

# Blockchain: Getting Beyond the Buzz

Why are financial services firms so excited about blockchain technology? Galen Stops looks at its potential to disrupt the industry.

Unless you've been living under a rock for the past several months you've heard the buzz around blockchain, the distributive ledger technology that underpins the controversial digital currency Bitcoin.

While the hype surrounding Bitcoin seems to have subsided somewhat amongst financial services institutions, many of them now appear to be in a fully fledged race to find ways to adopt and implement distributive ledger technology to improve their current services and operations.

To put it simply, distributive ledgers – of which blockchain is one – allow for the distribution, verification and record keeping of transaction information in a decentralised manner.

“At any given point in time everyone has access to the same iteration of data sets, which completely removes the need to compare data sets or ensure that you involve a third party to be the keeper of authenticated data,” explains Mireille Dyrberg, chief operating officer at TriOptima.

On the surface this might not sound like the most exciting of technological developments, but the implications of this have the potential to make financial services infrastructure much more operationally efficient, cost effective and safer. This is a powerful combination for an industry that has largely been under growing regulatory and economic cost pressures since the 2008 financial crisis.

Additionally, much of the foundation technology that financial services firms' processes are based around haven't

changed in form for decades, meaning that the time could be right for the next evolution in infrastructure technology. For instance, Swift is now over 40 years old, FIX protocol was initiated in 1992 while the FpML standard was first published in 1999.

But while innovation labs across the world have been quick to pump out potential use cases for distributive ledger technology, so far only a handful of financial services firms have publicly put their money where their mouth is.

“I think that the excitement at the moment probably outstrips the short-term applications or uses of this technology,” says Nick Solinger, head of product and chief marketing officer at Traiana. “But in the long-term, we definitely see the potential for blockchain to be incorporated into the set of foundation technologies in the financial services stack, exchanging and verifying information across the whole post-trade and settlement life cycle.”

## Bitcoin < Blockchain < Private Ledger

One of the first challenges facing financial services firms when examining this technology is conceptually understanding the distinctions between the various technologies that are being touted in the market at the moment.

To be clear: Bitcoin is a type of cryptocurrency. Blockchain is the distributive ledger that allows bitcoins to be transacted

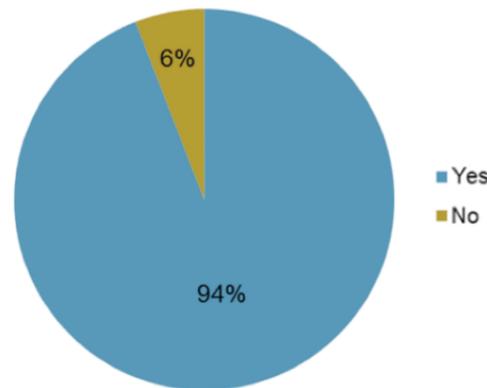


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### Blockchain Has a Place in Capital Markets

Do you believe the Blockchain or similar digital ledger technology could be utilized in institutional finance?



Source: Greenwich Associates survey, July 2015

traditional financial instruments that are programmed with all the terms and conditions of that particular instrument along with all of its corporate actions. Putting all that information in a public blockchain would cause complications, according to its CEO and founder, Mark Smith.

“One issue around the public versus private ledger models is the bandwidth and bloat. In the world of smart securities we’re programming all the terms, conditions and restrictions relating to that security into the product itself. That could mean potentially programming a prospectus that’s one hundred-plus pages long into the security, but if you overload the amount of information in one security that you want to put on the Bitcoin blockchain then it could create a bloat problem and you could see the blockchain start to struggle with that as a public open source distributed database,” he says.

It’s for these reasons that when financial services firms explore the potential applications of ‘blockchain’ they are generally referring to a private distributed ledger that may be based on the Bitcoin technology.

Private ledgers are shared networks that can be created by groups of institutions for a specific purpose. There is no anonymity and no need for a direct fiscal incentive to verify transactions, because a common shared incentive is a prerequisite for forming the group in the first place. Financial institutions can build these private networks with trusted partners or counterparties that they already know and work with and can customise numerous aspects of the ledgers, such as the size of the blocks and the consensus algorithms used to verify each transaction.

“What we’re seeing within financial institutions is this linear learning process, where they began with Bitcoin as a currency, then they began to understand the concept of blockchain, then they moved onto the idea of cryptographic tokens that can work on the Bitcoin blockchain and represent other assets and now they’re looking at ways to use distributed ledgers without utilising the public Bitcoin blockchain,” says Smith.

