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## Upgrading the plumbing

Will Blockchain transform the Financial Services sector? | November 2015

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Is Blockchain a disruptive technology that will recast the Financial Services sector by driving profound change through the back office plumbing of the industry?

# Is Blockchain a disruptive technology that will recast the Financial Services sector by driving profound change through the back office plumbing of the industry?

Throughout the history of financial markets innovation has been driven principally by the demands of the front office as the Financial Services sector has sought alpha or been driven by the structural changes brought on by new regulation. What is indeed rare is for the plumbing - the infrastructure and the back office – itself to be the catalyst for innovation or the first adopter of any new wholesale technology change.

Be under no illusion, upgrading the plumbing is hard: it rarely leads the way, costs money without obvious top line revenue benefits and never happens easily. It takes longer than expected, requires extensive change management across the organization, and different parts of the market often have divergent interests.

However, with Blockchain there is an emerging sense that we might just be at a powerful point of inflection, where breakthrough change is about to be driven by the underlying plumbing. Hardly a day goes by without a headline in the press making claims about the disruption Blockchain will bring. But before we ourselves are accused of succumbing to the media hype, we should look deeper.

## isn't it always about following the money?

As the primary source of revenue generation there has typically been a far greater willingness to make the necessary technology investments

in the front office so that further gains can be realised. This is in direct contrast with the back office where there is typically a reluctance to spend.



**From the morning of the 21st [October], the ticker lagged, and by noon it was an hour late. Not until an hour and forty minutes after the close of the market did it record the last transaction”**

J K Galbraith, *The Great Crash, 1929*

Think of the telegraph that was developed in the mid 1830's. It was immediately adapted to allow for the faster communication of trading signals and was later upgraded by Callahan in 1867 specifically as a stock ticker to glean critical information advantages. Yet, in his book “*The Great Crash, 1929*”, J K Galbraith noted that “from the morning of the 21st [October], the ticker lagged, and by noon it was an hour late. Not until an hour and forty minutes after the close of the market did it record the last transaction”. In those extreme moments the plumbing lagged so far behind it proved a liability. Many investors sold when they did not have to whilst others were bankrupt before they knew it.

This is perhaps an extreme example but points to an historic trend that what generally stimulates wholesale changes to the plumbing is some significant event such as a market crash or a major change to regulation (which in itself is often the response to a crash).

Take for instance the 1987 crash, which resulted in the 1990 Market Reform Act that aimed to constrain program trading and introduced the concept of circuit breakers. We could add the USA Patriot Act of 2001 and its wide implications for Anti-Money Laundering, Know Your Customer (KYC) and sanctions monitoring across the world. More recently, the Dodd-Frank Wall Street Reform and Consumer Protection

Act of 2010 has been implemented as a direct consequence of the 2008 crash and has placed a critical focus on Liquidity Coverage Ratios.

This rubric is so engrained in our markets that it is hard to conceive that the plumbing would ever lead the innovation cycle.

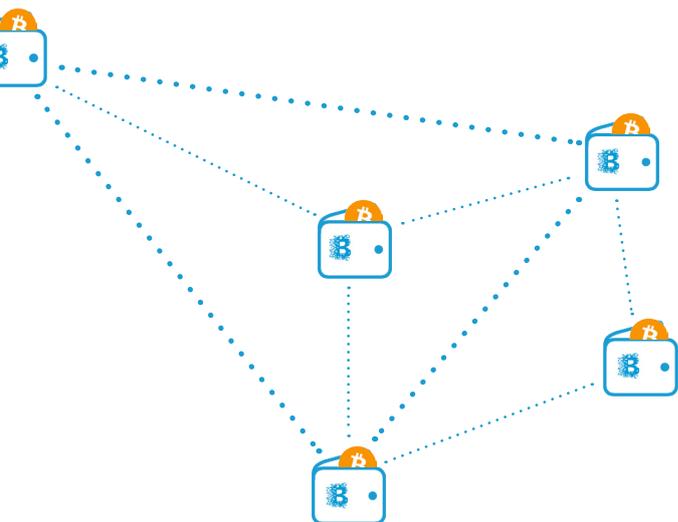
Yet, perhaps there is a confluence of favourable winds pushing Blockchain to popular adoption. On the one hand, regulators are demanding more transparency, greater risk reduction and tighter controls, with significant consequences for non-compliance. On the other hand, there is a growing wave of support for Blockchain technology with bold suggestions that it can deliver radical cost savings and risk reductions. In fact, some are suggesting that the scale of disruption could be as significant as the rise of the Internet in the 1990s.

