Retail & Corporate Banking

BLOCKCHAIN: REAL DISRUPTION IN THE FINANCIAL MARKET?

The open-source cryptocurrency protocol (i.e. Bitcoin) was published in 2009 by Satoshi Nakamoto, an anonymous developer (or group of bitcoin developers) hiding behind this alias. The true identity of Satoshi Nakamoto has not been revealed yet, although the concept traces its roots back to the cypher-punk movement; and there's no shortage of speculative theories across the web regarding Satoshi's identity.

Bitcoin spent the next few years languishing, viewed as nothing more than another internet curiosity reserved for geeks and crypto-enthusiasts. Bitcoin started has one of the new era currency before backed by a heterogeneous amount of groups. Through the years, the virtual currency has gained credibility to reach today the spotlight. As an example, several tech giants have started to adopt bitcoins.

While it is usually described as a "cryptocurrency," "digital currency," or "virtual currency" with no intrinsic value, Bitcoin is more than that.

However, the technology on which Bitcoin is leveraging is the real "Big Deal". Indeed, the BlockChain is the system used by the cryptocurrencies to record the transactions. In the last years has gained an incredible popularity and is seen as something achievable and not just visionary as Bitcoin.

Looking Beyond The Hype - Into The BlockChain

So what is BlockChain? BlockChain is the technology backbone of the BitCoin network and provides a tamper-proof data structure, providing a shared public ledger open to all. The mathematics involved is impressive, and thanks to the adoption of specialized hardware to construct this vast chain of cryptographic data makes it impossible to replicate.

All confirmed transactions are embedded in the BlockChain. Use of SHA-256 cryptography ensures the integrity of the BlockChain applications – all operations must be signed using a private key or seed, which prevents third parties from tampering it. The network confirms transactions and this process is handled by miners that are the nodes of the BlockChain. Mining is used to confirm transactions through a shared consensus system, and usually requires several independent confirmations for the transaction to go through. This process guarantees random distribution and makes data alteration hardly achievable.

However, it is theoretically possible to compromise or hijack the network through a so-called 51% attack, which means that a unique source is controlling the major part of the network. By the sheer size of the network and resources needed to pull off such an attack make it practically unfeasible. Unlike many bitcoin-based businesses, the BlockChain network has proven to be very resilient when under threat.

Cryptographic BlockChain could be used to digitally sign sensitive information, and decentralize trust. Other applications are in the areas of smart contracts, escrow services, tokenization, authentication, and much more. BlockChain technology has countless potential applications. However, the potential has not been yet realized due to a fragmented market that is seeking for a platform rather than for ad-hoc application. Hence, the revolution is just around the corner.

So what about that potential? Is anyone taking BlockChain technology seriously?

Potential Uses And Implications Of BlockChain Technology

There are already thousands of developers and dozens of companies experimenting with BlockChain applications. For example BoE is investing 10 £ million in this technology. However, we have not yet seen large scale projects build around BlockChain technology that are not bitcoin or "altcoin" related. IoT could bring BlockChain technology to the masses. Research firms expect the user base to grow at a compound annual growth rate of 17.5% this decade, with up to 28.1 billion IoT devices in the wild by 2020, and revenue passing the $7 trillion mark the same year. The role of BlockChain will be to bring IoT to the next level. For example can you imagine to rent a house and in few minutes sign the contract, settle the payment and have the key available in your mobile?

The potential of this technology is comparable to a previous technology called "internet" in the 90's. Decentralizing trust is a "big thing", allowing the creation of vast and secure networks without a single point of failure. You can think of them as an additional layer of the internet, a layer that can be used for authentication, signage, secure communications and content distribution, financial transactions and further applications.

BlockChain technology could allow developers to outsourcing security and privacy issue at a reasonable cost by releasing the potential of all the applications that are lacking cryptography system or facing high cost to protect their customer's data

The elusive goal for all BlockChain developers is to make the technology just as seamless and not intrusive as internet protocols. For example, how many people realize they are using TCP/IP every time they start browsing the net? This is the ultimate goal - to make the use of BlockChain technology invisible to the end

user. BlockChain technology can really be the basis to build up secure and solid solutions with innovative functionalities and reducing the cost of developing alternative solutions to protect the end user.

