

A c-suite guide to blockchain

# CATCH ME IF YOU CAN



IDG research reveals only 13% of senior IT leaders surveyed have clear and current plans to implement blockchain – yet the hype and litany of use cases goes on and on. In this short report, Kathryn Cave, editor at IDG Connect, attempts to identify what the c-suite might really need to know.

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## Introduction

“Yesterday I sent my uniform out through the hotel to have it dry cleaned,” 16-year-old Frank Abagnale told the New York purchasing department of Pan Am airline in a beautifully socially engineered cold call way back in 1964. “Now the hotel and the cleaner say they can’t find it...”

This was the initial step in a chain of events that saw Abagnale masquerade as a Pan Am pilot and claim 250 free flights over the course of two years. It was the subject of 2002 film, ‘Catch Me If You Can’, starring Leonardo DiCaprio. But the most striking part is the number of unchecked steps that allowed to it take place.

On that first call in 1964, the fellow on the end of the line asked Abagnale briefly about a spare uniform. When he said he left it at home in San Francisco, he was promptly dispatched to the company’s outfitters on Fifth Avenue. There he charged his new pilot’s costume back to Pan Am, via a fictional computer ID.

A badge printing company mocked-up a photo card for him, while an Airfix kit supplied the necessary Pan Am logo. And this ludicrous set of fake credentials gave Abagnale the passport necessary to claim the jump seat on all and any airlines; it gave him access to free hotel rooms and the chance to cash infinite \$200 cheques.

“This couldn’t happen now,” is most people’s first response to this type of scam. They thought the same thing back in 1964, of course, only now we have 24/7 CCTV footage, social media profiles which can be accessed anywhere in an instant, along with all kinds of IT systems processing data in the background. The fly in the ointment is most of these systems are nowhere near as joined up as people assume they are.

If you want to check if an employee has the educational qualifications they say they have, you’ll be hard pressed to do so. Depending on when they graduated, you will most likely have to go through a lengthy rigmarole of ringing round various records offices in a slow and possibly fruitless bid to find out the answer. Then there’s health records. These are far more unified than they used to be, but are still by no means fully integrated, and still liable to go astray. And this is just the tip of the iceberg when it comes to important, untrackable information.

### Blockchain: A101

#### How would you explain blockchain to someone who had no clue?

It is like a cloud version of an excel spreadsheet that is always accurate and always up-to-date. This means you can check a financial transaction or record – such as education qualification or medical notes – and be certain you’re getting the right answer.

#### What has blockchain got to do with cryptocurrencies?

Blockchain was discovered through the most famous cryptocurrency of all, Bitcoin, but it doesn’t need to be attached to a cryptocurrency. Also, Bitcoin associations aside, Initial Coin Offerings (ICOs) have become a popular – if risky – way of funding blockchain businesses via the sale of cryptocurrency tokens.

#### How is blockchain currently being used?

Blockchain started out being used in finance but a raft of newer use cases have emerged over the last 12 months. These have included checking up on the supply chain, policing online elections and providing smart contracting solutions to properly pay artists. A growing number of headline-making startups have appeared in the space but they are all in the very early stages.

#### What are the limitations of blockchain?

Despite the extensive potential for distributed databases, they are still slower and more expensive to use than regular databases. The hype surrounding blockchain has meant that some organisations have attempted to shoehorn use cases where they’re simply not necessary. The big picture potential around all this is still a very long way from being realised.

