



WHITE PAPER

# //// BLOCKCHAIN TECHNOLOGY THAT'S READY TO ROLL

Blockchain is dominating digital transformation conversations within financial services and other sectors seeking to overhaul high-inertia/high-cost processes. However, there is a significant gap in what it's capable of becoming and what's possible now.

Read how your organization can utilize Blockchain today.

**Mark Castiglioni**

*Client Solution Manager*

**Barry Feirstein**

*Client Solution Manager*

July, 2017



Pressure is mounting on CTOs, CIOs and Heads of Innovation to implement Blockchain solutions without evoking what the marketing world calls FUD — fear, uncertainty and doubt about a new product or technology — throughout the organization. Today's conversations regarding Blockchain are often diverted to concerns about enterprise security, the lack of uniform standards, cryptocurrency, cybertheft, clandestine hacking, the so-called “dark web,” etc.

That said, Blockchain represents a significant technological sea-change that will alter markets when properly applied. It has serious implications to vertical markets in which disintermediation, smart contracts and other bilateral transactions are prevalent. And it's slated to have a major impact within financial services and multiple other industries, including shipping, manufacturing, government, legal and logistics.

Blockchain is sure to work through its loftier concerns over the next several years; consider the evolution of open source, operating systems, guaranteed messaging and ecommerce over the internet. Standards and accepted practices for new technology tend to emerge over time, even if answers come late in the opportunity cycle.

Our thought leadership is focused on the permutation of Blockchain known as Distributed Ledger Technology (DLT). DLT features practical applications and use cases that are safe, manageable and likely to result in major cost savings, as well as reductions to counterparty risk.

From a macro perspective, the “how, when and where” of exchanging currency for goods via Blockchain is still evolving. Rather than get distracted by hype and concerns about digital currency, we immerse ourselves in DLT and its practical applications to today's business problems.

Here, we'll discuss the evolution and some of the best features of Blockchain and DLT.

## Cryptocurrency to broad Blockchain uses

Eight years ago a **white paper** by Satoshi Nakamoto described a peer-to-peer distributed electronic cash system that could enable direct online payments between parties without the need of financial counterparties. The paper described the concept of a cryptocurrency called “Bitcoin” that didn't need to be issued from a central monetary authority (such as USD or EURO) but could rather be “mined” or created through software capable of solving complex mathematical puzzles or proof of work calculations. The software could enable both the creation of new Bitcoins and the processing of transactions within the Bitcoin system.





Bitcoin itself was a very new concept and disruptive approach to currency, but the solution for a shared ledger of transactions was the truly disruptive innovation. That solution, Blockchain, can now process peer-to-peer transactions across the world via distributed computers.

## Encrypted data chains means greater security

How does it work? Blockchain acts as a shared, distributed and immutable (unable to be changed) ledger for recording assets within a given network. The transactions are processed in a block "container" that is linked within a chain (thus the name).

To maintain integrity, each block incorporates a cryptographic hash (a large number such as a hexadecimal) as well as the hash from the previous block and other sets of verified transactions, strengthening the security of the previous block and the chain as a whole. Those safeguards ensure no changes can be made to the transactions therein without clear signs of tampering. In addition, each transaction is processed through agreed-upon consensus protocols that analyze both the validity of the participants and the disposition of the asset(s) to be transferred.

## Distributed Ledger Technology means autonomy

A main advantage of Blockchain is that its ledger of blocks and transactions enables all participants to work with a single version of truth - thanks to Distributed Ledger Technology (DLT). The methodology records and shares each transaction once to create an immutable record for all participants.

Unlike past and present corporate IT systems, DLT provides businesses with complete autonomy and ownership of the digital systems and data they use to automate their business functions. No longer must they work within siloed systems; they can now establish true, transparent digital relationships with their partners using shared ledgers of transactions. Neither the ledgers nor the rules governing their updates and readability are owned by single corporations; rather, partner networks known as consortiums decide all that.

## In what environments does Blockchain work best?

When considering Blockchain as a solution to a business problem, critical aspects include the scale of the network in question, the participants' relationships, the need for high performance and the need for confidentiality. Blockchain is often a good fit when the following are already in place:

- **Distributed information systems:** There is no single, centralized location for data. Each participant has an entire copy of the ledger and its transactions; the systems supported are distributed to avoid dependence on any single organization for functionality.





- **Consensus-driven autonomous solutions:** A Blockchain-based system is only as strong and secure as the consensus model maintaining the integrity of the stored data. As such, Blockchain technology can only offer immutability and auditability when the underlying assumptions are correct and the consensus model can protect the system under failure or adversarial conditions.