BlockChain Technology to revolutionize Financial Services

The interesting aspect of the BlockChain technology for Banks is not (clearly) the decentralisation of collecting and storing the information that may imply a looser connection with their data. Rather, they are interested in finding a more efficient and secure way to do it by cutting the intermediate actors involved in every transaction and dramatically reducing the reconciliation processes needed when using decentralised or private databases. To give an example, using BlockChain could allow to immediately check and verify if the information / asset / ownership declared by the counterpart is real and verified simply by checking the relative block in the chain. In banking transactions, it could mean making the clearinghouse and most of their processes redundant, quite a big saving.

The use of BlockChain based technology is becoming popular also in non-financial related industries, such as ride sharing companies (La'Zooz), home automation using IoT (Chimera), digital archive (UK Gov), but for sure the Financial Services industry looks more likely to benefit from its wide spread adoption.

The main reason is probably that being a relatively new technology it requires massive investments under high uncertainty, given that the outcome is still not determined, and only big players can afford it. Indeed, if we look at the capital market spending over the last years, it is increasing at impressive rates (+50% YtY in 2015) and it is expected to reach $400m by 2019.

The greatest push in this sense comes from the creation of the R3 Distributed Ledger Group, a consortium of over 40 global banks with the objective to study the BlockChain technology, set utilization standards and shared solutions at a global level. Currently, it is known that each bank is working on a specific topic with the aim to continuously share the results to arrive as soon as possible to conclusive ideas and practical application of the shared ledger infrastructure.

If we look at real application of BlockChain solutions in the financial services, virtually all departments and areas in the Financial Services industry could benefit from it. In B2C payments, BlockChain could help reducing the existing latency gap between the approval of the payment and the receipt of the money. For reporting, it would be easier to retrieve information on past transaction. In Operations could help in improving organization and storage of transaction and asset specific data. In the area of IT cards system can reduce drastically the cost and time of migrating from one software to the other one.

However, due to its natural "digital attitude", it is evident that CIB (Corporate Investment Banking) and specifically Capital Markets, in the Bank Division with the potentially greater gaining, such as:

- **Increase efficiency in capital markets:** today transactions rely on the reconciliation performed by intermediaries to ensure that both parties actually have the underlying transaction asset. This process is quite inefficient and time consuming in such a fast moving industry as it requires the involvement of multiple parties (e.g. clearing houses, custodians). Using a shared

ledger it would be possible to (virtually) immediately verify the claiming of the other party without having to rely on an external check, thanks to the possibility to show the entire chains of transaction done for a given asset. This would imply a relevant operational cost saving for banks, also considering the increasing regulatory attention in this sector and how it impacts the banks account (in 2015 the agglomerate cost of fines hit the 215$bn)

- **Increase transparency:** linked to the above point is the potential full visibility over the entire chain, making possible instant check and verification both, as already seen, for the parties and for the institutions. This aspect offers also important linkage to the possibility to collect and easy verify information about a given asset. For example to ensure it responds to all the money laundry prerequisites and can clear all doubts related to the ownership.
  Moreover, being able to immediate verify the holding of the counterpart could help reducing the credit exposure by limiting the amount of assets to use as collateral and reducing the related margin and coverage requirements.
- **Reduce fraud:** Trade finance still operates in much the same way as it has for hundreds of years. There are often at least 5 or 6 parties involved in the buying or selling of a particular item (e.g. the buyer, the buyer's bank, the shipping company, the courier, the seller and the seller's bank). There have been attempts to both standardize and create central utilities in trade finance. Shared ledgers offer some unique advantages.
  A 'partially permissioned' system using smart contracts could enable the secure signing of a digital document, easily recognized and legally bounding by all parties. In addition, rather than simply storing the documents, as is done today, a shared ledger system would record immutable proof of the state of those documents.

Use Cases

What we have seen so far is still very theoretical so it may be worth analysing real use cases, which are solutions already under investigation by the relevant actors and have the greatest potential and scalability to see those apply to the daily activities.