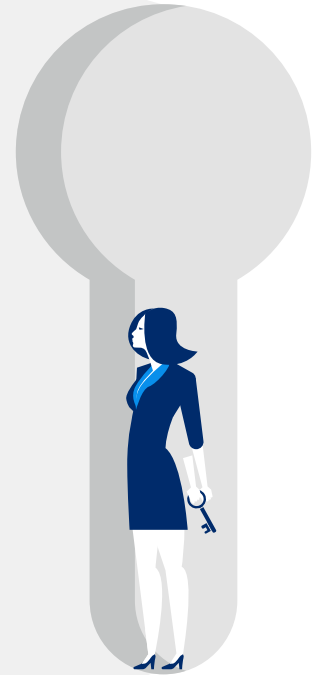
This is the promise of blockchain in all its shining hyped up glory. It can, theoretically at least, make all the vast swathes of uncheckable stuff fully accountable. It can act like a multi-tentacled and fully-integrated cloud spreadsheet where records are always updated everywhere in one single hit. The reality, sadly, is likely to be a bit more nuanced.

Firstly, despite the endless publicity, it is still extremely early days for this technology and although a litany of use cases are presenting themselves these are very much in test phase. Secondly, blockchain technology is complicated. There are a number of different types of blockchains which store different types of information – from smart contracts to financials – and these blockchains themselves also need to communicate with each other for the full promise to be realised. Thirdly, these decentralised databases are generally slower and more expensive to run than any regular database and so the true opportunity is likely to be decades away from reality.



*“Blockchain is just a record of transactions, like a double-entry book keeping system or ledger.”*

*-Ed Wallace, director of advanced threats at MWR InfoSecurity*



## What do you need to know about blockchain?

As Ed Wallace, Director of Advanced Threats at MWR InfoSecurity explains: “Blockchain is just a record of transactions, like a double-entry book keeping system or ledger, that can be distributed – shared with whomever you want or is completely public – that uses encryption as a way of validating the entries are correct and can’t be changed.”

At an even more prosaic level it is a database. “What exactly could it do now that we couldn’t do with database technology like SQL before?” asked Luke Parker in [the Magnr Blog](#). “Not much, really, and it would also be much slower than a SQL database. All of the advantages derived from basic blockchain technology can be boiled down to only two benefits; corruption resistance and redundancy.”

Rahul Singh, President of Financial Services at HCL Technologies spells out a pragmatic everyday use case which combines financial potential with other areas.

“Imagine a smart lock to a public toilet. Imagine now that it can be opened instantly by making a payment over a mobile app that is dictated by rules embedded in a smart contract using blockchain technology. When the rules are met, the lock opens. Money becomes the key, and the transaction is completed, securely and in an auditable manner.”

There are use cases emerging across every industry – from airlines to insurance and everything in between – but most are very much in the testing phase. In the wake of all the hype nobody wants to miss out and these stories have become increasingly newsworthy. For example, in the midst of the fuss and furore about spying Russian companies and election rigging, security firm Kaspersky has brought out a blockchain solution to secure elections. This is mostly being trialled at the college level, but like all things blockchain, its ambitions are high.

The rise of Initial Coin Offerings (ICOs) – where blockchain startups sell cryptocurrency tokens to raise funds – have also received a lot of excess publicity. Eric Ross, director of technology at Loci, which is pursuing its own ICO, describes these as the new gold rush within technology, but they are fairly limited to the blockchain technology space. “It has always been difficult to get funding through traditional routes,” he explains.

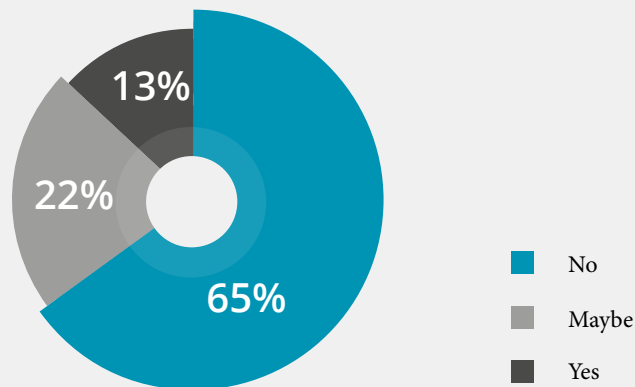
## Are companies really implementing blockchain?

