WHITE PAPER

Blockchain – Takeoff With A New Technology

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Introduction

In recent past, blockchain technology has gained significant momentum and major financial establishments, technology firms and even nations are contemplating whether this technology is revolutionary or not. Many firms have invested in research of blockchain technology in order to understand whether this technology can transform the banking and financial services landscape, and ultimately elevate front, middle and back office efficiencies.

The technology has immense potential to boost transparency for regulatory reporting, mitigate counterparty risk and also increase transparency in pre and post trade processing and thus increase operational efficiency. In this paper, we attempt to connect the dots around blockchain technology, various aspects around this upcoming network, offerings to different market segments and how it could impact financial markets.

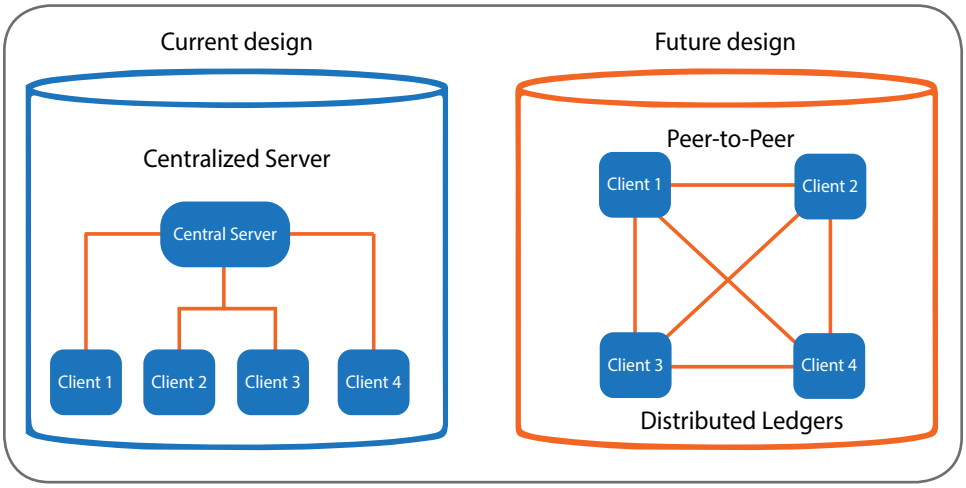
All About Blockchain

A blockchain is primarily a distributed database of the records or the public ledger of all the transactions executed and circulated between the participating parties. All transactions are validated by concurrence of the best part of the participants in the system. Once the information is part of the system, it can never be deleted. The blockchain accommodates a particular and verifiable record of each transaction to have been ever concluded.

In the beginning, this technology was used by crypto-currencies like bitcoin whose success paved way to the notion of blockchains as an instrument of building harmony. With reference to financial markets, blockchain-distributed ledgers empower open-source, decentralized, imitated, shared and cryptographically protected operations that are verified and can be utilized in many financial products.

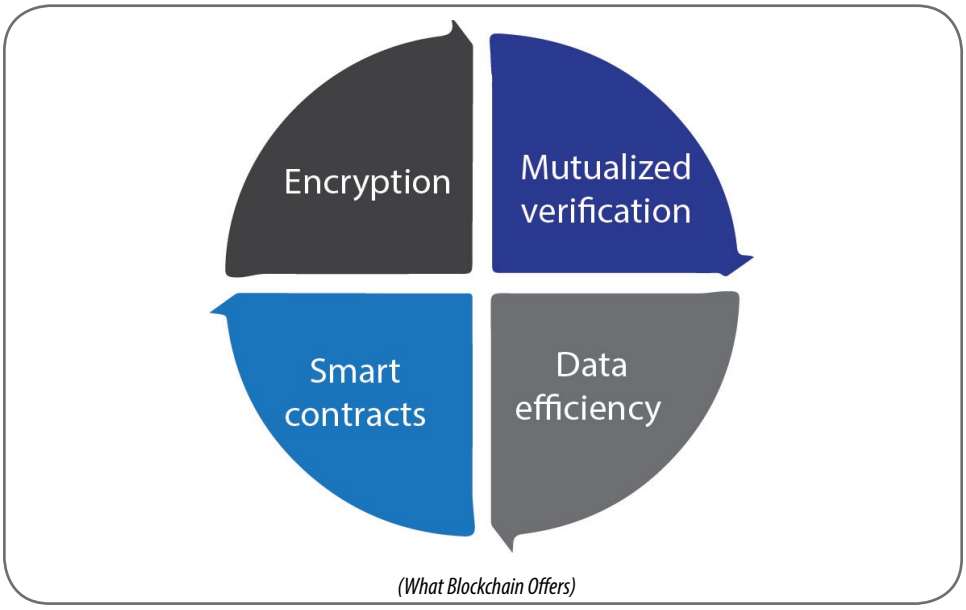
Currently, the way it works is that the banks use a centralized mechanism to access the database and the authentication, being centralized, makes it time consuming and overload on the database to process any data-access requests. Blockchain uses a decentralized method, wherein the database is distributed, which then empowers these requests on the basis of a protocol handled by the network users through a coordinated mechanism.

