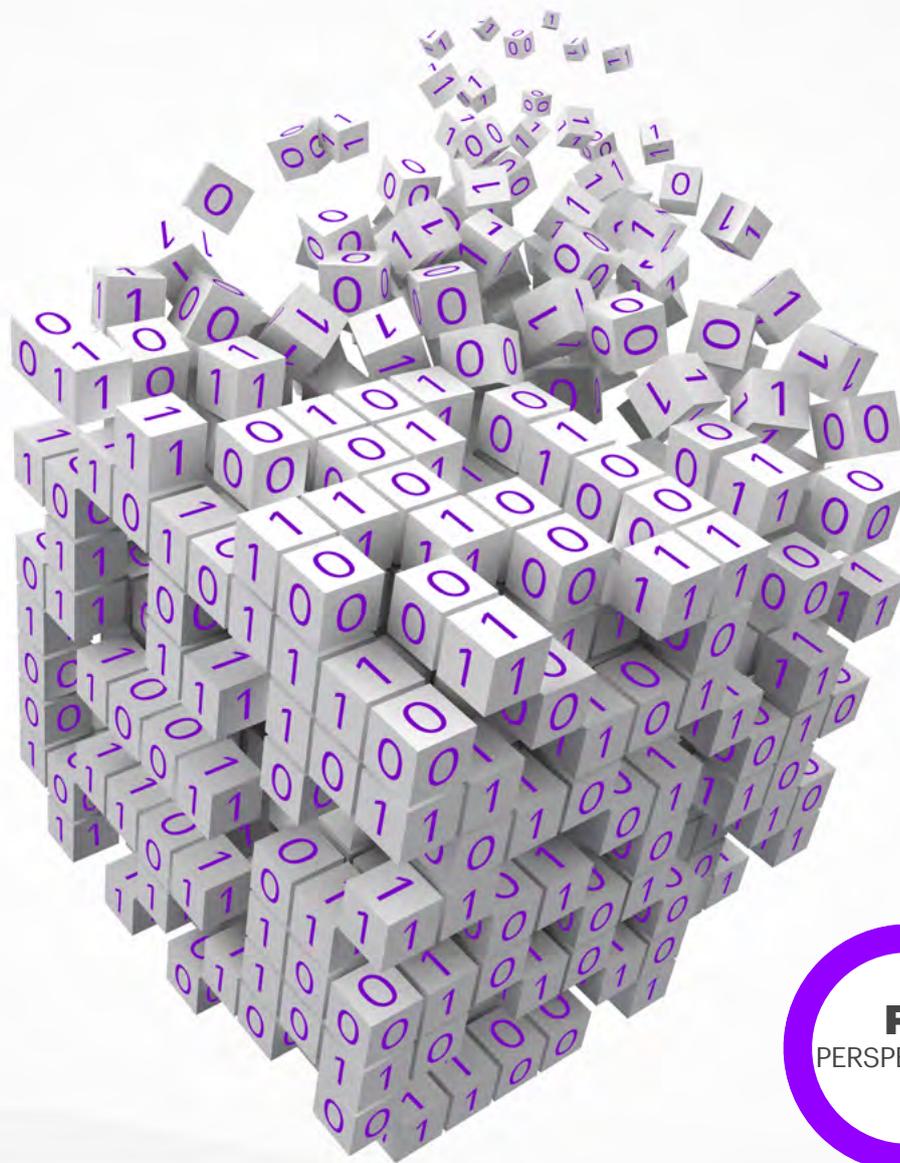




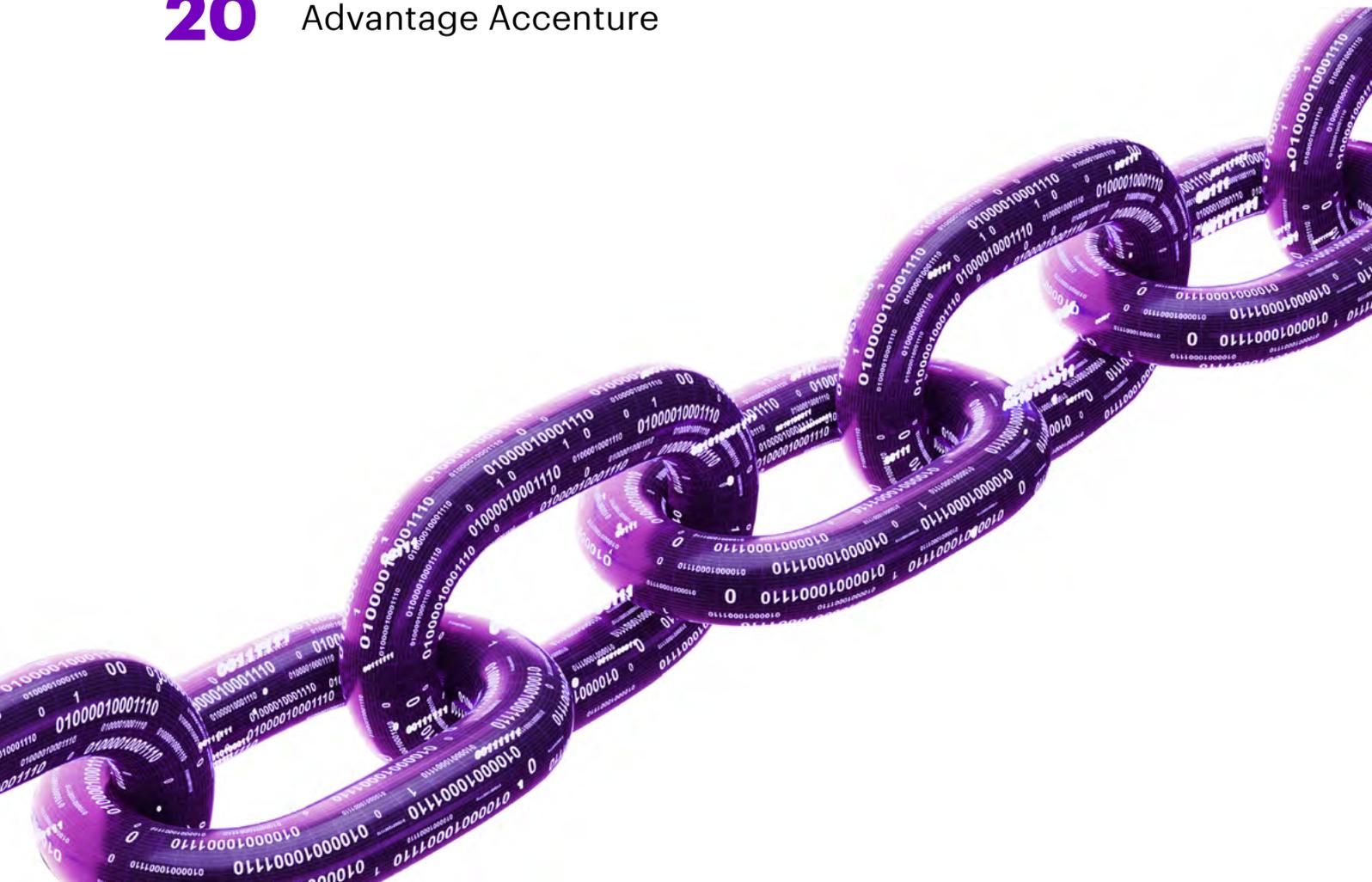
UNTANGLE THE MAZE

**Making corporate actions faster,
simpler and safer with Blockchain**



Contents

- 03** Executive summary
- 04** Corporate actions – a sneak peek
- 05** Negotiating the intricate maze of corporate actions
- 07** Help is just around the corner
- 08** Saving the day with blockchain
- 18** Blockchain is blooming gradually
- 20** Advantage Accenture



Executive summary

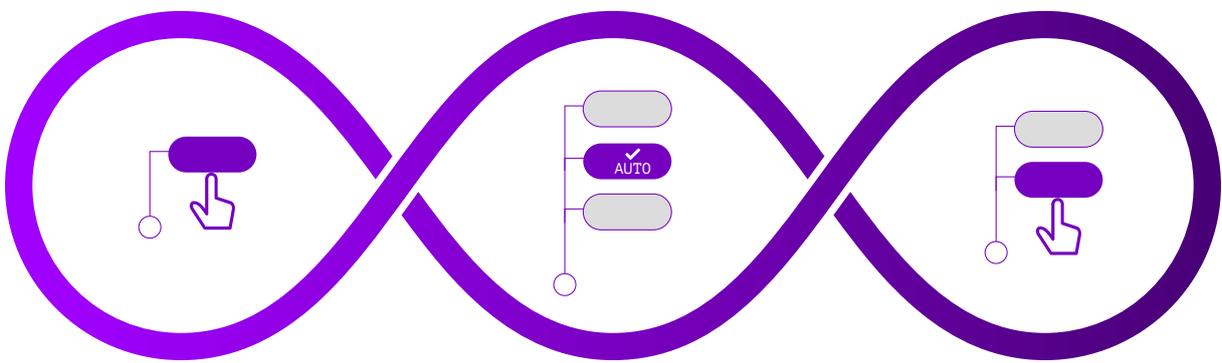
As capital markets expand rapidly and become more digital and interconnected, their critical but complex and time-consuming processes are under tremendous pressure to transform. **Emerging technologies**, such as Distributed Ledger Technology (DLT), are already forcing buyers, sellers and intermediary institutions to foster a high level of operational efficiencies in the trading and post-trade processes.

For **corporate actions** too, the winds of change are right at the doorstep—if not already in. In fact, with highly unstandardized processes, corporate actions cannot avoid the next big transformation for long. Corporate actions are any initiative undertaken by a public company that impacts their securities (equity or debt). A corporate action life cycle consists of long and complex steps that are time-consuming and effort-intensive. With the involvement of multiple intermediary institutions such as custodians, data providers, exchanges, banks, central counterparties clearing houses (CCPs) and central securities depositories (CSDs), there is a high possibility of errors and anomalies creeping in. With the help of blockchain technology, these inefficiencies can be addressed effectively, resulting in **cost reductions, time and effort savings, risk mitigation** and, more importantly, **transparency**.

This point of view explores a corporate action's intricate processes, the complexities and challenges, and how blockchain can transform them to ensure enhanced automation, standardization and transparency.

Corporate actions— a sneak peek

A corporate action is an activity initiated by a publicly listed organization that brings a change to the securities (equity or debt) of the organization, impacting its stakeholders. There are three types of corporate actions—mandatory, mandatory with choice and voluntary.