Most of what we hear about blockchain is about its potential. It is very hard to get clear figures on the current size of the market – Coindesk runs the best ‘[State of Blockchain](#)’ quarterly survey – but insight into the future size of the market is naturally speculative. [Markets and Markets](#) believes it will be worth \$2,312.5M by 2021, while [Grand View Research](#) puts a figure of \$7.74B by 2024.

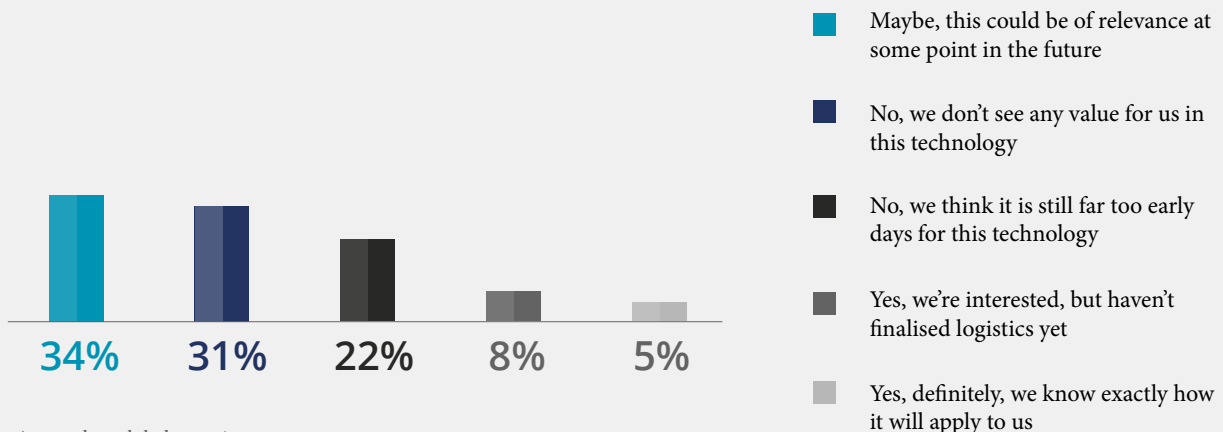
As there has clearly been a knowledge gap on actual adoption figures, towards the end of 2017, we [asked 7,381 IT leaders](#) across 48 different countries: “Is your organisation considering implementing blockchain technology?” The findings revealed that, despite the hype, only 13% have clear, current plans to implement the technology.

Answers were divided into two nuanced “no” options, two “yes” options and one “maybe” option. In the charts below we’ve include the simplified version as a full tally of the answers recorded.

