

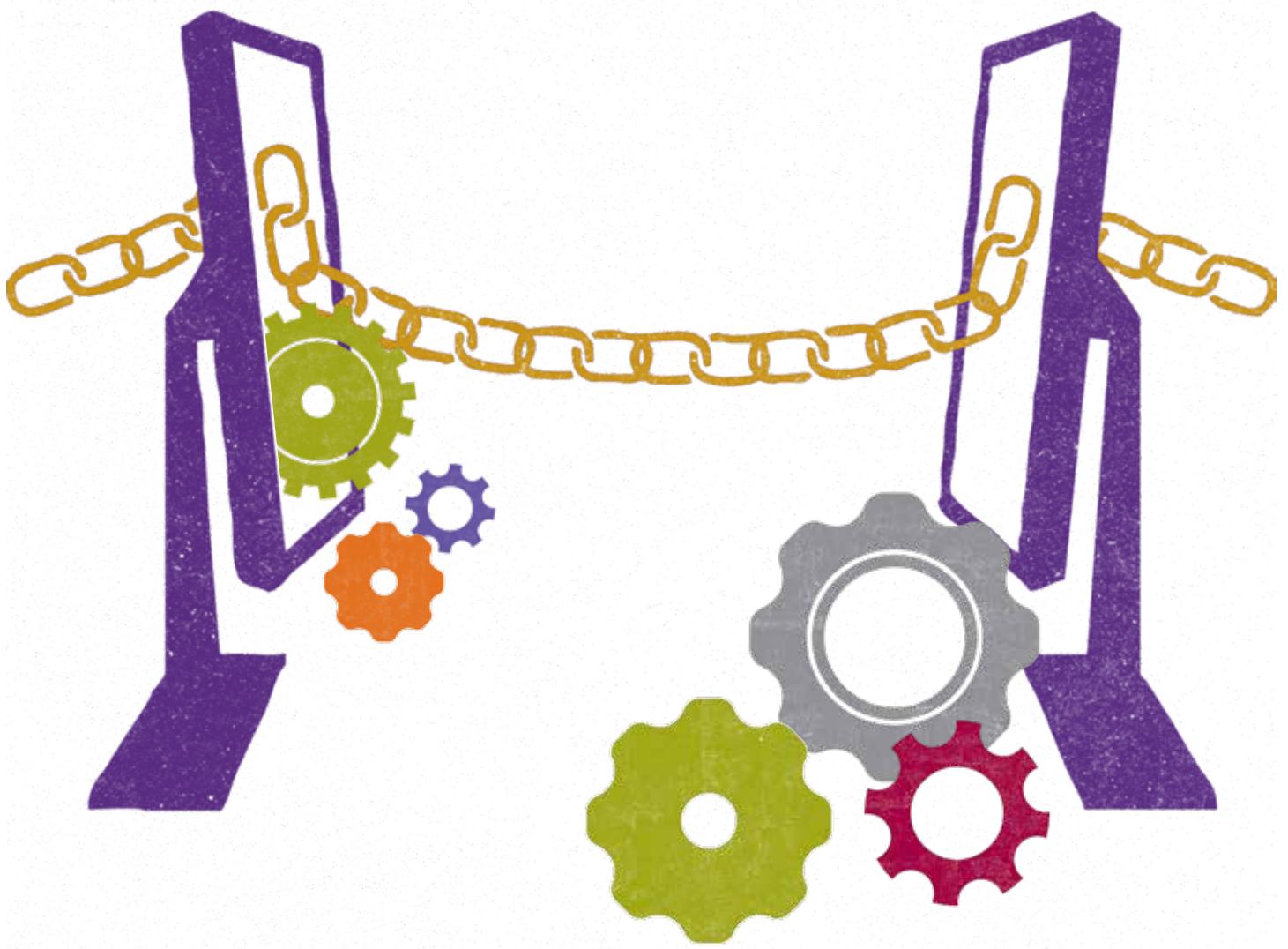


Grant Thornton

An instinct for growth™

Blockchain

Could it transform your business model?



At Grant Thornton, we are in the business of making a difference. We have an instinct to help people achieve their ambitions. From new start-ups or small businesses to large enterprises and public institutions, our clients look to us for objective and impartial support on how their business is performing and how they can achieve their business goals.