### Bespoke Ledgers

Thus far, a myriad of potential applications for private distributive ledgers have been put forward, with many of them focusing on improving efficiencies in post-trade settlement.

“Ideas will get winnowed down, concentrated and really focused over time,” says Solinger. “If you can reduce the cost of settlement and go from T+3 to settlement in real time, then blockchain becomes a powerful idea and something that the market at large would like to utilise. The question then becomes how you put these ideas into practice in each different market.”

Peter Shiau, co-founder and CEO of Blockstack.io, reveals that one proof of concept his firm did for a financial institution involved the clearing and settlement of non-CLS cleared currency pairs.

“There are some currency pairs that [financial institutions] use correspondent banks for in order to transact and they would like to have a system for settling these currency pairs that CLS isn’t providing them with today. So they could set up a separate private clearing and settlement system with a set of other financial institutions using a shared but private blockchain if they wanted to have the facility,” he says.

Blockstack.io’s enterprise software, developed by founder and ex-Google engineer, Miron Cuperman, provides private ledgers that are based on the Bitcoin blockchain core software, but customised depending on the purpose that a financial

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institution plans to use the ledger. This means that the firm is able to provide ledgers that can handle higher transaction volumes at lower latencies to its clients.

“We’re able to work with different applications for different companies, we’re not focused on one specific kind of back office process. We think of this as generic infrastructure on which different applications can be built – whether it’s in FX clearing and settlement or for a multi-national corporation that wants to have a shared ledger amongst its divisions for accounting purposes,” says Shiau.

Another potential post-trade application that Dyrberg sees for the distributive ledger technology is to improve the efficiency of trade reporting amongst financial services firms.

“In theory, if trade repositories could ensure that all data records are automatically and instantaneously updated at the point of execution and thereby ensuring that the whole contributing network only has the latest version of the information it would save a great deal of the administrative process,” she notes.

Dyrberg adds that if blockchain technology was to be applied to trade reporting, then it could effectively eliminate the need for a data repository, increasing efficiency and reducing the scope for errors in reporting.

On the other side of the trade lifecycle, Solinger identifies potential applications for this technology in the pre-trade arena, pointing out that it could help with regards to credit verifications.

“We provide a service that allows trading venues to verify that clients have credit and then redeem that credit upon execution. The clearing house is then provided with evidence that credit was used, verified by Traiana CreditLink. We have built this network of pre-trade through to post-clearing verification on top of existing protocols. I see a real path where we could perform this function using cryptographic tokens. We’re already working with the industry to examine a blockchain-like protocol for verifying credit for SEFs, trading venues and clearing houses,” he explains.

### Not So Fast

Despite the numerous possible areas where distributive ledger technology could supplant current financial services infrastructure there are still some barriers to its implementation.

For example, implementing the technology for credit verification is currently complicated by the fact that there is a limitation at one clearing house that credit tokens have to be 40 characters or less, which is too short for the code used in ledger transactions.

Additionally, integrating shared infrastructure technology is harder given the lack of interoperability between the various swaps trading venues available. Solinger notes that some of the Swap Execution Facilities (SEFs) are firms that have

been around for well over a decade while others are relatively new, meaning that there are gaps in terms of interoperability that will take some time to bridge.

Shiau concedes that implementing shared infrastructure between a set of different financial institutions that all have different legacy technology is a challenge, but points to precedents of where consortiums of banks have come together to solve shared infrastructure needs – such as in the creation of Swift – as evidence that such challenges can be overcome.

Similarly, the mandate in the US from the Commodity Futures Trading Commission (CFTC) for order screening on SEFs meant that the swaps industry had to create infrastructure linking the buy side, the FCMs and the SEFs within a two-year period.

“One of the benefits of shared ledgers is that it will start to normalise information across everyone’s systems, reducing some of the complexities facing financial institutions today. Right now everyone describes things differently and once you start to normalise that lexicon then life gets a lot easier, this is something that we’ve seen happen in the tech space,” says Shiau.

Firms must also temper their dreams of disruption via blockchain with the reality of inertia within financial markets infrastructure.

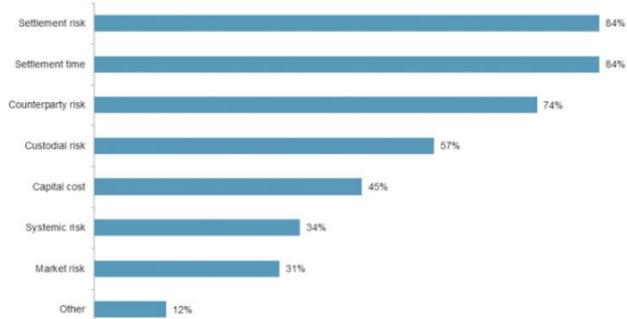
While there have been complaints about outdated and inefficient post-trade technology for years, weaning financial services firms off the embedded legacy structures that they have in place has proved to be a tricky proposition and will continue to slow the pace of change.

