

# ***Blockchain: the operating model of the future***

A commodities risk  
management perspective

# DLT and the operating model of the future

*Distributed ledger technology (DLT) has the potential to overhaul existing market infrastructure and change the way we transact. In 2016, venture capital funding passed the US\$1bn mark, and the momentum continues to grow. Given its complexity, however, its benefits have so far evaded the attention of many time-constrained managers – to invoke the boiling frog metaphor, the frog is now starting to simmer.*

## What is DLT?

At its most basic level DLT – also known as **blockchain** – represents a new way of managing data. It introduces a distributed model whereby a network of participants (referred to as ‘nodes’) replicate and share a database, eliminating the need to reconcile between disparate datasets. Consensus is required for each new record, and this is achieved through the use of digital signatures and complex cryptography. The process is fast, secure, transparent and, given its distributed nature, highly resilient to system failures.

## The benefits

Focussing on commodities DLT has a number of potential use cases or benefits:

### Trading tokenised products and services

- To tokenise an item is to record its existence and pertinent details on a distributed ledger. Once tokenised, an asset can be traded between the nodes on the network. A DLT with participants across the full supply chain therefore becomes a digital ecosystem in which trade can be paperless and seamless.
- Features such as origin and quality can be validated by creating a node on the network for an independent certifying authority. This authority could apply its private key to digitally sign a certificate after a physical inspection of the goods.
- This needn't apply only to physical commodities – it could apply to related services too such as insurance, finance and freight, creating the potential for an all-in-one marketplace.

### Compliance

Compliance costs could be reduced by creating a node on the network for a regulator. Simply by granting the regulator viewer access to the whole network the distributed ledger could for example be used to comply with EMIR reporting requirements.

The regulator could also efficiently analyse trade data for market abuse, or ensure other regulatory requirements are complied with.

### Automation

Smart contracts are a set of instructions in the form of computer code which, when activated, have the ability to transfer funds or assets, submit messages or even activate other smart contracts. Such code can automate many aspects of trade. One example is derivatives; a smart contract could use an FX or commodity price data feed to both calculate and automatically settle cash flows.

## An illustrative example

*In the not-too-distant future, Alex is feeling very pleased with the progress he has made. He's the Chief Operating Officer of a mid-sized agri-trader, and during the year his business successfully implemented a new DLT-enabled CTRM system. What excites Alex about this system is that it gives his business a ticket into a whole digital ecosystem that just a few years ago didn't exist, but which nowadays hosts significant volumes of physical and financial commodity transactions. It's a land of opportunity. Alex's business is now a node on a vast network of traders, banks, shipping companies, warehouse operators, quality inspectors, regulators and auditors which all have access to a common, immutable data pool.*

*Within this common data pool all trades, trade finance, transport arrangements, storage and so on can be agreed and evidenced electronically. As all parties replicate the same dataset trade becomes more fluid, the bank, for example, does not need to wait for shipping documents to arrive in the post before releasing payment as these records will be updated at the click of a mouse by the shipping company.*

*Alex keenly tracked the development of DLT, engaged professional support early on and developed a clear strategy that gave him an early mover advantage. Others in the industry are struggling to compete, burdened with the administrative time and expense of legacy arrangements.*

# The future is getting closer

## Removing barriers

### *Evolution of platforms*

Driven by significant investment and research, over the past few years much progress has been made in addressing the numerous issues with large-scale commercial use of DLT. One such issue is scalability, with classic examples of DLT such as *Bitcoin* famously inefficient when it comes to processing large volumes of transactions. Different platforms are solving this in different ways – one example is to break up the ledger into a number of separate ledgers which work in tandem and synchronise periodically. Such solutions are currently being trialled by Visa and the DLT business BTL in the context of interbank payments.

### *Privacy restrictions*

Another issue is privacy. For a simple distributed ledger, if all parties replicate the same database then everyone's transactions are visible to all. Similar to the scalability solution above, one answer is to partition the ledger such that participants can only see transactions that relate to themselves.