### “Is your organisation considering implementing blockchain technology?”



A simplified global overview  
Source: IDG Connect data



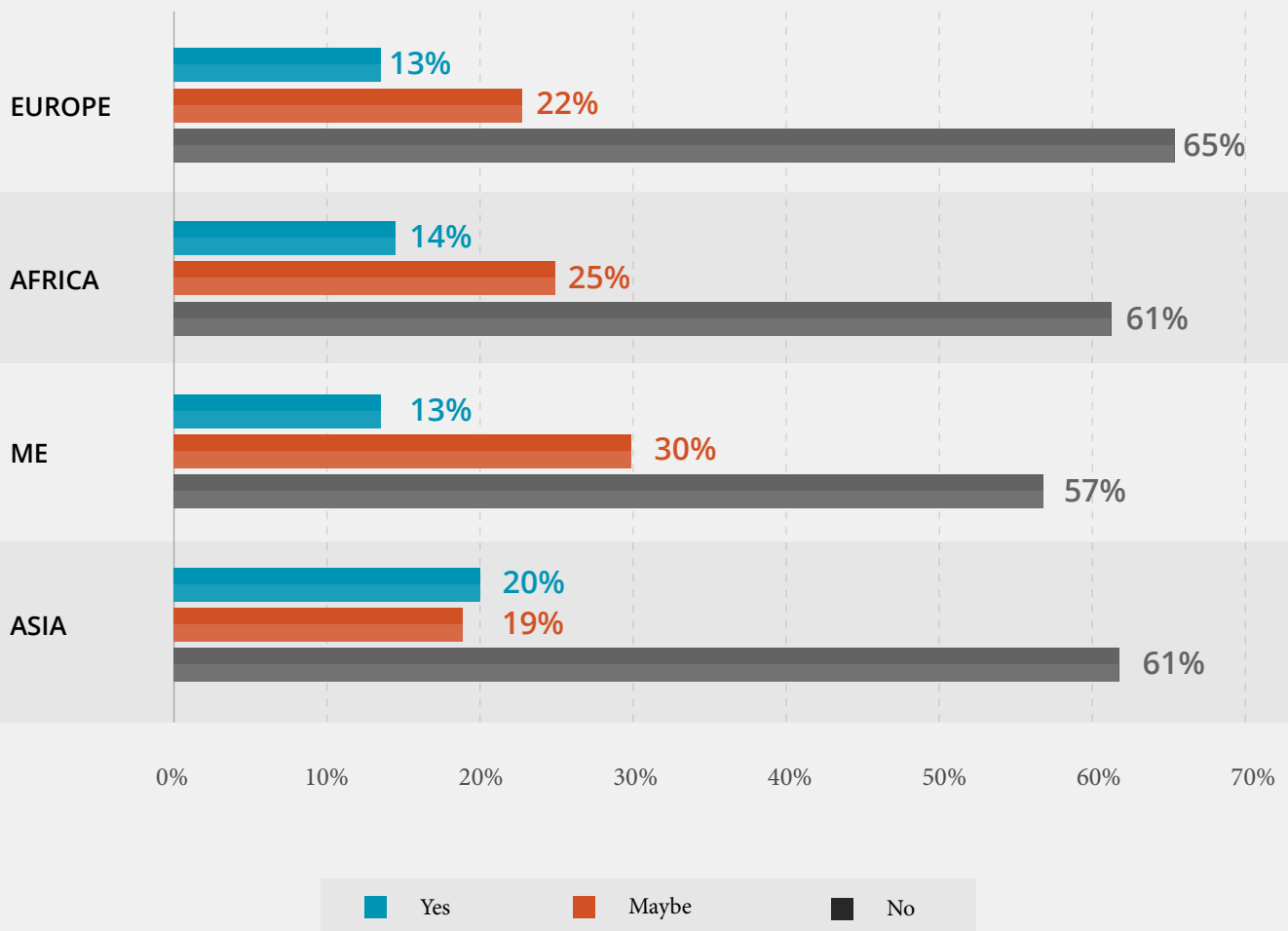
A complete global overview  
Source: IDG Connect data

It seems there are two clear and distinct ways of viewing these global findings. The first is that, although everyone is talking about this technology, hardly anyone is actually implementing it. The second takes the reverse view and asserts that, although this technology is brand new and totally unsuited to many use cases, a solid 992 senior IT decision makers worldwide are already on the brink of implementation.

Regional differences also emerge. The majority of leaders we spoke to were from Europe (4,778) with the bulk from the UK and Germany. However, there was also a good proportion of responses from Asia (985), with the highest number of responses coming from India (286) and Singapore (255).

Despite smaller numbers, Asia appears to have slightly more concrete implementation plans than elsewhere. The strong majority of the “yes” answers also came from India where 32% answered in the affirmative overall. This could, of course, come down to the cultural bias where it is considered preferable to offer an optimistic answer. Of those Indians that answered “yes” only 29 (31%) knew exactly how they would apply it compared to those who haven’t yet finalised the logistics.