“The world cannot switch to an all digital, distributed solution overnight. The existing infrastructure supports a tremendous amount of activity and any new solution cannot ignore the roles of existing processes. Implementing shared infrastructure requires a delicate blend of old world integrations and new world technologies across a spectrum of users,” says Eric Saraniecki, head of product at Digital Asset.

Another limit for the use of ledgers is purely technological. Although the speed at which private ledgers can be updated is substantially faster than public ones (the Bitcoin blockchain takes on average 10-15 minutes for

### Hopeful for Settlement & Counterparty Risk Reduction

Which of the following do you believe digital ledger technology could help reduce?



Source: Greenwich Associates survey, July 2015

between two counterparties. The next important distinction to make is between public and private distributive ledgers.

Public distributive ledgers are available for anyone to participate in. They are pseudo anonymous and require some form of incentive to encourage the participants in the network to verify transactions and effectively create the security fabric of the network. This is how Bitcoin works; the miners get paid to verify transactions on the public blockchain.

For the purposes of many financial services firms, however, a public distributive ledger is problematic for a number of reasons.

Firstly, there are significant Know Your Customer (KYC) issues. For example, if a heavily regulated financial institution in the US were to book a transaction using a public ledger like the Bitcoin blockchain and then a miner in a country that the US has trade sanctions with mines the next block in the chain and gets paid for doing so, the institution could be liable for breaker international banking laws.

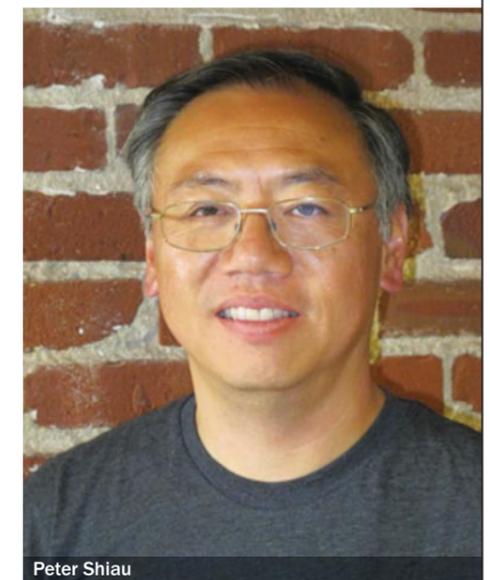
Secondly, there can be a lot of confidential data involved in financial transactions that mainstream financial institutions will not tolerate being made available on a publicly accessible and immutable ledger.

Thirdly, there is the problem about how much information can currently be put into each block of a public ledger like blockchain.

Symbiont is a firm that is creating what it calls “smart securities”, which are essentially digital representations of



Nick Solinger



Peter Shiau



Mireille Dyrberg

each block to be added), it is still not fast enough for the kind of low latency trading that occurs, for example, in the equities markets. Some claim, however, that the speed at which these ledgers can be updated will continue to increase, meaning that this is only a short-term barrier to adoption.

Although the use of private ledgers eliminates the legal concerns around KYC, there are still issues that remain unresolved.

"I think that the biggest issue is the legal transfer of title and what is true settlement," says Todd McDonald, a partner at R3CEV, a firm that looks at ways to apply crypto-technology and blockchain-based protocols to the financial sector. "If you take the example of a tokenised asset on a Bitcoin blockchain, if I send that to you with one-hundred Apple shares attached, is that a legal transfer of that security and that stock to you or not?"

Saraniacki is confident that all of these challenges can be overcome.

"Legal questions, such as being able to demonstrate clean transfer of title to digitised assets are important considerations that must be taken into account with every proposed application. In some cases and jurisdictions, laws will need to be revised and clarified, as they have been in the past in response to new technological developments," he says.

Saraniacki adds: "Cutting edge thinking in this space is evolving rapidly. Limitations relating to transaction throughput, speed, privacy, KYC, KYV (know your visibility), transaction

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processing dependencies, and so on are all being tackled and are highly unlikely to remain fundamental roadblocks."