### *Technology barriers*

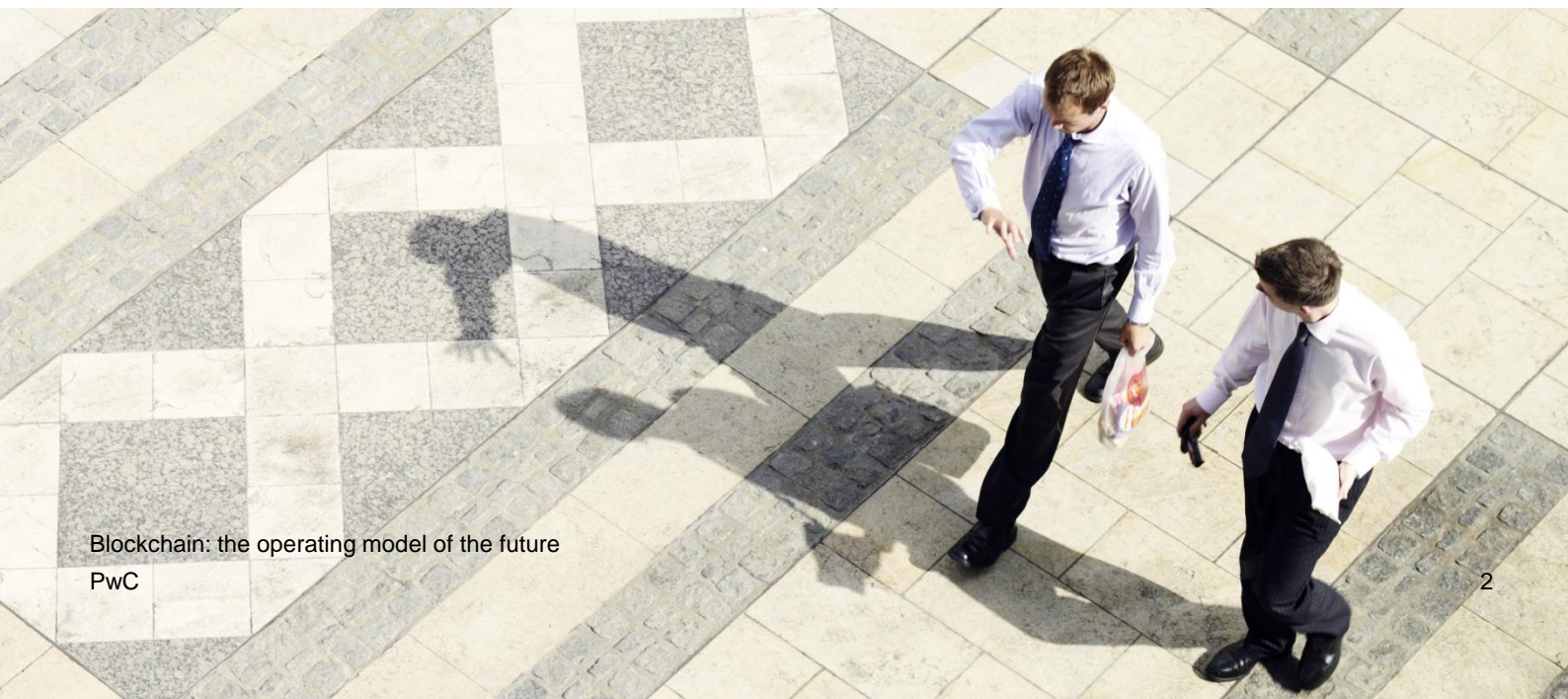
Solutions are being found for other more technical issues, such as the interoperability of distributed ledgers with each other and with existing software – an important step in overcoming a key barrier to entry for the technology. Consider the extent of progress within a few short years and it's becoming clear that fully developed enterprise-grade DLT solutions are just around the corner.

## The remaining challenges

Governance is a key concern. DLT platforms create a far more efficient place to do business, but with any platform the developer has the keys to the city so to speak. So how can you be sure that they're used responsibly? This question was brought into sharp focus in 2016 after the attack on the DAO.

Most governments are adopting a 'wait and see' approach to regulating DLT, with the EU in particular making this an explicit strategy in order to allow the potential of the technology to become clear before any regulations are devised. Attempting to fill the governance vacuum are a number of research organisations, such as the World Economic Forum who have presented ideas but none yet have traction. So how DLT will be governed in future is far from certain and still subject to much debate. We believe however that widespread deployment of the technology will not wait for an answer to this question.

A more tangible weakness of DLT systems is the human element. Each node has a private key which is used to authenticate transactions, along with a public key. So while the network itself may be highly secure, that security is very much undermined if the organisation behind a node fails to enforce the controls that keep its private key safe. Were a third party to obtain a node's private key, he or she can essentially hijack the node, entering into transactions on its behalf.





## What's next?



DLT is still very much in the development phase, but we're now reaching a point of inflection where large-scale trials with big industry players are yielding promising results. There are many ways to prepare for the coming change.

As one example, early movers in many industries have signed up to consortia dedicated to developing the technology in their field and will be at the front of the queue when viable enterprise-grade solutions become available. This approach allows first-hand involvement in the developments made, but usually comes with a

six-figure membership fee and a notable demand on management time.

If a more resource-efficient approach is what you seek, the alternative is to draw on the expertise already available in the market. Professional services firms such as PwC routinely advise clients on their digital agenda, have close relationships with DLT start-ups and can provide advice that's tailored to your organisation.

Either way, making clear your strategy soon will be essential – the water is starting to boil.

## Contacts



*To have a further discussion about this topic and find out how we can support you, please contact one of our experts:*

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