When you choose Grant Thornton as your partner and service provider, you will discover what so many companies and organisations have already discovered - the power of enthusiasm and certainty.

We are successful because of our people and because we bring to bear for our clients all that our global firm has to offer. We are a leader in the global marketplace and among the top audit and advisory firms in Malta. Our continued rapid growth is a testament to the certainty our clients experience every day.

Building on more than 40 years of experience, Grant Thornton combines the international reach, depth and expertise of the global brand with the personal attention, value for money, focus and relationship approach of the local team. It is how we keep you moving forward. Initiative you can rely on and knowledge you can trust.

In collaboration with its global partners, the Grant Thornton Malta team draws on insight gained from working with start-ups in the blockchain ecosystem to see how the technologies can be taken further.

We know that by applying our professional, yet personal business philosophy we will retain the trust and loyalty of our clients, our staff and the wider community. In an increasingly complex and rapidly changing world, it's time to take the lead with Grant Thornton and unleash your potential for growth.

**\$4.6bn
global
revenue
in 2015**

**presence in
133
countries**

**730
offices
and growing**

**42,000
people
and growing**



Tracing blockchain's origins

Blockchain-based technologies experienced phenomenal growth since 2015. They went from being ignored by big companies and researched only by start-ups, to attracting attention from the innovation world and featuring on the cover of respected mainstream publications such as the Financial Times and The Economist.

Could blockchain transform your business? The key to blockchain's rise is distributed ledgers – open ledgers which allow transactions to be registered between different parties without a third party, such as a bank.

So why might your business use blockchain? Why is it now top of the agenda for Microsoft, IBM, BBVA, CitiBank, Banco Santander and VISA, and why have the 44 biggest global banks created 'R3 CEV', a consortium designed to explore its potential for financial services?

The driving factors pushing companies to invest millions of Euros into developing the technology are:

- **Cost** - a distributed ledger reduces the cost of storage
- **Security** - client-side encryption is superior
- **Speed** - the power of a decentralised distributed network trumps a centralised server.

The origin

Throughout history, many items have been used as a store of value. As our understanding of money has matured, so have the methods and modes for exchanging it. Blockchain was developed as the technology principle that sits behind the first crypto currency to go mainstream: Bitcoin.

Created by the elusive Satoshi Nakamoto – whose identity has never been revealed – the 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.'

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

Despite the turmoils that followed related to Bitcoin, crypto currency startups are now attracting more investment than ever. The financial services industry is investing heavily in blockchain technology with banks, traders,

exchanges, brokers and regulators today being involved in many pilot projects that go beyond money transactions. Many have gone as far as forming multiple industry consortia to study blockchain's use.

Other blockchains have followed, such as Hyperledger, Multichain, Monax and Ethereum.

The clarity and reliability with which blockchain enables the recording, proof and audit events in our personal lives, as well as our collective history has radically improved making it more tangible and increasing exponentially the technology's application.

' Over the past two decades, the Internet has revolutionized many aspects of business and society—making individuals and organizations more productive. Yet the basic mechanics of how people and organisations execute transactions with one another have not been updated for the 21st century. Blockchain could bring to those processes the openness and efficiency we have come to expect in the Internet Era. '

Arvind Krishna, Senior VP, IBM Research

Blockchain explained

What is the 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.

Assume an organisation has 10 transactions per second. Each of those transactions receives its own digital signature. Using a tree structure, those signatures are combined and given a single digital fingerprint — a unique representation of those transactions at a specific time. That fingerprint is sent up the tree to the next layer of infrastructure, such as a service provider or telecom company.

Blockchain will create huge disruption in many sectors and, potentially, see some firms leave the market. But by bringing in the right expertise and adopting a collaborative approach, it might also be the technology that will help you to steal a march on your competitors.

This process happens for every organisation in the network until there is a single digital fingerprint that encompasses all the transactions as they existed during that particular second.

Once validated, that fingerprint is stored in a blockchain that all the participants can see. A copy of that ledger is also sent back to each organisation to store locally. Those signatures can be continuously verified against what is in the blockchain, giving companies a way to monitor the state and integrity of a particular asset or transaction. Anytime a change to data or an asset is proposed, a new, unique digital fingerprint is created. That fingerprint is sent to each client node for validation.