In **mandatory corporate actions**, the board of directors initiate an action that affects all shareholders of the organization. Participation of shareholders is mandatory for these corporate actions. Some instances of mandatory corporate actions are cash dividends, stock splits, mergers and spin-offs.

Mandatory corporate actions with option are those initiated by the board of directors or assigned decision makers that allow shareholders to choose from a set of options. If the shareholders do not choose any option, the default option is applied for benefit disbursement. An example of such an action is cash or stock dividend option.

Voluntary corporate actions are events where shareholders have the option to participate or abstain from a decision made by the board of directors or decision makers of the company. Voluntary corporate actions include events such as tender offers, optional dividends and rights issues.

Negotiating the intricate maze of corporate actions

Though corporate actions play an important role in the overall capital market operations, processing and reconciliation of corporate action benefits are **complex, rigid, repetitive and labor-intensive**. The corporate action processes commence on the date when corporate actions are announced by the issuer. In case of voluntary or mandatory corporate actions with option, shareholders send their respective responses (instructions) on their decision within a deadline set by the issuer. Once the deadline is over, no further instructions are accepted for processing. This communication exchange is done through Society for Worldwide Interbank Financial Telecommunication (SWIFT) messages. After the deadline is over, the paying agent of the issuer calculates the entitlements for each beneficial owner and sends them to the clearing banks and depositories to process the payment in cash or securities.

Corporate action events also result in the creation of additional transactions initiated by the CSDs for the participants, in case there are unsettled transactions. Processing the corporate action on flow (unsettled trades) is a costly and time-consuming exercise. There are two types of corporate actions on flow:



Market claims

The process commences when benefits of a corporate action do not reach the entitled recipient (or shareholder) as the actual transaction is still unsettled on the record date of the event. The CSD or a CCP, in turn, creates a transaction for this corporate action event to **settle the obligation between the parties** without hampering the underlying transaction.

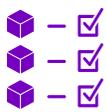
Transformation

When a reorganization corporate action event takes place on an unsettled transaction, the transformation process cancels any unsettled transactions for the underlying security and creates new transactions in accordance to the new terms of the corporate action event.

One of the common risks encountered in corporate actions is the **anomalies or errors in processing voluntary corporate actions and mandatory actions with options**. These errors occur due to discrepancies in the flow of information from the issuer to the investors and vice versa. The complexity increases further when the number of intermediaries between the investors and issuer increases. Multiple intermediate deadlines are actually set by the intermediaries, keeping a buffer time for the consolidation and reconciliation processes. Since the investors place the instructions within the deadline set by the intermediary, and not the issuer, the investors end up losing the opportunity to take a decision. In addition, deadline misses can happen at every level. The liability for such a failure is borne by the market participant (custodian, sub-custodian or CSD), with the participant also incurring the costs of compensating the client accordingly.

Help is just around the corner

Blockchain helps to simplify the entire securities post-trade process, drive extensive transparency, security and efficiency into the operations, and keep all associated parties (buyers, sellers and intermediary institutions) aware of the transactions.



Issuance of securities

Blockchain records the number and amount of securities issued, with smart contracts programmed to implement the business logic and update the issuance.



Securities settlement

Decentralization of transaction validation through nodes is maintained by multiple participants, ensuring usage of appropriate private key to complete the transaction.



Collateral management

Smart contracts defined by counterparties are used to enforce collateral arrangements to identify pledged securities that are not transferred to other participants.



Cyber resilience

Blockchain improves cyber resiliency by using centrally managed database systems to process financial transactions.



Asset servicing

Ad hoc smart contracts are applied for automatic collection of taxes at the right applicable rate due to higher efficiency or lower processing time of the transactions.

