Building the Roadmap for Blockchain in the Enterprise: Capabilities, Opportunities & Challenges
Introduction

Blockchain is among the most exciting technological advances to emerge in a generation — “on the lips of every business leader,” as Gartner says. Yet for all the attention, blockchain remains a digital phenomenon that is as puzzling as it is promising — something that’s talked about far more often than it’s understood.

Less a technology product than a technology ecosystem, blockchain involves recording data and transactions concurrently across a wide digital network — public or private — in ways that are transparent, chronological and immutable once recorded. The potential benefits to enterprises from this kind of distributed ledger technology (DLT) can be immense.

Unfortunately, reaping those real-world business benefits involves teasing out the value from what’s become — even by tech industry standards — an outsized helping of hype and mystique. This eBook is a roadmap to leverage blockchain in the real world of enterprise business — designed to help executives understand blockchain’s promise, pitfalls and potential applications for the organization.
Looking Past Blockchain Headlines in Search of Enterprise Value

“Blockchain” first gained wide notice as a technological approach developed anonymously under the pseudonym Satoshi Nakamoto (to this day, nobody is sure whether Nakamoto is a man, woman or group of people). It’s often mentioned in the same breath as bitcoin, since the distributed ledger technology (DLT) that undergirds blockchain helped solve the double-spending problem around cryptocurrency.

In reality, there are different blockchains that are applied to cryptocurrencies and many other novel uses like crowdfunding and even new forms of journalism. The challenge for the enterprise is to see past these mercurial headlines and probe for more serious, secure, real-world business applications. The roadmap to enterprise value involves addressing the right permissions, security, interoperability, compliance and a host of other considerations required to implement and optimize a blockchain system in production environments at scale.
Benefits of Distributed Ledger Technology

Leveraged correctly, blockchain — or, more to the point, the distributed ledger technology associated with it — can be hugely valuable for the enterprise in its ability to document records or transactions across wide communities of interest. Distributed ledger technology helps lower costs and increase the speed and visibility of transactions by reducing reliance on a centralized server, database, authority or intermediaries.

Private and Permissioned blockchains, which are what businesses typically would use, will still require a certain level of expertise in security to implement a robust and secure blockchain ecosystem. When correctly implemented, blockchain can illuminate a “single source of truth” across a wide range of consumers or participants. This is hugely helpful in situations like emergency response, clinical trials, supply chain and other realms where diverse inputs feed a collective societal or business goal. Not surprisingly, blockchain is especially promising for IoT, where it can be used to securely manage the digital identity of IoT devices.

Blockchain also enables “smart contracts” — self-executing contracts with the terms of the agreement between two or more parties being directly written into lines of code. In doing so, contract participants can come to a common agreement on what defines a successful transaction and then execute when agreed upon metrics are met.

These are just a few examples of how blockchain can improve efficiency, visibility, auditability and cost management — but there are several hurdles in the way before blockchain can be realized consistently and securely in enterprise settings.
Barriers to Blockchain as Enterprise Solutions

Blockchain is an exciting new technology that unlocks lots of possibilities — but also lots of potential for misunderstanding, and misapplications from rushed implementations that don’t properly address real-world enterprise concerns around security, legacy technology, interoperability, integration and a host of other practical and strategic considerations.

Furthermore, the implementation requires reorienting the IT department to grasp key aspects of blockchain-related security, smart contracts law, value exchange and decentralized governance — all within the context of commercial architectures.

There are also cultural barriers that involve getting used to the transparency and unvarnished view into business environments and stakeholder operations. Consider the example of supply chain example: Two different suppliers can now collaborate to better understand how each other’s priorities differ under a system that allows them both to get the insight they need. This is valuable, but it involves levels of transparency between companies that may take some getting used to.

Ultimately, this is still a nascent technology that is growing and changing — one that must be harnessed with care before trusting it in the enterprise. And not all of the potential applications of blockchain will actually become a reality. In the end, it will be the business value of a use case that will drive adoption.
How Unisys is Getting Blockchain Ready for Prime Time

Unisys is uniquely positioned to pioneer the application of blockchain in the enterprise. We have deep experience with IT infrastructure and understand how a new technology will impact the business and broader operations at the scale of even the largest global enterprise.

As part of this, we’re working to better integrate it into enterprise IT infrastructures and erase the pain points and hurdles to organizational readiness. Much of the to-do list involves creating the right private, permissioned environments for blockchain, like a Hyperledger-Fabric or private Ethereum.

We have several focus areas for our efforts:

- **Security is the most important factor.** Unfortunately, security is often taken for granted, or as an afterthought. In reality, there are many ways for security to be compromised around blockchain, including how it’s connected to enterprise systems and how keys can be stolen.
- **Speed is a critical** — Transaction rates in public blockchains have traditionally been too slow, on the order of seven transactions per second. Unisys is helping orient enterprises to private DLT environments that can execute much faster, at a thousand or more transactions per second.
- **Keeping up with maturity is a big challenge.** As blockchain continues to evolve and shift, Unisys is among the few with the expertise to track trends and advances in enterprise-grade implementations to ensure that your blockchain platform remains on the cutting edge and that your organization never has to contend with technological obsolescence.

On all these fronts, Unisys brings its deep expertise to bear on the blockchain challenge. Both our Zero Trust security architecture — preferred by government and commercial organizations to secure sensitive systems — and our experience in solving the challenges of mission-critical computing are key enablers of a secure deployment of a blockchain technology.
Tips for Enterprises Considering Blockchain

With all this in mind, here are some things any large enterprise should evaluate when thinking about when, where and how to leverage blockchain — including partner considerations:

**Make sure your partner has expertise not just in blockchain, but also in your specific business environments** — In healthcare for instance, it’s hard to trust someone who says “we’re blockchain” but is unfamiliar with HIPPA or other regulatory elements. The same is true in other sectors where blockchain may be of use — including customs/border control expertise for global supply chain; FDA compliance acumen for Pharma; or deep knowledge of government policy for federal implementations.

**Don’t let your initiative introduce yet another layer of complexities or vendor-specific dependencies into your existing operation** — When implemented properly, blockchain technology enhances your existing platform by removing silos and replacing intermediaries with a more efficient and secure peer-to-peer network.

**Make sure your approach addresses the entire lifecycle of enterprise implementation and use** — You should be able to set up a customized blockchain that is well integrated through several stages. As an example:

- You should be able to quickly set up a proof of concept for the purposes of initial testing and evaluating ROI.
- Wherever ROI is demonstrated, the next step is to engage in an iterative process to implement.
- You may need to adjust the organizational structure or operational focus of your IT group to align with blockchain systems and processes.
- There should also be ongoing updates and improvements to make sure you don’t fall behind as the technology continues to mature and evolve.

**Leverage a microservices approach** — A microservices architecture will help your blockchain solution be easily integrated with other emerging technologies such as AI, biometric security and advanced analytic engines.
Conclusion

Blockchain has the potential to disrupt countless industries and how organizations operate within them. The technology is real and it is being evaluated seriously by many enterprises and government agencies to enhance and streamline operations. These efforts continue and, in many ways, the book is still being written on blockchain in the enterprise.

Unisys has had the unique vantage point of helping write that book through our work in vetting and helping optimize its capabilities for enterprise settings. The more we learn about blockchain — both its promise and how to overcome the pitfalls — the more we’ll be able to continue bringing blockchain-fueled ROI to many more large public and private organizations.