However, whilst there are many loud claims in relation to the scale of the impact Blockchain might bring, even a cursory scratching of the surface reveals divergent views.

## Blockchain or Bitcoin

It is important to clarify that Blockchain is not Bitcoin, although they are sometimes presented as synonyms. Bitcoin is typically labelled as a virtual or “crypto currency”, which operates independently from any Central Bank. That said, it is possible to find references to Bitcoin as a currency, an asset and a technology.

Irrespective of the classification used to describe Bitcoin, it is actually the underlying technology, Blockchain, which is driving much of the more recent interest.



Blockchain is a decentralised cryptographic record-keeping system or distributed ledger of all transactions that have taken place across any given network within which exchanges have been made. The ledger retains a non-repudiable, sequential record of transactions and as each new record is created it is confirmed by consensus of non-centralised nodes (called miners with Bitcoin) and upon confirmation is connected to the previous block using a cryptographic algorithm (called a hash).

This constant process creates a chain of records, with each record relying on the preceding block. Therefore, even if the chain is broken or hacked only that specific block is affected. If someone were to try and change a block, they would then have to recalculate all the following blocks before another block can be confirmed.

The confirmation of each block can be near instantaneous but there is a bitcoin-specific issue that has arisen, i.e. the Bitcoin blockchain has a built-in hard limit of 1 megabyte per block. A full confirmation on the network requires more than one miner to reach consensus, with 6 often cited as the expected number. Reaching consensus can be quick but at the moment because of the technology limitations imposed by the hard limit the average time for confirmation is around 10 minutes. A 10 minute delay has obvious disadvantages in financial markets where trading is measured in micro or nano seconds, and many multiple trades are happening continuously.

## a divergence of views

This scalability concern, anonymity, plus the links of some users of Bitcoin to questionable or illegal payment activities have together created bad press for Bitcoin. As a consequence, a number of new innovations have started branching away from any association with Bitcoin but still using Blockchain technology.

These new adaptations of Blockchain technology have focused on faster processing as well as being built on closed or private networks specifically for financial markets. They are receiving much scrutiny from some of the largest banks in the

world, including Goldman Sachs, JP Morgan, BBVA, Royal Bank of Scotland, UBS, State Street, Credit Suisse and Barclays, as well as seeing a lot of investment dollars being directed towards Fintech start ups. As recently as September 2015, Nasdaq, Citibank and Visa joined Fiserv, French telecom Orange and Capital One, in investing in Blockchain start up [chain.com](http://chain.com) on a valuation estimated by Forbes at \$150m.

A recent Accenture report (March 2015) stated that, “possibly the biggest opportunity from taking an open approach to innovation is in the area of the Blockchain”. A further report by Accenture (June 2015) stated that “although the potential of the technology is only just emerging, Blockchains will become the critical backbone of the future capital markets infrastructure.”

The extent of these transformational claims are all quite unusual for something so closely aligned to the back office. But it is perhaps because it is so unusual that there is a real temptation to get caught in the hype - that changes to the plumbing could indeed set a large part of the innovation agenda across Financial Services for years to come.

## looking beyond the first wave

### **BUT COULD IT ALL JUST BE NOISE, POSTURING AND RHETORIC?**

In our assessment much of the vocal support for Blockchain seems to be coming from those who stand to benefit directly from the new technology, e.g. Fintech ventures, research houses or specialist consultancies who all have their own agendas. Those who have invested in new ideas or startups are rightly going to look to attract as much attention as possible. However, it is our view that many on the buy-side would seem to prefer to wait for this (albeit fascinating) idea to gain broader market acceptance before they are to be won over.

Some would say they have more important things to do.

On the back of the 2008 global financial crisis many organisations have had to deal with unparalleled amounts of regulatory change. For instance, many buy-side firms operating in Europe have to deal with both European Markets Infrastructure Regulation (EMIR) and MiFID II. Each of these reforms have onerous reporting and compliance obligations, both in volume and complexity. We do not believe it would be too far from the truth to conclude that these regulatory items sit at the very top of almost all their IT systems or operational change agendas. Blockchain is not a near term solution for any of these problems and we would therefore conclude that it would not be on their agendas.

That is not to say that Blockchain technology is not exciting. In their recent “Fintech 2.0 Report”, Santander InnoVentures, Oliver Wyman and Anthemis Group “have internally identified 20 to 25 use cases where this technology can be applied.” Many start up firms are looking to apply Blockchain to: money transfers, trade finance, syndicated lending, collateral management, risk analytics, inventory management and settlement.

