

A beginner's guide to blockchain

Your questions answered on blockchain technology, which could revolutionise the payments settlements landscape...and more.

Blockchain, the latest buzzword in financial services, has the potential to revolutionise the way transactional information is stored, shared and used. The driving factors causing companies to invest millions of euro into developing the technology are:

- **cost and speed:** blockchain can reduce or eliminate the need for certain intermediaries and can be used to automate manual tasks;
- **security:** interfering with transactions on the blockchain is extremely difficult due to the complex cryptography employed and also the distributed nature of the ledger – every participant in the blockchain can view any changes; and
- **provenance and traceability:** a distributed ledger stores the entire ownership history of an asset (today mostly Bitcoins but information on other assets can be stored).

Sounds simple enough and yet we are being asked the same questions about blockchain technology time and again: What is it, where did it come from and why is it important?

History of blockchain

Blockchain was developed as the technology principle that sits behind the first crypto currency to go mainstream, Bitcoin.

The 'permissionless' blockchain is, as Business Insider defined it: "A ledger of all transactions, owned and monitored by everyone but ultimately controlled by none. It's like a giant interactive spreadsheet everyone has access to and updates to confirm each digital credit is unique." 'Permissioned' ledgers, on the other hand, can be owned by individuals or co-operating groups.

While there are many potential uses of the blockchain, its initial focus was to create a platform capable of making Bitcoin payments that are efficiently and securely transferred without the need for central control.

The success of Bitcoin led to a surge of crypto currencies being launched such as Ripple, Litecoin and SETLcoin, with the intention of becoming the leading financial services currency used internationally across markets to remove the cost and inefficiencies associated with payments today.



Blockchain explained

What is blockchain?

People use the term 'blockchain' to describe many different things, such as smart contracts or virtual currencies, which can be confusing. Most of the time though, the blockchain is best described as a decentralised technology (or distributed digital ledger) where transactions are anonymously recorded across many different users. It is a record of events, which once entered cannot be altered or deleted.

Why is it important?

The blockchain has the ability to change the way data is stored, shared and managed. The most powerful aspects of the technology are the barriers to tampering or deleting information which has been added to the chain.

In theory, the blockchain should be more cost-efficient, secure and quicker than other technologies in use today.

When did it become a big deal?

Crypto currencies have been a buzzword since Bitcoin launched in 2008. However, the potential of the blockchain has really taken off over the past 12 months. There are many potential uses of the blockchain being explored, including Know Your Customer (KYC), Anti-Money Laundering (AML), trade surveillance, smart contracts, collateral management, settlement and clearing, as well as the ability to capture historical and current ownership of high-value items.

What are smart contracts?

Smart contracts are agreements that are encoded in a computer program and automatically executed upon certain criteria being met. Obvious advantages of smart contracts include reduced contract execution costs, improved quality and increased speed. Smart contracts can be stored on the blockchain.

Who controls blockchain?

It depends on the type of blockchain, which ranges from permissioned (where the verification blockchain is preselected by a central authority or consortium) to permissionless (where anyone can participate in the verification process). At present it is the permissionless blockchain, that supports Bitcoin, that has been the focus of more media attention. However, the fundamental principles of a technology that captures events securely are the same regardless of who has control.

Where do I sign up?

Not so fast! Blockchain has received a lot of positive press about how the technology is going to revolutionise the payments and settlements industry but there's a long way to go before it's widely implemented across financial services. Recent exploitation of poorly written smart contracts show that there is still work to do in making some of the applications of blockchain mainstream. Blockchain's real-world uses today include Bitcoin, provenance and land registry. Future potential uses, such as healthcare records management, insurance, digital identity, voting systems and supplier contract management and smart execution, are still being perfected.

Blockchain – future applications

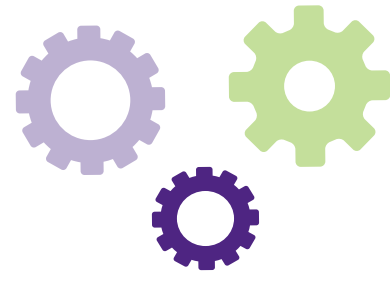
The interest in blockchain has grown rapidly. In theory, the technology has the ability to cross boundaries and remove inefficiencies caused by third parties, logistics or a whole host of other obstacles.

In practice, the potential of the blockchain is so powerful that major banks are partnering to invest and develop the technology. Santander estimates that the blockchain can save banks up to \$20 billion a year in infrastructure costs by eliminating central authorities and bypassing slow, expensive payment networks. In addition, the 44 biggest banks have created R3 CEV, a consortium created to explore the blockchain potential for financial services. Here in Ireland, banks are investing in research and proof of concept projects to explore the possibilities of the blockchain technology.