This approach transfers the authenticity from the institutions to each individual, the data transfer could be expedited with no use of a third party involvement. Blockchain technology thus has the potential to re-engineer front-office operations, simplify complex regulatory requirements, achieve transparency and reduce middle-men interventions.



What Blockchain Offers

- **Encryption:** New encryption, decryption techniques are expected to evolve due to the introduction of new applications.
- **Mutualized verification process:** This protocol establishes that the database is refreshed by all the users who are part of the network as a whole and that the latest data is accessible to all the users, removing the need for centralized database governance.
- **Smart contracts:** Referred to as relatively smaller piece of program/ code to perform remote functionality without having to access the hub every time.
- **Higher data efficiency** is practical with blockchain, making large encrypted data sets available, where these data sets contain information related to any transaction of a counterparty (individual or group).



(What Blockchain Offers)

Key Advantages

- **Widely applicable:** One of the major advantages for Banks & Regulators with the blockchain, as this works on real-time, data enrichment and disputes during trade booking – revealing the credit worthiness, reducing the risk thereby etc., will become simpler and faster.
- **Promotes greater transparency:** As the data is published on (near) real-time basis and is transparent, all the parties in the network could see the same data, enabling the settlement, reconciliations of transactions (cash & positions) faster.
- **Simplifies trade lifecycle** Industry experts are assuming that, with this level of data transparency, the need for affirmations, confirmations and central clearing might be ruled out completely during the settlement process, which would reduce the time taken for these activities to minutes or seconds in some cases.
- **Data consistency & reconciliation:** As all users in the network could see the same information, reconciliations would become far accurate and might lead to 'no-errors' situation, speeding up the end-to-end process.

Blockchain And Capital Market

Equities Market

Once the trade is executed on a trading venue, block chain provides the facility of owning the transaction's completion through encryption which is real-time and the contract is signed almost simultaneously by the involved parties. As said earlier, each party will key-in their private keys to release cash, asset from their account, then transferring the ownership by entering their public keys, once done, this transactions will be published in the distributed ledger to be validated in the next update, along with other updates to both cash and asset ledger.

Asset Management

In the portfolio management world it could look pretty simple. When a new asset/ security is added to the existing portfolio, then the details be updated in the Portfolio ledger. Other fund management related functions can be administered by 'smart contracts'. Asset managers would have visibility to the portfolio and any updates to a particular fund would be updated in the fund ledger. With distributed ledger approach, a transaction not necessarily have to have a sequence, but can be sent to all the parties simultaneously, and the response can be updated into the asset ledger directly with the latest entry.

Derivatives – Exchange or OTC

This is one area where we expect remarkable changes, posing new challenges and new approaches to financial engineering of complex exotic products (highly customized), calculate their pricing, and maintain cash flow information. The assumption here is that each cash flow is maintained in a separate cash ledger of that counterparty.

The contractual obligations can be managed using smart contracts and the asset details will be stored in the asset ledger. In case of events like 'Novation', the counterparties will be able to perform netting with ease.

For collateral, the collateral ledger will have the information with the latest valuations of the collateral, and in a distributed network, the collateral management will work very efficiently providing room for the counterparties to work with multiple clearing corporations. Margining also is expected to become much smoother as the smart contracts can be put in place to generate the margining requirements for counterparties, enabling the counterparties to take decisions based on real-time data.

Regulatory Reporting

With all the other areas of operations getting renovated with new technology, we expect a faster and more accurate information would go to the regulators, helping the repositories, regulators reduce the back-office operations – validations, reconciliations and go-to-market time.

Conclusion

Although, blockchain is at its nascence stage now, technology firms, financial institutions, various other industries, investors are closely watching the developments around the technology, and thinking how to use it in their complex eco system so that the best benefits can be optimally derived. Apparently, this technology has the favourite-baby treatment right now, but as confidence around it grows, it may attract serious attention and has the potential of changing the way traditional systems have worked. In order to achieve the best outcome, appropriate investment for its development is needed by all stakeholders including the regulators.

About the Authors

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Lakshmi Nagaragere is an MBA graduate, currently working as Senior Consultant for Infosys Capital Markets Practice. He has over 7 years of IT experience as Business Analyst, majorly, in the OTC Derivative Regulatory domain & Reconciliation domain. Lakshmi has deeper understanding of OTC Derivative products, Risk Management and has been following all the financial regulations like EMIR, Dodd-Frank, MiFID, BASEL, FCA etc., since their inception.

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Shanky Singh is working as Senior Consultant in Infosys Capital Market Practice, and has around 7 years of IT experience in Capital Markets domain. He has B.E in Computer Science and MBA in Banking and Finance from University of Wales, UK. Shanky has very good exposure in financial derivatives space and reconciliation systems. He has very good understanding of regulatory areas like Dodd frank, EMIR, MIFID and has followed it since its initiation.

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