If the fingerprints don't match, or if the change to the data doesn't fit with the network's agreed-upon rules, the transaction may not be validated. This setup means the entire network, rather than a central authority, is responsible for ensuring the validity of each transaction.

The blockchain brings significant operational benefits

Auditable

An auditable record that can be inspected and used by companies, standards organizations, regulators, and customers alike

Interoperable

A modular, interoperable platform that eliminates the possibility of double spending

How to assess the value of blockchain to your business

While the hype around blockchain may suggest it can be applied to any business, it does not mean it is always a suitable solution. So how do you ensure it is a viable option for your business and that it can truly add competitive advantage? And how do you implement it? These considerations can be broken down into three key stages:

Training

The training stage is about obtaining hands-on experience of how blockchain works, where it can be applied and how to leverage it, often through case histories.

Diagnosis of the business case

Diagnosis of the cost and benefits of using blockchain, in the context of a business case, is also vital – not least because adopting new technologies will likely involve the replacing of a legacy system or generating a new business model.

Development

The development stage will require you to understand which is the right solution for you. Right now, there are no one-off plug-and-play products on the market, so every solution must be tailor-made.

The development process is not straightforward and you are likely to face several challenges along the way. Implementing a change programme of this magnitude is time-consuming. With blockchain, once a protocol is developed, you must be prepared to go back and forth to fine tune the product. And because blockchain as a concept is still evolving, new advances are emerging all the time.

There are other industry-related challenges to consider too, such as sector-specific laws and government regulations. For industry-wide projects, it's always best to bring in the regulators from the beginning. Although interest from early adopters such as the UK, China, Estonia, Honduras, Ecuador, Georgia and Singapore is particularly strong, many governments and regulators are not yet ready for blockchain and in those cases we have to find a solution without them. All of this means collaboration with experts and a willingness to test and adapt is a must.

Guaranteed continuity

The elimination of any central operator ensures inclusiveness and longevity

Real-time and agile

A fast and highly accessible sign-up means quick deployment

Public

The openness of the platform enables innovation and could achieve bottom-up transparency in supply chains instead of burdensome top-down audits

Cost-efficient

A solution to drastically reduce costs by eliminating the need for 'handling companies' to be audited

The future of blockchain

The interest in blockchain has grown rapidly to the extent that it's now a major buzzword within financial services. 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 blockchain is so powerful that nine major banks, including JP Morgan and Goldman Sachs, have joined partnership with one another to invest and develop the technology. Santander estimates that blockchain can save banks up to \$20 billion a year in infrastructure costs by eliminating central authorities and bypassing slow, expensive payment networks.

How other sectors are embracing blockchain? If financial services businesses can find advantages from the adoption of blockchain technology, then you may well be wondering what it can offer other sectors. Some examples are already beginning to emerge.

Insurance is one area of financial services where blockchain is an obvious fit. The sector is employing blockchain technology when registering luxury assets to help prevent theft and fraud. One project, which involves Interpol,

insurers and diamond distributors, is working to stem the flow of 'blood diamonds' into the precious-stones market. Blockchain provides what is hoped will be a tamper-proof record of the provenance of diamonds.

In the health sector, blockchain is being considered as a solution to the counterfeiting of drugs. The creation of a decentralised database of medical records, which would give patients more control over their personal data, is also being explored in the US and in Estonia.

These examples clearly show the benefit to industries and sectors. But can blockchain help businesses directly deliver a benefit to their customers – enhancing the customer experience, improving loyalty and, ultimately,



driving profits?

One start-up energy-supply business in Australia certainly believes so. PowerLedger has adopted a blockchain-secure ledger to empower residents on the country's West Coast, which has 300-plus days of sunshine every year, to trade excess energy generated by their solar panels. They will be able to buy, sell or swap excess solar energy with anyone connected to the Western Power network. The business's co-founder, Jemma Green, believes consumers "want to take control of their energy generation and consumption", rather than simply selling it back to energy providers. And blockchain, she believes, is the technology to deliver that service. "We want to show that this tech is so simple to use that anyone can use it," she said at the company's launch in 2016.

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.

The race is on to realise the true potential of blockchain.

A multidisciplinary Blockchain Team

Grant Thornton has created a multidisciplinary Blockchain Team in order to research about new use cases implementing distributed ledgers. We are covering the following areas:

Development

A team of experienced blockchain developers carrying on proof-of-concepts in the multiple variations of blockchain.

