MASTERING DLT ADOPTION

BALANCING REGULATORY COMPLIANCE, BUSINESS GROWTH, AND CONSUMER DEMANDS

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Written for consideration of Texas Legislature and Enterprise Leaders by: Kelly Massad & Dan McMorris

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Understanding the Need

In the face of increasing pressure for transparency from Executive Order 14017, legislative requirements for digital disclosure such as NIST 800-161, and consumer demands for evidence supporting various company marketing claims, organizations are exploring Distributed Ledger Technology (DLT) and blockchain as potential solutions to enhance visibility and collaboration. However, enterprise adoption has been slow due to misconceptions about the technology, data property and privacy concerns, and a lack of industry standards. This portion of the white paper addresses these challenges, presents potential enterprise use cases, and explores the business value that can be unlocked through the adoption of DLT.

Blockchain and Distributed Ledger Technology (DLT)

DLT can be classified into three types: public, private, and permissioned. The most well known are public blockchains, like Bitcoin and Ethereum, which are open to anyone. Less well known, but more applicable for enterprise adoption, are private and permissioned DLTs such as Hyperledger Fabric, R3's Corda, and Quorum that restrict access to a select group of participants. Regardless of the type, the main value of a DLT or blockchain is the concept of immutably capturing details of various transactions on a ledger. Whether the details of the transaction need to be made public, kept private, or shared only with those that have permission determines what type of DLT is needed. Additionally, the nature of the use-case transaction can also help determine what DLT or blockchain is most appropriate. Bitcoin's value is almost exclusively financial, while Ethereum and other smart-contract platforms essentially are a distributed virtual computer that can automatically perform pre-programmed workflows depending on the outcome of a given step in a series of transactions. Ultimately, each type of DLT has its advantages and disadvantages, depending on the use case and specific requirements of the enterprise, and a combination of these technologies is often used to address various business use cases effectively.

Data Privacy and Data Property Ownership

Companies looking to comply with Executive Order 14017 and NIST 800-161 must find a way to collaborate with regulators, consumers and value-chain partners that protects sensitive data. With some help from regulators, DLT and blockchain can be a tool for this digital disclosure.

Securely and efficiently sharing data is a key benefit of DLT and blockchain that unlocks significant value for enterprises. But this new functionality comes with concerns over compromising an organization's intellectual property if done improperly or on the wrong DLT. New logic tools exist that can help address these concerns technically, such as zero knowledge proofs which enable parties to definitively answer questions without revealing underlying data, but enterprises need additional support from regulators in order to effectively apply this technology and realize its full potential. Given 1) the lack of clarity and resulting confusion over what constitutes a digital asset versus a digital security versus a digital commodity, 2) the fact that public, private, and permissioned DLTs and blockchains have varying levels of functional transparency, and 3) the observation that organizations are not prone to putting sensitive company data on a node operated by a competitor, regulators should classify data as digital property rather than attempt to define and enforce new aspects of data-privacy as they apply to these complex, non-standard platforms and situations. Doing so will allow states to leverage existing tort law to protect businesses, and such protections will encourage enterprises to deploy this new technology more quickly.

Industry Standards and Consortia

Standards, such as those established for product classification using barcodes by GS1, results in a consistent experience of consumers buying a product at any retail outlet. Such standardization drives efficiency gains, profitability enhancements, and job growth that is realized by entire industries. While standards exists for a select data set within consumer goods at retail, such standards do not exist for capturing the broader data needed to be gathered and shared with consumers and regulators through the supply chain, within manufacturing, or applied to services.

While traditional business-to-business integration is possible through mechanisms like Electronic Data Interchange (EDI) and Application Programming Interfaces (APIs), and these technologies have defined aspects for each transaction, the application is not uniform and so consistency is lost. DLT and blockchain offer a new approach to solving this problem. By integrating with a network rather than individual businesses, all participants can benefit if data and processes are standardized. States are encouraged to support and adopt legislation that convenes industry players, facilitates collaboration, and delivers uniform adoption of DLT and blockchain technology, such as DAOs (Distributed Autonomous Organizations). Enterprises are encouraged to participate in such industry consortia and collaborate with peer organizations to define and implement standards across industry sectors that will drive efficiency, profit and job creation while delivering transparency.

Best Practices for Enterprise Adoption of DLT

Aside from the general steps outlined above, in order for enterprises to maximize the value created by implementing DLT, companies should consider these additional guidelines for best practices:

1. Digitize the supply chain, not just the product/service. Most deployments of DLT and blockchain for enterprise use have first digitized the product or service being provided. This creates a digital container of information to which other value chain partners through the supply chain can contribute various data, however this approach has limits. The effectiveness of this approach is limited to the extent that a mandate for action will be followed by partners. The best practice is for enterprises to digitize their facilities, brands, employees, and companies in addition to products and services. This approach recognizes that each enterprise will ultimately control their own DLT or blockchain node, keeps all sensitive data resident to that deployment, and facilitates data sharing with other entities by linking products and services together.
2. Avoid, or limit, data contributions to another company's DLT/blockchain. Any data contributed to a partner's DLT/blockchain node will be controlled by the partner. Therefore, enterprises must be careful how they respond to requests from partners to contribute data. In some cases, it may be appropriate to refuse the request if it compromises data property ownership, or if data property rights cannot be guaranteed. The best practice is for enterprises to contribute private and permissioned data only to trusted nodes. This approach quarantines sensitive data to known networks.
3. Engage DLT/blockchain in a way that keeps business operators in charge of deployment and operation. DLT and blockchain is a new technology, with very specific code needed to write smart contracts. But it is the business subject matter experts that best understand the application of the logic the smart contract is intended to represent. Best practice is to deploy DLT and blockchain such that the business operators do not have to understand or write the smart contract code, and in the best case can leverage the daily operation of the business to engage. This approach keeps the control of DLT close to the subject matter experts driving business value.

Enterprise Use Cases for DLT

With data defined as property, and standards established by consortia, DLT and blockchain can be applied in Texas across various industries, such as retail, real estate, energy, ranching/farming/mining, healthcare, hospitality, finance, banking, construction, entertainment, personal computing, semiconductors, defense, commercial aerospace, manufacturing, and more. Potential use cases within these industries include:

- Chain of Custody
- Digital Labels
- Provenance
- Regulatory Disclosure
- Demand-Supply Optimization
- Traceability
- Parts Return, Recalls
- Remote Inspection
- ESG Validation
- Supplier Certification

- Evidence Evaluation

These use cases can address legislative requirements, business needs and consumer demands for evidence supporting marketing claims, such as non-Uyghur cotton, non-Asia source code and products, true organic farming practices, clear legal title to property, and full supply chain traceability, all while protecting an organization's and an individual's rights.

Next Steps

Adopting Distributed Ledger Technology in enterprise settings can significantly enhance transparency, collaboration, and operational efficiency in response to the growing legislative requirements and consumer demands for evidence-based marketing claims. However, challenges like misconceptions about the technology, data privacy concerns, and a lack of industry standards must be addressed for successful implementation.

By focusing on a cross-functional approach that prioritizes brand, operations, and supply chain teams, and utilizing privacy-enhancing technologies such as zero-knowledge proofs, enterprises can navigate the challenges associated with DLT adoption and realize the benefits. Furthermore, participation in industry consortia and collaborative initiatives that establish and maintain standards can unlock the full potential of DLT broadly across multiple sectors.

With the increasing pressure for transparency, traceability, and compliance with legislative requirements, such as Executive Order 14017 and NIST 800-161, now is the time for organizations to explore the benefits of Distributed Ledger Technology and unlock its transformative potential across industries.