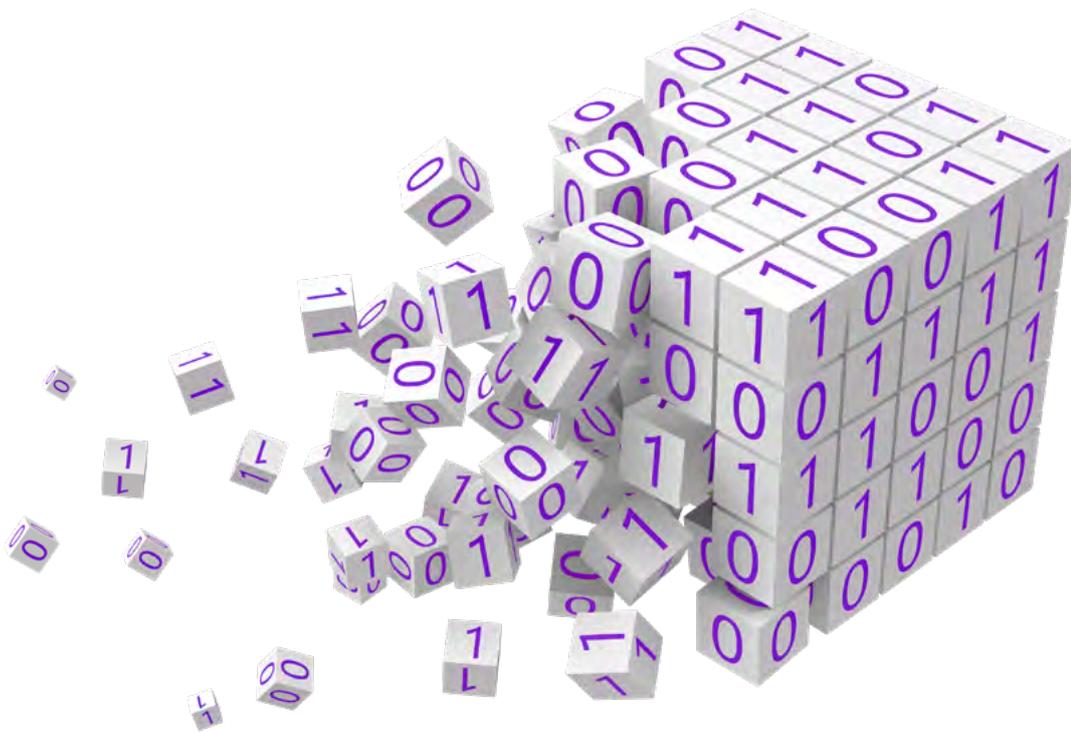


Data protection and professional secrecy

Public blockchains are used as a public notary registry to time stamp documents and ensure the authenticity of financial transactions between parties that do not fully trust each other.

Saving the day with blockchain

In financial markets, transactions are executed quickly, often instantaneously. Settlement of the trades are also expected to be done instantly instead of waiting for T+2, T+3 days. Similarly, clients expect corporate action benefits to reach their hands at the earliest. However, the inherent complexities and involvement of multiple intermediaries make it time-consuming. Any processing error can result in huge financial losses for the benefactors.

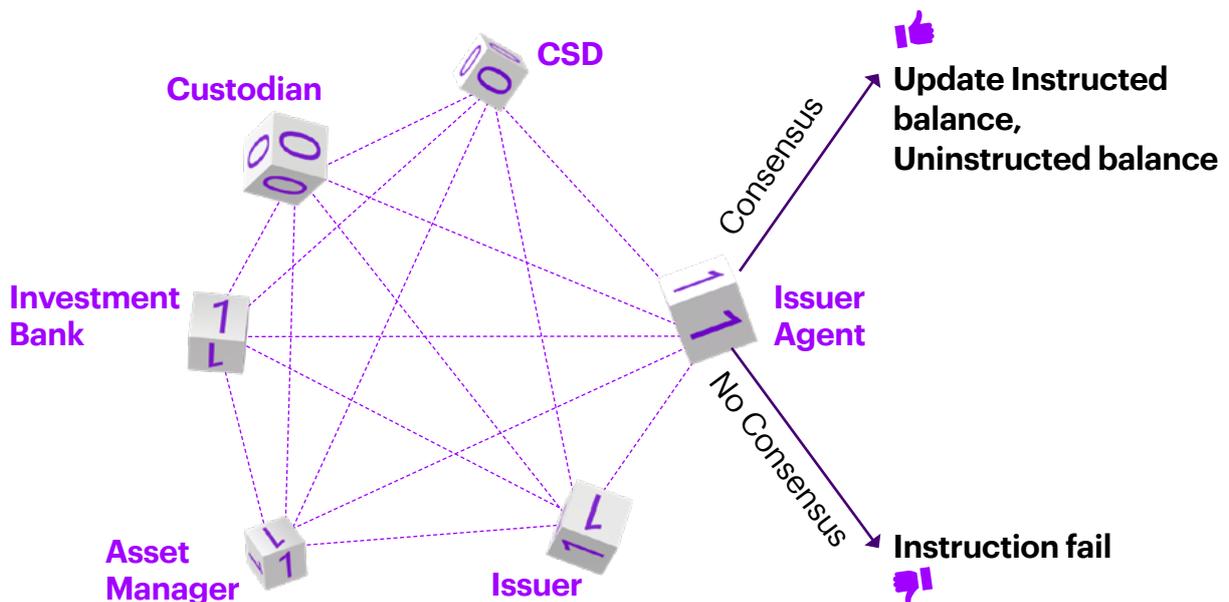


1. Disrupting the normal

When blockchain is coupled with an application that captures and stores corporate action announcements in a structured format, it ensures that the data is from a verified source and is time stamped. However, when intermediaries are allowed to augment the data before it is

processed further, the original corporate action can change due to follow-up announcements. The modified data can quickly lose its provenance as data vendors share it with clients or package it with other data, making the process difficult to automate. [Blockchain helps in storing](#)

Blockchain technology applied to election/instruction processing



the corporate action announcement from verified data source and ensure authenticity of the information.

Another area where blockchain solutions foster significant efficiencies is the voting process.

The issuer can create the voting event and assign the eligible quantity to the custodians, who can then assign the eligible quantity to the investors. The sum of the quantities assigned to investors will be the cumulative eligible quantity. Investors can vote and the issuer can view the voting progress and statistics on the blockchain platform on a real-time basis.

All the intermediaries processing a shareholder's instructions for election (a decision taken by a shareholder) are linked through a blockchain setup. Instructions that successfully receive consensus

from each node for the voluntary/mandatory with choice corporate action are updated accordingly. In case a consensus is not received, the instruction for election of the shareholder is considered as failed.