Yet, even the most obvious instances where Blockchain might have immediate application, the business case might not be as compelling as first thought. For instance, you would think that any reduction in post execution settlement times would easily allow a sufficiently strong business case to be constructed to justify the early and widespread adoption of Blockchain.

History, however, tells us such moves are complex, wide-ranging and costly. Keep in mind that in the post trade space:

- there are multiple (divergent and different) stakeholders who operate across the value chain, all with their own agendas that are not always aligned fully;
- there are no clear lines of delineation for who actually incurs the investment costs; and
- (given the scale of change) a vast multi-year, wholesale industry-wide transformation programme to implement and coordinate all

the changes would have to be agreed, funded and executed.



The present plumbing is already so interwoven across the length and breadth of the sector that to overcome the inertia needed to develop an industry-wide business case would require Herculean efforts.

Consider that the historical standard settlement of 14 days was in place for hundreds of years up to the 1970s when computerisation finally enabled it to be reduced to T+5, and where it remained up until 1995. The U.S. equity settlement cycle was reduced to T+3 to provide improved straight through processing and lower risk in 1995. The recent move in Europe to T+2 was mandated by January 2015 and in the U.S. the debate about a move to this standard continues.

Some proponents of Blockchain have stated that T+0 is achievable, removing vast amounts of risk from the system as well as eliminating the risk capital caught up in the settlement process. However, we would caution that this needs more than the simple implementation of Blockchain to motivate change.

In 2000, the SIA (predecessor to SIFMA) estimated that the one-time initial cost to the industry to move to T+1 (from T+3) was \$8 billion. More recently, in October 2012, a Boston Consulting Group and DTCC report highlighted that the move from the less ambitious T+3 to T+2 in the United States would require approximately \$550m in incremental investments, whilst the move from T+3 to T+1 would require nearly \$1.8Bn.

Interestingly, the report went on to say that the reduction to T+2 would result in “\$170M in annual operational savings and \$25M in annual return on reinvested capital from Clearing Fund reductions, whereas T+1 would result in \$175M in operational savings and \$35M in return on reinvested capital.” Simply put, the business case to support the reduction to T+1 was simply not strong enough, i.e. the marginal gains to get to T+1 were unattractive.

Following the same logic it should be expected that the business case for a reduction to T+0 would not stack up since the costs would be even higher. Hence, our reluctance to support any shift to T+0.

## **BUT WHAT IF BLOCKCHAIN COULD RADICALLY RECAST THE BUSINESS CASE?**

In their “Fintech 2.0 report” Santander InnoVentures highlight that Blockchain “could reduce banks’ infrastructure costs attributable to cross-border payments, securities trading and regulatory compliance by between \$15-20 billion per annum by 2022.” If that scale of savings is achievable, then the economics underpinning the business case would be fundamentally recast meaning that post trade execution would be a strong candidate for Blockchain – but certainly not before 2020. However, further work is needed to validate the scale of cost and risk improvements possible.

## *from small acorns*

Maybe, just maybe, we are at that point where there is a disruptive technology that can recast the industry by driving profound innovation. Perhaps those favourable winds of change are all blowing in the right direction, at the right time.

The massive regulatory changes initiated since 2008 have greatly impacted business models, and risk management has undoubtedly had a strong impact on front office activities. Many buy-side firms are hitting capital constraints and prime brokers have had to change their models with the result that some buy side firms have stopped trading derivative products.

The implementation of Blockchain driven smart contracts could liberate the risk capital that is tied up by the plumbing.

Regulatory focus is now starting to have an impact on repo activities and securities lending. One of the contributing factors to the financial crisis was the tangled web of pledged securities that were in fact not available but were tied up on bank balance sheets across the industry.

So imagine a world where any change of ownership is impossible to repudiate and is automated upon certain verifiable conditions. Some proponents of Blockchain and smart contracts see this as the future. Delivering such transparency and surety would undoubtedly meet with regulatory approval and would no doubt result in better markets by providing traders with better priced instruments, lower risk and freed up capital.

It is not our intent to doubt the potential of Blockchain but rather to cast it in the realities that it will have to overcome if it is to succeed and be adopted widely in the sector. There are many moving parts Blockchain will have to navigate if it is to go from upstart technology to mainstream platform. Upgrading the plumbing is never easy.