### Branding Issues

As with any shared infrastructure venture, there will also be questions to answer about which firm owns the data being transmitted and recorded on the ledger, although this is an issue that will have to be solved on a case-by-case basis in a way that is amenable to the users of that ledger service.

Smith also cites the need for positive brand recognition and increased understanding around immediate applications of distributive ledger technology as factors that could slow its implementation in the financial industry.

"One of the big branding issues that this ecosystem has is that we're trying to get past this image of the snake oil salesmen coming from outside of the financial market and trying to convince people within it that this technology can do anything. If technology can do anything, then by definition it can do nothing and then you have analysis paralysis problems. What the industry needs to be doing is fine tuning the few initial use cases that you can go to market with, without disrupting current franchise businesses," he says.

With regards to this last point, Shiau is similarly keen to point out that blockchain technology should be viewed as a way to augment existing business processes by ripping out layers of friction, making them cheaper and more efficient, rather than as a challenge to these business lines.

A final limiting factor on the adoption of this technology might simply be the lack of expertise in what is a very new field. While many financial institutions have found numerous theoretical use cases for distributive ledgers, there remains a very limited number of experts in this field with practical experience in building these ledgers.

Basic supply and demand means that this is good news for firms offering distributive ledger technology, but in the short-term it could also prove a limiting factor on these firms' expansion.

Smith reports that Symbiont is struggling to find the people with the right skill set to help the company continue growing, while Shiau wryly notes that he can't exactly find the people with the skill set that he needs on traditional job websites. Yes, there are increasingly more talented individuals coming through places like MIT with knowledge of blockchain protocols, but currently people with hands on experience in building and deploying this technology are scarce.

### What Next for Blockchain?

So is distributive ledger technology the inevitable next step in the evolution of financial markets infrastructure? Dyrberg certainly thinks so.

"I see this as being so transformative and radical that it's essentially technology for the 21st century whereas much of the current infrastructure of the financial markets is 20th century architecture. This requires a radical re-think about how everyone does business," she says.

Solinger agrees that the technology has a lot of potential, but says that some of the ideas being floated regarding this technology today might be too far ahead of the market's ability to digest the change, which suggests an analogy to the Internet bubble of the late '90s.

"The ideas aren't wrong, but the time it may take to

transform our markets is likely underestimated," he says.

If widespread adoption does occur, Solinger predicts that it will take "a couple of years, not a couple of months" for it to be integrated into the foundations of financial services firms' technology.

Looking at the long-term prospects of the ledger technology, one interesting sub-plot will be how firms that it threatens to disintermediate, such as Swift, respond. One consequence of this technology could be the development of new businesses on top of this new infrastructure.

As the cost of messaging between financial institutions gets pushed down close to free, this could have the impact of increasing the number of messages running through the network and could open the door for new businesses offering ancillary services around analysing the increased message data.

For Shiau, the eventual impact of the distributive ledger technology could be to shape financial services infrastructure into a series of connected private network chains.

"These chains do ultimately want to talk to each other. So initially these financial institutions are going to come together in these isolated chains, because it's the easiest path forward and you'll have a lot more control. But once they get comfortable with that they'll want to connect them with other chains to create more liquidity and flow and reduce frictions," he says.

Such a development could in theory see a private commodities distributive ledger be connected to an equities one, meaning that barrels of oil could be traded directly for shares of a company.

In the shorter-term, the adoption of distributive ledger technology will of course, as Solinger points out, continue to be outpaced by the excitement surrounding it and no doubt some of the cases for it being put forward at the moment will prove to either be misguided or simply beyond the reach of the financial services industry to absorb.

But as the understanding of distributive ledger technology continues to grow and become more nuanced amongst financial services firms, so does their apparent enthusiasm for it, which is a good sign for its prospects going forward.

The fact that influential figures from the financial services industry are lending both investment and their personal brand to companies offering distributive ledger technology services is a great PR coup for this nascent industry, but also underlines the real value that experienced finance professionals see in the technology.

Blythe Masters at Digital Asset has obviously become the poster child for this, but likewise the managing partner and founder of R3CEV is David Rutter, formerly CEO of Icap Electronic Broking.

Symbiont recently secured funding from former NYSE Euronext CEO, Duncan Niederauer, and Matt Andresen, founder of Island ECN and former co-head of trading at Citadel.

This is a wealth of financial experience and understanding that is being allied with the advanced technological expertise that is coming out of places like Silicon Valley and MIT. Whether you call it disruption or evolution, as these firms partner with financial services companies that have both the political will and the economic muscle to invest in this technology, they make a compelling case that distributive ledgers have an important role to play in the future of the financial industry.