Blockchain in election processing eliminates the error-prone manual consolidation efforts at multiple stages, thereby minimizing deadline misses, and saving costs and time. The technology ensures data is verified during the execution of instructions. A distributed ledger-based election processing reassures parties at every point in the process that their information is accurate, up-to-date and unchanged. This also eliminates the operational risk encountered at the intermediaries, guaranteeing the accuracy and timeliness of the information exchanged between the issuers and the investors.

2. The gains and pains of adopting blockchain

It is understood that even though blockchain could add value to the different layers of the post-trade process, certain risks and challenges need to be considered as well. Here are some of the key potential benefits and challenges of leveraging blockchain in these operations:

Benefits



Cost reductions

A distributed, shared and synchronized record of security ownership helps in reducing reconciliation and data management costs significantly.



Time savings

Blockchain helps in reducing the duration of the settlement cycle to T+0, while also eliminating the associated settlement risks.



Direct ownership

Blockchain enables investors to have direct ownership for their securities, reducing legal and operational risks and intermediation costs, resulting in more transparency.





Traceability and transparency

Tracing the history of flow of funds or any ledger changes is easy since all distributed ledger records are immutable.



Real-time regulatory monitoring

Regulators can now monitor the cash flows and position flows in real time and estimate areas where risk measures need to be applied or removed.



Enhanced security and resilience

A decentralized system is more resistant to a single or multiple node attack, enables faster recovery, and uses cryptographic signatures and encryption to enhance security.



Efficient settlement process

Consensus among nodes and digitally signed transactions ensure settlements are processed fast and efficiently.



Reduction or zero SWIFT cost

Blockchain replaces SWIFT message exchanges used in settling international transactions traditionally, thereby reducing transaction costs.



Proxy voting

Blockchain eliminates the tedious flow and error-prone consolidation of the data/information from the issuer to the custodian in a traditional proxy voting (voluntary corporate action) process.



Election processing

Blockchain removes liabilities in case of processing failures, reduces error-prone consolidations and tedious reconciliations, and powers efficient handling of election instructions and real-time settlement of corporate action proceeds.

Challenges and risks

It's not always smooth sailing with blockchain. Here are some key challenges to be considered before going full throttle on the technology.



Depository function

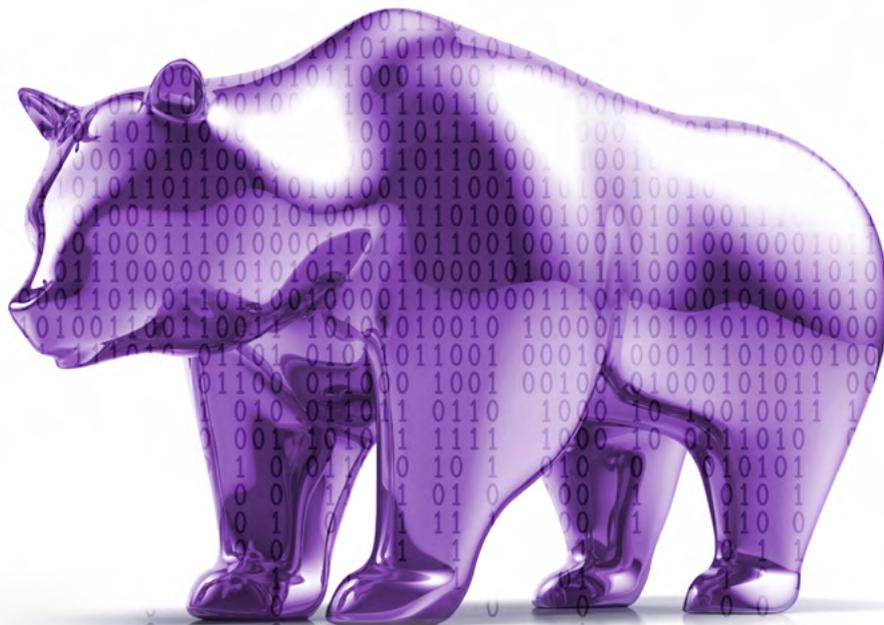
Blockchain migration requires ledger integration with legacy assets. Though digital tokens can be used here, a trusted entity must still guarantee a faithful exchange between tokens and assets.



Delivery versus payment (DvP)

DvP is a form of settlement that guarantees the transfer of securities only after payment is made. When blockchain interacts simultaneously with cash accounts to facilitate DvP, it does so in two ways:

- Settlement done through digital currency.
- Interaction with external cash accounts through an interface.





Settlement finality

Though blockchain ensures a settlement is irrevocable, the consensus mechanism is not necessarily “final.” This is due to forking, where blockchain diverges into two potential paths forward. Though both paths converge eventually, settlement finality needs a “certainty” when the trade is final and complete.



Legal ownership

A settlement or a transfer of ownership must always have a legal certification. Whether a blockchain entry can be considered a legal proof of ownership remains a pertinent question.



Confidentiality

Blockchain makes a transaction visible to multiple participants regardless of the rules implemented to reach consensus, thereby sometimes raising concerns about confidentiality and security.



Identity management

Since CSDs and CCPs manage identity management centrally, it is mandatory that right processes are in place to protect identity and access management effectively from security attacks.



Scalability

Securities settlement must process large number of transactions in a secure and reliable way, with scaling capabilities when required. However, such cases can restrict the choice of validation protocol to be used, limiting the transaction speed considerably.