We consider Blockchain to be at the starting point of its journey. There have been a flurry of wild valuations of Blockchain related enterprises but in all reality we are just at the starting point of a phase of acceptance, especially for financial markets. The Internet boom of the mid to late 1990's was characterised by hyperbole, failed business ventures and crazy valuations. Nearly two decades later the Amazons, Googles and Paypals of the world are now essential services. But it took two decades, and a spectacular, speculative bubble and crash before the Internet reached a stage where people understood the technology in a business context, and where the supporting infrastructures had caught up to support sustainable business models. Perhaps this time the plumbing really will change the Financial Services sector. If not in this wave, certainly in the next (or the one after that). ■

## bibliography

The Future of Fintech and Banking: Digitally Disrupted or Reimagined - Accenture, March 2015

Blockchain in the Investment Bank - Accenture, June 2015

The Great Crash, 1929, J K Galbraith, 1954

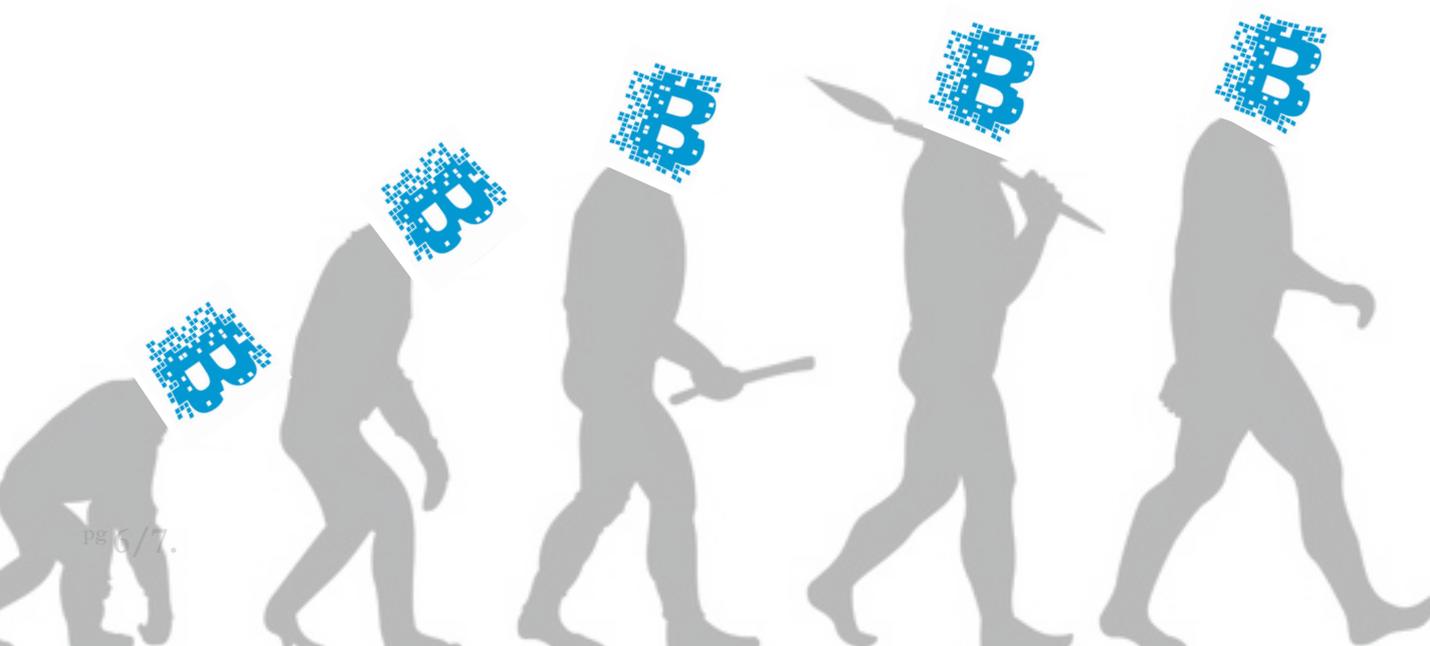
Forbes magazine, September 2015

The Fintech 2.0 Paper: rebooting financial services - Santander InnoVentures, Oliver Wyman, Anthemis Group, June 2015

Cost benefit analysis of shortening the settlement cycle - The Boston Consulting Group commissioned by The Depository Trust and Clearing Corporation, October 2012

SIA T+1 Business Case, Final Report - Securities Industry Association (SIA) (predecessor to SIFMA), Andersen Consulting and The Capital Markets Company, August 2000

DTCC Recommends Shortening the U.S. Trade Settlement Cycle - DTCC, April 2014



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