### “Is your organisation considering implementing blockchain technology?”



A comparison of results by region  
Source: IDG Connect data

These kinds of stats can be hard to make sense of but one potential parallel is to the growth of cloud computing. Around eight years ago – at the start of 2010 – there was a sudden surge of interest in the cloud amongst IT professionals. Nobody really knew what it would mean in practice for their organisation so there was a mad rush to find out more.

Today nobody is confused by cloud computing, yet it [still may not be as widely used](#) as is commonly assumed. New technology takes a long time to implement – it starts with hype and ends with practicalities – and the modern face of this is probably [the endless difficulties in achieving](#) “digital transformation”.

## What are public and private blockchains?

Blockchain came to light as the ledger that underpinned Bitcoin. This brought with it a certain kind of up-front fame but is also misleading as the Bitcoin blockchain is neither the only one available nor the best fit for most business use cases. There is also a marked difference between the public and private variety.

Put very simply a public blockchain has full open access and is associated with famous cryptocurrencies like Bitcoin. While the private variety is shut – you need permission to join – and acts more akin to a safe ‘walled garden’ for companies.

Luke Parker presented an excellent discussion on the difference between private and public blockchains and [whether both can prevail](#) in an instalment on Magnr Blog. But the very short answer is that the main benefit of the public blockchain is that it is open and transparent – although this can, of course, throw up issues of its own – while private blockchains are much faster but have been described by popular Bitcoin speaker [Andreas Antonopoulos](#) as akin to corporate intranets.

“Permissionless [public] blockchains are much more disruptive and difficult to fit into existing legal and business frameworks,” summarised Smith and Crown in an article around the [differences and advantages of each](#). “Their strongest argument is that blockchains are like the internet: they need to be open to benefit from innovation.”

Blockchain is an even bigger evolutionary step for many businesses than cloud computing. It will not suit every organisation and is certainly not the answer to every imaginable business problem. Yet many companies are already looking to implement it.

This means many technology firms are working to develop saleable private blockchain services to meet specific business needs while potential customers – like banks – are looking to find ways to utilise them. [A report by Infosys Finacle](#) suggested that, out of a small sample, 69% of banks surveying blockchain were interested in private blockchains, 21% hybrid models and only 10% public blockchains.

### Banks looking at blockchain adoption



**69%** interested in private blockchain



**21%** interested in hybrid blockchain



**10%** interested in public blockchain

Source: Infosys Finacle

Brian Donegan, head of e-business operations for the Isle of Man Government’s Department of Economic Development tells IDG Connect that previous high-profile security breaches faced by public blockchain “prompted a spike in interest for private permissioned blockchain development especially from within the financial services community. I see enterprises diverging away from public usage towards private usage given the greater security benefits.”

But this could be just a short-term phenomenon. Peter Loop, AVP and principal technology architect, at Infosys believes “in the long run, as the technology and governance improves, a public blockchain will be viewed as a public good, much like TCP/IP, and will serve as a foundational element. Adoption will follow a pattern like on premise > private cloud > public cloud. Several hurdles need to be cleared at each stage – and there is lots of room for hybrid models along the journey.”

## What are the technology aspects of blockchain?

One of the more confusing aspects of blockchain for those who don’t follow the day-to-day news is all the different ‘flavours’ it comes in. At present, in the west at least, there are two main alliances: [Enterprise Ethereum Alliance](#) (EEA) and [Hyperledger](#). The first is a public blockchain with a ‘walled’ section for enterprise. The second is hosted by the Linux Foundation, based on a steering committee of which IBM is a key member, and brought out its [first white paper](#) [PDF] last August.

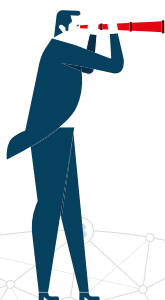
Brian Behlendorf, executive director of Hyperledger and primary developer of the Apache Web server explains this is not like the Linux kernel where you have one type of technology. There are plenty of different approaches that can be taken to match specific business requirements.