Interoperability

To ensure efficiency and transparency in electronic trading, all stakeholders (infrastructure providers, vendors and market participants) must cooperate and establish robust blockchain standards, interoperability protocols and governance.

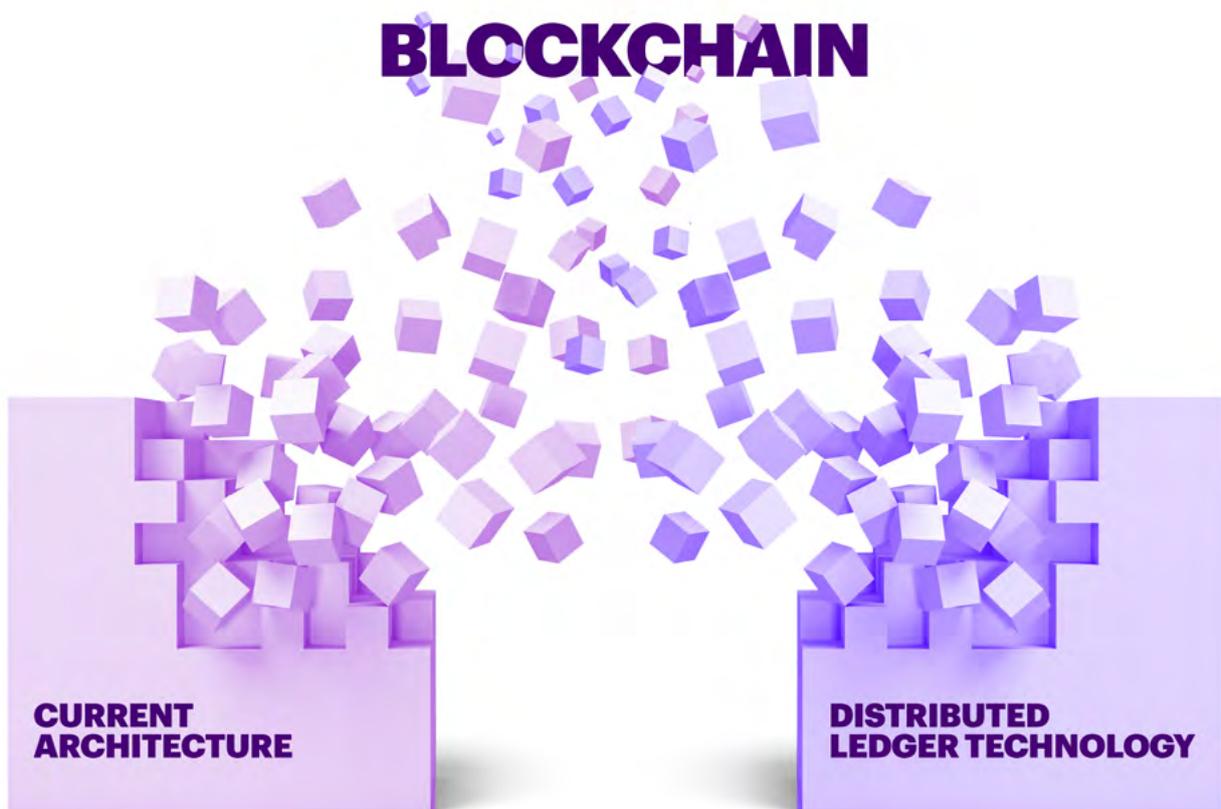
3. A giant leap or measured steps?

Adopting blockchain must be a well-thought out decision, taking into consideration all the possible pros and cons of technology, capability limitations, costs and the impact it would have on business operations.

Big bang or phased implementation?

The journey toward blockchain implementation would be a **step-by-step reorganization** rather than a big bang adoption. The arrangement is simply too complex, big and important to adopt a big bang approach. Hence, it is required that individual use cases are identified, and solutions are developed in a **phased manner**. Initially, these use cases need to be adopted within

or alongside current architecture—that is, they could be stand-alone but should be able to coexist with the traditional model. Here are some potential stand-alone use cases. There is no doubt that once the stand-alone use cases gain popularity, they will open avenues for blockchain technology to be used in unexpected ways.



Some potential stand-alone use cases

E-voting for shareholders

Secure participation by shareholders from remote locations

Examples:

1. Nasdaq adopting blockchain to facilitate shareholder votes
 2. NSE India testing e-voting on blockchain for key shareholder voting events
-

Tracking securities lending

Blockchain platforms can assist short sellers and lenders in tracking the values and status of borrowed exchange-traded funds (ETFs), as well as trigger the issuance of collateral through smart contracts if the short seller is under too much debt (overleveraged)

Example:

Nasdaq Linq Blockchain Ledger technology validates and tracks the purchase of securities

Facilitating dividend payments

Blockchain offers the ability to issue payments in a self-executing manner, increasing timeliness and reducing the cost and effort required to execute dividend disbursement

Example:

TMX Group and Natural Gas Exchange (NGX) is testing blockchain systems for payment delivery and processing

