education is improving on this point, but misconceptions continue to affect the way that many people think about bitcoin.

Blockchain technology is likewise subject to certain clichés. In the first instance, attention focused closely on bitcoin itself and how the digital currency was going to change the world. In the last couple of years, this focus has shifted and many people are now repeating the assertion that blockchain technologies are more interesting than Bitcoin the currency.

This may prove to be the case – but rather than simply leaving it there, banks and companies could be delving into this topic to understand what makes this technology so attractive and what types of application could be created. It is only when the possibilities are explored in more detail that the true scale of possible change can be appreciated.



\*[www.insidebitcoins.com/news/bitcoin-venture-capital-funding-pace-1-billion-2015/30665](http://www.insidebitcoins.com/news/bitcoin-venture-capital-funding-pace-1-billion-2015/30665)

## Understanding blockchain

The first port of call should be to gain an understanding what makes this technology so special. Blockchain technology, which underpins bitcoin, has a number of interesting attributes. There are two main types of Blockchain Technology

1. Unpermissioned
2. Permissioned (sometimes 'distributed ledgers' or 'replicated shared ledger')

An Unpermissioned blockchain is an open, decentralised ledger which records the transfer of value. Every transaction is cryptographically chained to the previous transaction. The result is a permanent, immutable and verifiable record of truth that everyone can see. This is useful when no central entity is available to verify a transaction. Unpermissioned Blockchains are "censorship resistant". Nobody can edit them, meaning if you want to record a statement of fact with your name on it (for example; "Alice would like to pay Bob £1" or "This is my last will and testament"), Unpermissioned blockchains are a great place to do this

A Permissioned blockchain technology is often far more appealing to enterprise and financial services. To understand this we need to explore one of the biggest problems with financial services and industry; the cost of paper.

In recent years, there have been many different initiatives intended to remove paper from the economy. However, in many cases the new technology has simply recreated old processes in a new way, or has led to solutions which continue to rely on paper. For example, the process of signing a cheque was digitised by creating a cheque guarantee card, followed by a PIN card – but the new model continues to work on the same hub and spokes model that the previous cheque system had used. In other cases, such as tenancy agreements, there is a continuing need for a piece of paper that will hold up in court.

A Permissioned blockchain technology could, in contrast, replace certain paper-based processes with

processes which are genuinely different, because of the way many of these technologies work. The trick is in something called "consensus". Like consensus in a room full of people, computers use algorithms to reach consensus about the truth. This contrasts with today, where every bank, government department and law firm has their own paper copy of the truth. If we could rely on maths to "sync" the truth between us all, we could cut out a lot of wasted back and forth paper from the likes of:

- Trade Finance
- Land Registry
- Social Welfare
- Insurance
- KYC and AML

To name just a few.

## Blockchain and distributed ledgers business

As outlined above, whilst Bitcoin had a number of breakthroughs such as the creation of a widely available and very difficult to attack permanent and censorship resistant database. Some of these characteristics could also make this technology particularly relevant to a number of financial processes.



From regulatory reporting to derivatives settlement, the various blockchain technologies could be used to transform the many key services industry sectors, reducing cost, increasing the speed and transparency for data and reducing reliance on paper.

## SMART CONTRACTS “When paper knows what you told it to do”

Imagine a contract that you sign, where all of the key clauses could automatically execute. This is the promise of a “Smart Contract”. If we assume the blockchain technology of choice is helping keep records in sync between multiple parties (e.g. which shipping container is which television in), then Smart Contracts are the logic layer on top that allow for “if this, then do that” conditions to be actioned directly from the agreement.

Taking our television example further. What if the current buyer had agreed they would buy 100x televisions from the seller so long as the market price for televisions stayed above £1? A smart contract would record this “clause” in the same way a paper contract would. The difference however is if the price of a television fell below £1, the smart contract could change the owner of the television back to the seller.

Corporates may wish to consider how Smart Contracts may change their business.

## Putting it all together

One interesting development is Everledger, a permanent ledger for the certification and transaction history of diamonds. In the past, different stages of a diamond’s value chain have tended to be disparate and paper-based: the producer of the diamond, the shipping and the insurance would all have been recorded using pieces of paper – all of which can be lost or forged at any point.

Today, these different strands can be brought together. Drawing upon blockchain technology, Everledger provides an immutable record of the ownership of diamonds which allows individual jewels to be identified and tracked using a common database. The diamond’s serial number is registered against the database (or ‘blockchain’) and users such as insurance companies or law enforcement agencies can access the entire history of a specific diamond, including details such as changes of ownership and insurance details. If a diamond is stolen and recovered on the other side of the world, this database can allow the police to determine quickly the history of the item and its insurance details. Everledger is live today with over 800,000 diamonds being tracked on their blockchain technology.



Other items may also benefit from this type of audit trail. With greater attention paid to the origins of items such as organic and fair trade produce, a blockchain could certify the history of specific items, including the origins of the food, whether the farm was certified (e.g. by the Soil Association) and the amount paid to the farmer.

## Overcoming the obstacles

The key gap is education, we often conflate “The Blockchain” and “A Blockchain”. This terminology is especially tricky because the technology is so new, terms are emerging daily to try and understand and make sense of it.

This is a nascent technology and while the opportunities are exciting, certain obstacles will need to be overcome before some of these use cases can

come into being. It’s also clear that the security and controls associated with blockchain technology will need development before many of these applications can become mainstream

That said, the opportunities are so significant that it’s a question of when, not if, these applications will emerge. In order to smooth the way for greater development and adoption, financial service providers and start-ups will need to collaborate closely.

In conclusion, Bitcoin was a significant breakthrough – but it’s not the whole story. The technologies around bitcoin have the potential to transform many different processes and companies should be discussing these developments at the board level and asking how this technology could help them and whether they should be investing in it.

## About the author



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Named by City AM as one of the Top 10 most influential people in Fintech, Simon’s work at Barclays focuses on understanding the impact of this new technology on Barclays businesses and clients

[barclays.com/corporatebanking](https://www.barclays.com/corporatebanking)

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