Hyperledger itself is a sprawling open source community with 167 paid member companies and an untrackable number of non-affiliated developers. There are currently five different projects on there – the most famous of which is Fabric, which released its 1.0 version last July and was originally donated by IBM.

The way it works in practice is a company “comes to us with a code base that has been developed in house and then donates it to the community,” explains Marta Piekerska, director of ecosystem. Fabric may have been donated by IBM it but it currently has 27 official companies working on it not to mention the myriad spin off iterations. A similar story is true of Sawtooth, which was originally donated by Intel.

Behlendorf is also keen to stress that while it is tempting to pitch Hyperledger and EEA against each other in a straight contest, the reality is not as black and white. When [Dubai announced](#) it would build its smart city on the blockchain in 2017, it was made clear partners would need to be able to use both Ethereum and Hyperledger to make the project work.

Dominic Williams, president and chief scientist of decentralised cloud Dfinity points out that because Hyperledger is not a blockchain in the conventional sense – in that it cannot be used to host a public network – it might face some challenges. “Because of the interest in open computing technologies and networks, the EEA has significantly more corporate and developer support and Hyperledger will have its work cut out competing,” he says.



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-IDG Connect



## What are the industry implications of blockchain?

Outside of the underlying technology – and rapid emergence of new startups – a raft of big players are stepping forward to help businesses to use it. The cloud blockchain approach is a clear and obvious route to market and a recent article on Coindesk broke this down very bluntly as “[IBM vs Microsoft: Two Tech Giants, Two Blockchain Visions](#)”.

IBM has been leading the way with its blockchain offering for some time. It has invested more than others and has paved a path of acceptance for smaller players. “IBM drove demand across the ecosystem which has helped everyone,” says Behlendorf. However, he is unconvinced by the idea of a big fight between two behemoths because in the database world, people are comfortable with the idea of different players.

Shaan Mulchandani, director of technology and security at global design company Aricent believes IBM is pipped to do very well through its involvement with Hyperledger. The platform means “IBM is aggressively engaging developers to build a network of blockchain networks – thereby increasing the intrinsic value of blockchain technology, and its own platform”.

Microsoft was very early to market with its Blockchain as a Service offering in 2015 but only really released a workable enterprise-ready framework at the [start of August 2017](#). More significantly perhaps, Mulchandani believes it won’t be long before a “potentially game-changing release” arrives from AWS which “can command a vast audience given AWS’ architect/developer community”.



*“IBM has been leading the way with its blockchain offering for some time.”*  
-IDG Connect

There is also a lot of interest from some consulting and professional services firms, which are “rapidly making IP gains (e.g. [Accenture’s Editable Blockchains](#)), and making tremendous investments,” says Mulchandani. “This not only extends to some of the largest players in the form of Accenture and Deloitte, but also high-value consulting firms such as BCG and McKinsey, and a rising Indian contingent of technology/services firms such as Infosys, Wipro, and TCS. Some of these firms have a very deep understanding of the organisation’s core business processes.

There are also numerous other new approaches and small players. Jody Cleworth, CEO of Marine Transport International (MTI), was a very early adopter, using blockchain in the cross-border shipping supply chain. He tells IDG Connect when he initially began exploring blockchain, he first looked into the one associated with Bitcoin, but transaction time and cost made it prohibitive, after that he tried Ethereum but it was also too expensive. Eventually he [opted for Agility](#) because it was the only one which facilitated territoriality – the ability to include jurisdiction and applicable law – which was important for the shipping business.

It is also likely that an entirely separate blockchain ecosystem – with different players and modified technology – will emerge out of China to cover the east. This is a whole separate question which is not addressed in this paper.



## Is the Internet of Things the biggest use case for blockchain?

There is clearly a pressing need for something to secure the Internet of Things and this is only compounded by regulations, [like GDPR](#), which increase demand for compliance and authorised sharing of third party data. Blockchain could fill that shortfall, however, there are still a number of organisational – and potentially fundamental – stumbling blocks to mass adoption.