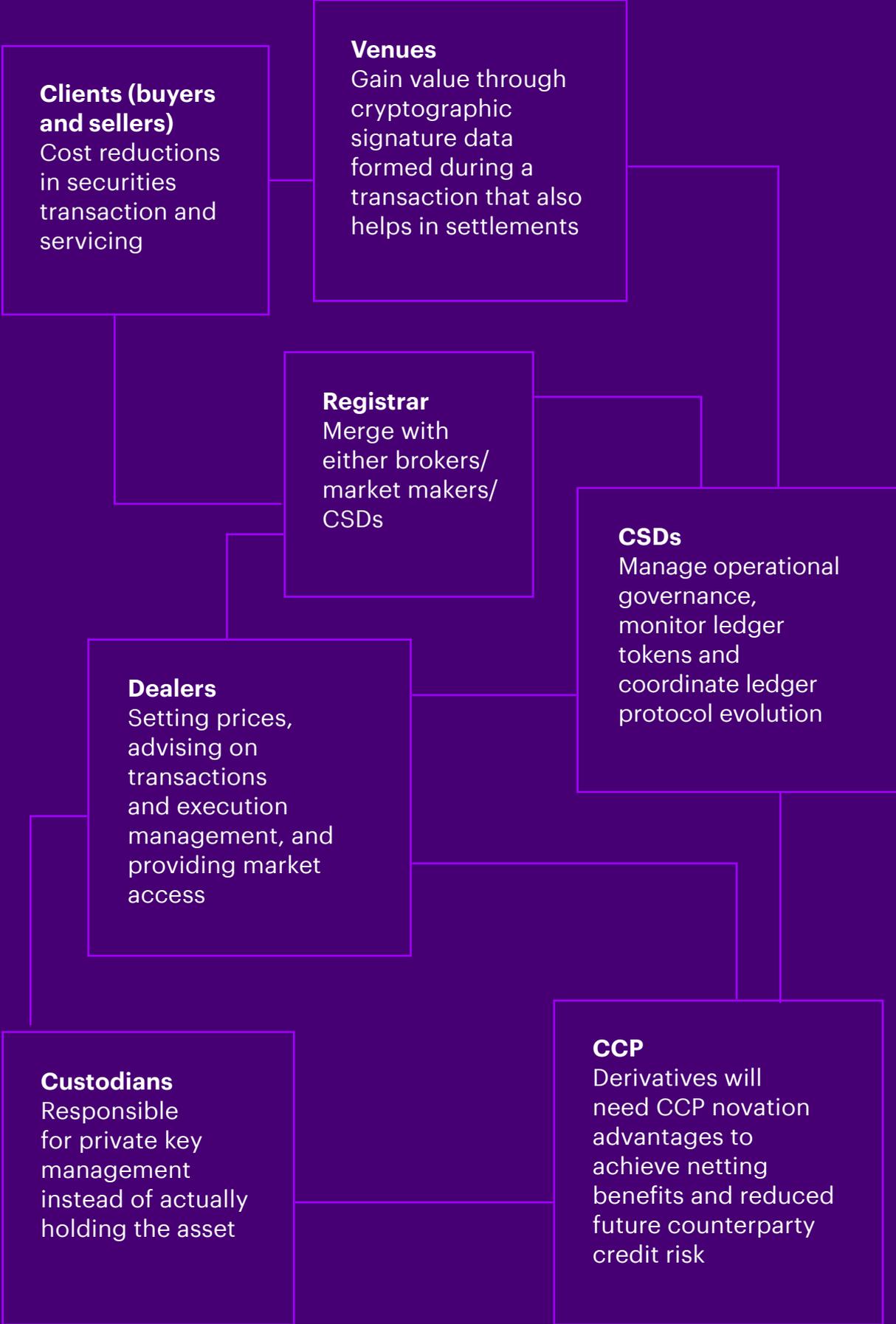
4. Implementing the right asset class

In the short- to medium-term, simpler assets such as fixed income and equities can be managed digitally over distributed ledgers. However, in the long run, it is pertinent that **smart contracts** be used to model the behavior of derivatives, structured products, security borrow/loans, and more. Though the over-the-counter (OTC)

derivative market is suitable for the implementation of blockchain, regulators need to be cautious of losing oversight in case **speculative bubbles** (commonly known as economic bubbles) increase rapidly. Here are the factors that contribute to choosing an asset or market in which DLT can have immediate benefits:

 <p>Settlement of unallocated asset is capital-intensive for banks</p>	 <p>There is a need to track ownership</p>	 <p>Need to clear and settle trades in close to real time</p>
 <p>Market is small in size and not complex</p>	 <p>Market recognizes its needs to change</p>	 <p>Government/regulators keen to use technology</p>
 <p>Need to cut trading costs</p>	 <p>Reduce number of intermediaries that are geographically agnostic</p>	

Key beneficiaries



Blockchain is blooming gradually

Thanks to blockchain, several alternative businesses have emerged in the trading landscape, such as issuance of private equity and e-voting for shareholders. One such prime example is the peer-to-peer securities lending. Many financial institutions have started to use blockchain to streamline the securities lending (especially equity finance) processes by creating their own securities lending/peer-to-peer lending pool. By doing so, all transactions can now be recorded and stored in an immutable and auditable manner, offering a high measure of transparency that regulators want to see in the financial industry. Here are some real-life examples that will help us understand the implementation better.

State Street Corporation, a leading American financial services and bank holding company, built a blockchain-based solution to automate its security lending processes and enhance transparency in its financial reporting.

Deutsche Börse Group (DBG), a German securities marketplace organizer, and **HQLAx**, a European fintech company, developed a blockchain-powered solution in March 2018 to enhance the interoperability of securities pools residing in various settlement systems and locations.