1. Client Relationship Utility

Existing service providers are under intense scrutiny by global regulators and banking laws to disclose ever more details about fees, charges, conflicts of interests, personal data protection and privacy, etc. In order to better safeguard against reputational and regulatory risks, firms could utilize BlockChain technology

when engaging and on boarding clients to deliver critical information about fees, charges, privacy, etc. in a more structured and transparent manner. The solution can involve a private ledger overlay with an enhanced mobile application that reflects the client's accounts and monitors related accounts and transactions to ensure the contractual rules are being followed and applied appropriately. In this way, ensuring the proper level of privacy and reading right, the same structure could be also used to respond to the upcoming requirements of the PSD II regulation, requiring a greater among of customer information to be shared among different actors (banks or institution in general). If for example, different banks adopt a shared BlockChain solution, it would be easier and cheaper to share and collect the same information without the need to replicate the same record for the same customer in the databases of the parties involved.

2. KYC / AML & Suitability / Appropriateness

Big challenges facing existing service providers today involves the on boarding and ongoing maintenance of customer accounts and relationships as it relates to Know-Your-Customer, Anti-Money Laundering and combating the financing of terrorism (CFT). This process results in both significant costs and risks to all existing players that is duplicated across competitors across the global industry. Additionally, the risks associated with "soliciting" clients have become so great that the majority of industry participants avoid solicitation at all costs to avoid regulatory risks causing in reduced fees and a much less interactive client relationship leaving clients feeling dissatisfied. BlockChain allows for the delivery of a market utility based on a "write-once / read-many" model where client backgrounds and investment profiles can be vetted by a single source and shared with parties of interest. This allows financial firms to recognize operational efficiencies, significant cost savings and risk-reductions while allowing them to focus on the overall customer relationship and experience. This also allows the client to "mobilize" their profiles thus allowing them to transition seamlessly across various service providers with very limited personal disruption caused by repetitive processes. If a consortium quasi-private ledger is less than optimal, existing firms could maintain private ledgers that allow profiles to be inter or ex-changed between other private ledgers as/when a client requests to ensure mobility for clients and cost-savings to the industry.

3. Client, Regulator and Intra-Industry Disclosures, Contracts and Reporting

Periodic reporting and ongoing monitoring of contractual obligations between clients, service providers, regulatory bodies and between other peer institutions (professional and eligible counterparties) is a major effort to implement, maintain and monitor. Private ledger that allow the issuance and monitoring of contracts allows for a more streamlined / lower risk process to minimize risks and costs in what is largely a "paper-based" system with disparate rules and methods. Such a system could involve legal documents from Terms of Business, Privacy, Prospectus, Risk Disclosures, Inducements, Client Order Handling, Client Assets and Client Money, Passports, Transaction Reporting, Trade Execution Policies, etc.

4. Peer-to-Peer payment solution

There are currently multiple solutions trying to define a valid P-2-P solution for banks not requiring the creation of a cryptocurrency and thus compliant with the current regulation. The most promising solutions currently under analysis enable almost real-time transaction (<5 seconds) in any currency and market allowing the automated selection of the best Market Maker (MM) based on the preferred conditions. In order to guarantee both parties and minimize the trust barrier for the counterparties and the Market Maker, the underlying escrow system takes the funds for the MM from the sender only after receiving a proof that the receiver has been paid eliminating the risk of illegal fund appropriation. Another great advantage of such system is the ability for the MM to link separated ledgers also using different protocols, thus virtually overcoming drawbacks deriving from different standard utilisation.

Such and more other solutions are under investigations by the main players in the Financial Sector, collaborating and leveraging each other on their own capabilities, sharing solutions to make BlockChain become reality. Some pioneers are also adopting internal BlockChain solutions in order to evaluate concretely the possibility of this technology and its potential implementation

There are still topics to be investigated and defined to ensure a sector-wise adoption of the technology (e.g. Regulations, Storage requirements, Latency limitations) but the solution is concrete and the potentialities are so disruptive that being part of the game is a must.