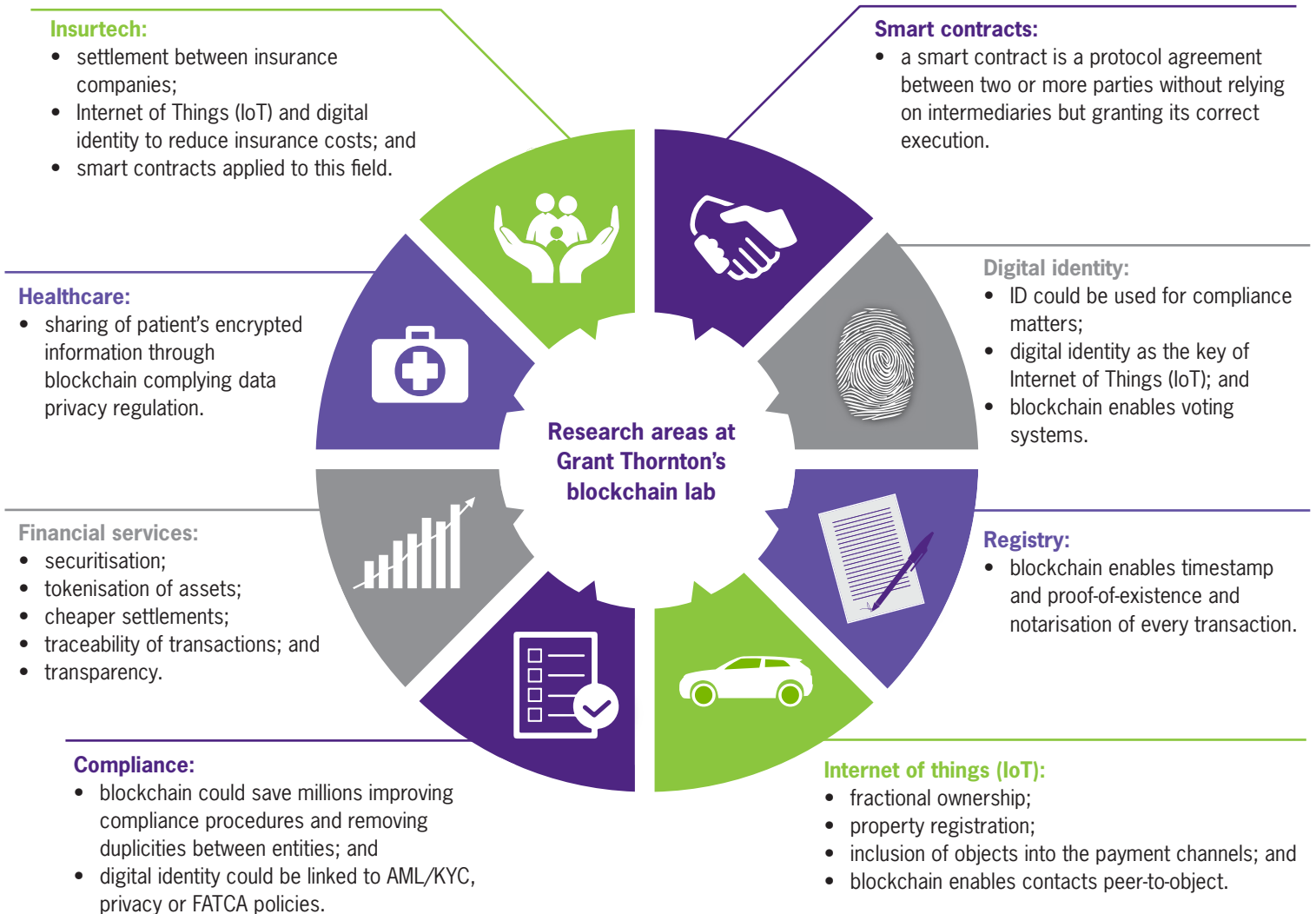
As with any new technology there are challenges to overcome from a legal, regulatory and political perspective. Security and permissions are high on the financial services agenda, as is the need to fit the blockchain technology into a market environment that is far more than exchange and proof of value. However, despite this and some uncertainty over the regulatory impacts of Brexit, interest in blockchain remains high.

The race is on to realise the true potential of the blockchain with 2016 shaping up to be quite a year.

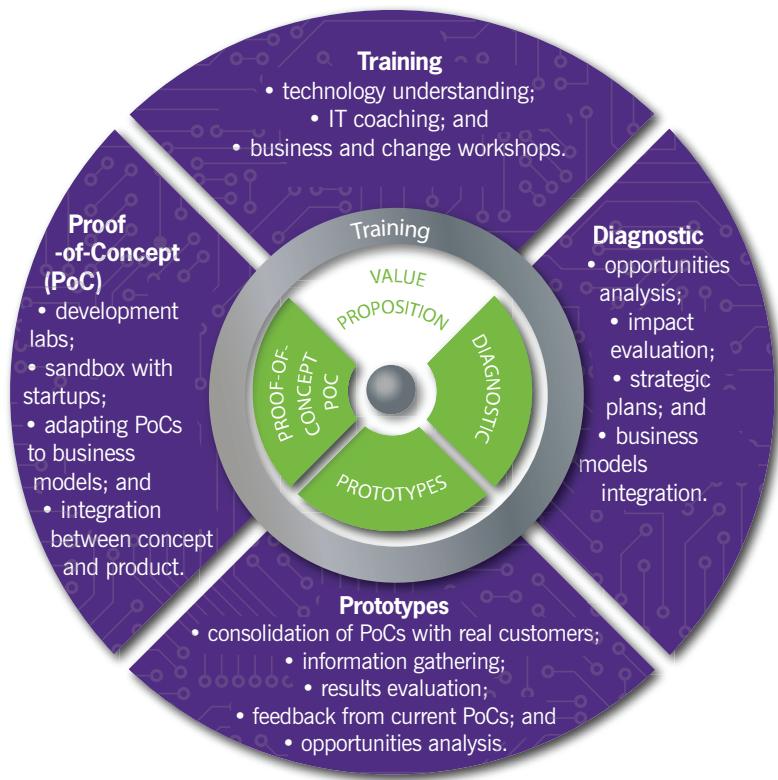




Research areas at Grant Thornton's blockchain lab



Our blockchain services



How Grant Thornton can help

Grant Thornton has developed a multi-disciplinary and multi-jurisdiction team in order to research the potential of the technology, work with clients to develop proofs of concept and provide advice on the legal, financial, product, technological, risk and business model aspects of blockchain.

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