The Chilean Stock Exchange and **IBM** built the world's first securities lending blockchain solution in May 2017 to significantly reduce fraud, operational errors, processing time and costs in stock market operations.

Credit Suisse, a Switzerland-based investment bank and financial services company, and **ING**, a Dutch multinational banking and financial services corporation, used blockchain to execute their first live securities lending transaction worth US\$30.48 million. This initiative has helped the bank to drive significant improvements in regulatory transparency, minimize systemic and operational risks, and optimize capital management.

Advantage Accenture

Accenture is a proven partner for delivering solutions for integrating blockchain technology. The Accenture Blockchain capability has delivered more than 20 blockchain projects globally. Currently, Accenture is actively involved in more than 50 blockchain engagements. Accenture's blockchain practice brings together global resources from the company's Strategy & Consulting, Interactive, Technology and Operations services.

Expertise



Industry experience

- Deep industry knowledge to lead use case definition and exploration
- Working with 2,000 global clients to solve their business needs using blockchain use cases
- Robust ecosystem to assess blockchain adoption
- Consult clients to help them scale with strategy, proof of concepts, pilots and enterprise rollout

Thought leadership

- Accenture professionals have authored several points of view that explore the transformational aspects of blockchain.
- Accenture is one of the founding members of The Hyperledger Project, an umbrella project of open source blockchains and related tools started by the Linux Foundations.

Partnerships



Start-up alliances

- Active partnership with leading start-ups through an open innovation process
- Alliances with leading blockchain start-ups, such as Ripple (real-time gross settlement system) and Digital Assets Holdings (financial technology company)
- Collaboration with numerous start-ups at Accenture Technology Labs

Innovation accelerators

- Access to more than 35 blockchain start-ups in a sandbox environment by leveraging Microsoft Blockchain-as-a-Service on Azure cloud platform.
- Partnership with several clients through blockchain innovation accelerator service.
- Accenture holds two patents in blockchain technology, two patents have been submitted and two patents are under development.

Technology



Technology Labs

- Accenture has deployed an internal blockchain Innovation Lab that focuses on research and development activities.
- Accenture has implemented leading start-up solutions on client-priority use cases.

Prototypes

- Cross-border payments (solution that manages transactions across different countries)
- Peer-to-peer payments (solution that allows transactions among peer groups members)
- Energy marketplace (solution that implements blockchain in the energy sector)
- Atomic transaction (solution that allows transactions to occur together or disallows to occur at all)

Authors



Mallikarjun Sb

Managing Director,
Capital Markets,
Accenture Technology
Center in India



Debi Prasad Datta

Senior Manager,
Capital Markets Practice,
Accenture Technology
Center in India



Bhuvana Karthik

Manager,
Capital Markets Practice,
Accenture Technology
Center in India

References

- <https://www.slideshare.net/hedaurahul/clearing-and-settlement-derivatives>
- <https://www.nseindia.com/education/resources/download/ismr2009ch5.pdf>
- https://www.researchgate.net/publication/5041082_Derivatives_Clearing_and_Settlement_A_Comparison_of_Central_Counterparties_and_Alternative_Structures/download
- <https://www.theotcspace.com/2016/04/05/over-counter-otc-derivative-primer-3-clearing>
- <https://www.google.com/url?q=https://www.chicagofed.org/~media/publications/economic-perspectives/2014/3q2014-part2-ruffini-steigerwald-pdf.pdf&sa=D&source=hangouts&ust=1554148390914000&usg=AFQjCNF1kCjVAVxx5jg9510-ZO1IN7eoPA>
- <https://www.sec.gov/news/public-statement/digital-asset-securities-issuance-and-trading>
- <https://thetokenist.io/digital-assets-v-digital-securities-whats-the-difference/>
- <https://www.experfy.com/blog/what-future-role-for-csds-in-blockchain-post-trade-environment>
- <https://www.bankofengland.co.uk/~media/boe/files/fintech/chain.pdf?la=en&hash=CC72FA14A79CE7276C6A59654D524E0429118B4C>
- <https://www.experfy.com/blog/what-future-role-for-csds-in-blockchain-post-trade-environment>
- <https://medium.com/@prathamahajan/blockchain-and-trade-lifecycle-8833c9bf53d1>
- <https://www.bankingtech.com/2017/11/implementing-derivatives-clearing-on-distributed-ledger-technology-platforms/>
- <https://www.ey.com/Publication/vwLUAssets/ey-blockchain-dlt-and-the-capital-markets-journey/%24FILE/ey-blockchain-dlt-and-the-capital-markets-journey.pdf>

About Accenture

Accenture is a leading global professional services company, providing a broad range of services in strategy and consulting, interactive, technology and operations, with digital capabilities across all of these services. We combine unmatched experience and specialized capabilities across more than 40 industries — powered by the world’s largest network of Advanced Technology and Intelligent Operations centers. With 513,000 people serving clients in more than 120 countries, Accenture brings continuous innovation to help clients improve their performance and create lasting value across their enterprises. Visit us at www.accenture.com

Disclaimer: This document makes descriptive references to trademarks that may be owned by others. The use of such trademarks herein is not an assertion of ownership of such trademarks by Accenture and is not intended to represent or imply the existence of an association between Accenture and the lawful owners of such trademarks.