The big vendors really want to get in on this though. [IOTA, which has a blockchain](#) specifically designed for the Internet of Things, shot up in value in December when a group of heavyweights including Microsoft, Cisco and Samsung [announced a partnership](#). This partly stemmed from the rapid inflation in value of cryptocurrencies but is also testament to the wider value in the underlying technology. IBM still leads, however, because it makes it easy to integrate blockchain technology with its Watson IoT platform to provide improved AI-enabled analysis.

“IBM is uniquely positioned to excel in the Blockchain-enabled IoT market, not only due to its diverse investments within blockchain, IoT, cloud, and cognitive – but how they gel together,” says Mulchandani of Aricent. “As the largest cloud services provider, a significant portion of this is realised through private cloud implementations.

“As consumer, and especially industrial IoT players will seek to use blockchains in realising new products, platforms, and ecosystems – a strong private cloud implementation brings IBM to the forefront, particularly as large competitors mostly target scaling their public cloud operations.”

It will not all be plain sailing though. Dr Kevin Curran, senior member of the IEEE (Institute of Electric and Electronic Engineers) and professor of cybersecurity at Ulster University highlights the fact that most IoT devices have a limited memory size, limited battery life, along with restricted processors. “Traditional ‘heavy’ cryptography is difficult to deploy on a typical sensor, hence why many IoT devices are insecure and are more vulnerable to the ‘[51% attack](#)’ where hackers control 51% of the processing power in the blockchain.

“This also raises a more important point that IoT devices may simply be too underpowered to actually be part of the blockchain, as it does require participating nodes to perform relatively complex computations in a ‘proof of work’, which is necessary for integrity of data,” he says.

Stephen Holmes, CTO FINTech Banking Lab at Virtusa believes a halfway solution might be possible. “There are some blockchain technologies that can be ported to the IoT that would enhance the security of IoT devices. You don’t need to have blockchain on an IoT device, you simply need some of the cryptographic protocols to provide this security.”

Blockchain could also be seen as a second phase to IoT security. Robert Jones, VP of product and sales at IoT security company Netsnapper explains that currently networks are either typically new with “connectivity being prioritised over security” or older and more traditional – like public utility networks – where security is gradually becoming exposed by modern connectivity.

“In both cases there is an urgent need to provide configurable encryption and access management today to plug security gaps. After that is done, blockchain will become more relevant in the mid to long term,” he says.

Luke Turvey, a security consultant for ethical hacking firm Pen Test Partners – who is used to breaking systems – feels for blockchain to be used effectively for the Internet of Things, an organisation might need two separate networks. The first would be the regular corporate one and the second would be for IoT and would run through the blockchain.



*“Blockchain could be seen as a second phase to IoT security.” -IDG Connect*



## What can we conclude about the future of blockchain?

The challenge with blockchain at the moment is that it is widely being treated as an all or nothing technology. The zealot enthusiasts talk of world peace and a change to the way everything works – while pointing to an ever-growing stack of individual use cases. The naysayers tend to shrug their shoulders and say it is all unproven.

In reality, blockchain is likely to be similar to any other technology adoption curve and blighted by human foibles. If one aspect works well, another will not pan out as anticipated, and this will be further complicated by hyped interest in cryptocurrencies and Initial Coin Offerings.

The potential big picture benefits of this technology make a lot of sense – and are, of course, attractive – but are also a very long way off. While the day-to-day progress of blockchain is likely to be another piece of the ongoing digital transformation story.

It is also worth noting that a lot of this transition will be handled in the background by third party suppliers. And there will be no real need for c-suite professionals, in large organisations, to understand the nuts and bolts of how it all work in practice. This means, the real challenge – as with any emerging technology – will remain the perennial problem of not getting dragged in to the relentless hype and clearly isolating genuine business needs.