Law and regulation

Technological lawyers with a large background in the blockchain ecosystem, not only studying the legal impact of the regulation in new tech applications, but also designing improvements for the current legal framework.

Economy and finance

Experts in Economy and Finance, covering areas from the issuance of new financial products to the economic viability the products developed.

Consultancy

Advisory approach on developing use cases into new business models.

At Grant Thornton, everyone strongly believes about the potential of this technology. Thus, specific departments of the firm are also involved in different research projects, carrying on project in specific areas, such as healthcare, insurance or automotive.

Insurtech

Settlement between insurance companies, IoT and digital identity to reduce insurance costs, smart contracts applied to this field

Healthcare

Sharing of patients' encrypted information through blockchain complying Data Privacy regulation

Smart contracts

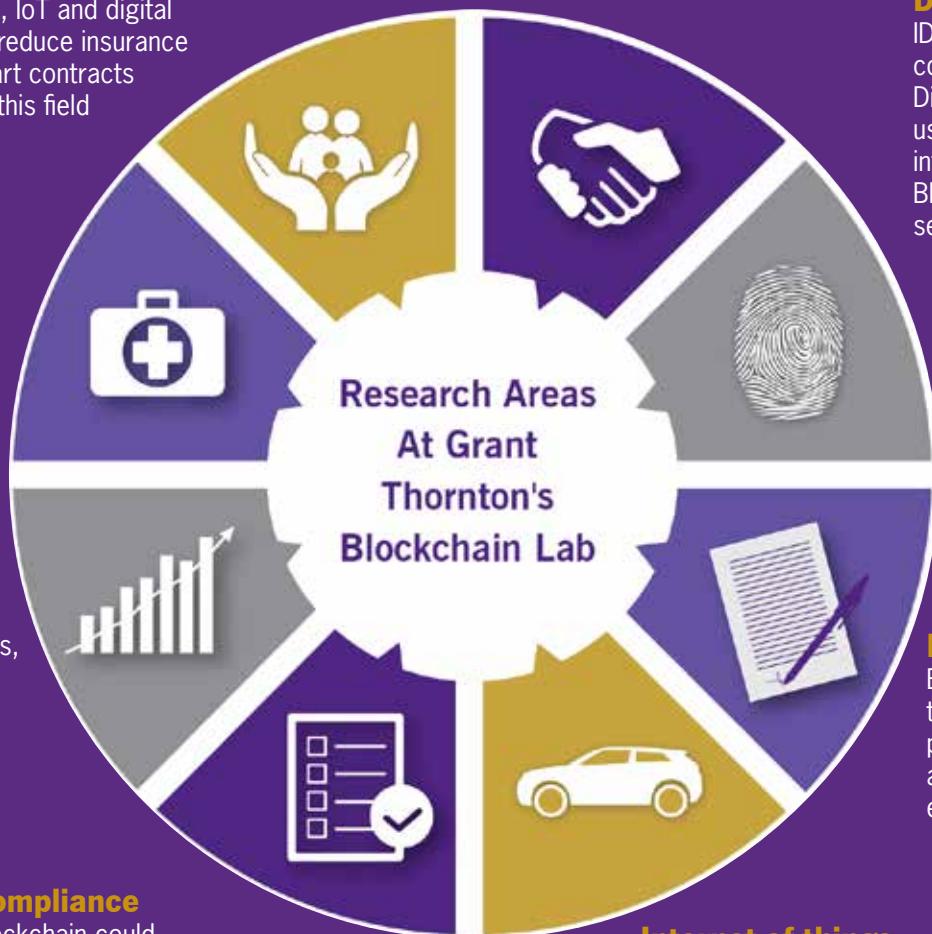
A smart contract is a protocol specially created to program agreements between two or more parties without relying on intermediaries but granting its correct execution

Digital identity

ID could be used for compliance matters, Digital Identity used as the key of internet of things. Blockchain also enables secure voting systems

Financial services

Securitisation, tokenisation of assets, settlement and clearing traceability of transactions, transparency



Compliance

Blockchain could save billions improving compliance procedures and removing duplicities between entities, whilst digital identity could be linked to AML/KYC, Data Privacy or FATCA policies

Internet of things

Fractional ownership, property registration, inclusion of objects into the payment channels, and enabling of contracts peer-to-object



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