## How a business might optimize Blockchain/DLT

One of the most popular uses to date is for smart contracts, which represent a significant improvement over traditional agreements that require bilateral approval before being drafted on paper. Smart contracts exist independently without the need for a middleman or human arbiter, whether it be for repeated validation or for physical presentation of any kind.

Let's say you are a wealth management firm that's onboarding a prospective client by gathering personal information, legal identifiers, original artifacts, security authorization, etc. Failure to accurately verify such information could lead to delays in doing business, poor client experience — or worse, regulatory violations that carry significant fines and penalties.

Using Blockchain/DLT, the client could immediately grant you access to those and other credentials. Despite coming from various sources (or Distributed Ledgers), cryptographic keys accompanying the client data could automatically validate and guarantee its authenticity, setting you up for the next stage of business negotiations.

Similar arduous and/or time-consuming workflow hurdles that can be cleared through such automation:

- Know Your Customer (KYC)
- Credit Reporting
- Legal Entity Identifier (LEI)
- Digital Vaults and Document Transfer
- Personally Identifiable Information (PII)
- Office of Foreign Assets Control (OFAC) clearance
- Source of Funds
- ACH Information
- Internal Control Workflow and Audits



## Blockchain terms and trends of which to be aware

- **Decentralized autonomous organizations (DAOs)** — This term refers to the organizations formed within (and abiding by) the automatically enforced rules of smart contracts.
- **Public vs. permissioned vs. private Blockchains** — Blockchain systems can be accessible to the public, to select stakeholders or to just one user depending on the need for anonymity, immutability, efficiency and transparency. Public Blockchains such as Bitcoin are open-source systems for purposes such as allowing consumers to safely buy goods online. Permissioned Blockchains are commonly used by businesses in the financial industry, while private Blockchains are often built for specific commercial purposes.
- **Digital Rights Management (DRM)** — Companies such as Verizon are experimenting with using Blockchain to enable DRM platforms as storage of the hundreds of millions of sensitive user data sets it must legally retain. Such solutions are expected to reduce millions of dollars in costs now associated with maintaining centralized databases and servers.
- **Escrow contracts** — Blockchain enables smart contracts that are essentially trustless, meaning they can be validated, monitored and enforced by all parties involved with need of a third-party intermediary. Rules may dictate certain aspects of a contract can't be enacted without user approval, unlike traditional contracts, which require escrow agreements between the participants and an escrow agent. In some cases with escrow contracts, data-gathering "oracles" are built in to help monitor and verify prices, performance or other factors that could impact the agreement.
- **Legal record retention** — Many in the legal industry appreciate Blockchain because it's so difficult to hack, doesn't rely on a centralized authority and represents a reliable digital ledger for everything from property records to UCC filings, court records, fund transfers, chains of custody, contracts and legal opinions.
- **Digital identity** — Blockchain can act as a portable, secure, globally available store of each person's personal data so they can prove their identity at any time without need for third-party verification.
- **Electronic Data Interchange (EDI)** — Businesses are pairing Blockchain technology with the electronic data interchange systems used for long periods of time in supply chain management. As IoT technologies improve logistics processes monitoring, Blockchain can maintain records of data flows for multi-party visibility. And smart contract technology is streamlining exception handling as well as introducing new forms of automation to the supply chain process.
- **Blockchain and healthcare** — The technology is slated to provide much-needed relief in providing efficient and secure systems for managing medical records, pre-authorizing payments, settling insurance claims and performing and recording similarly complex transactions in tamper-proof ways.
- **Intellectual property rights** — The entertainment industry expects to significantly reduce transaction and rights management costs with Blockchain systems that can help enforce IP rights. Being able to better track the territory, duration and media type of any given license, for example, should reduce disputes.

## Consider the following when adopting Blockchain

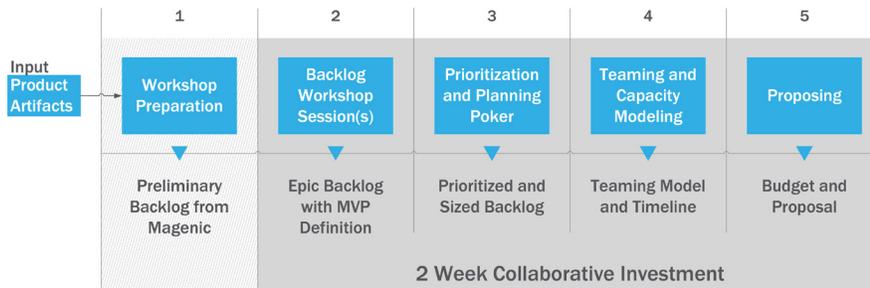
- **Contractual issues** — With smart contracts, the code enacted is treated as law by the users. Analysts predict users will increasingly hire skilled coders who can act as “lawyers” in tailoring smart contracts to their needs. However, others argue there’s no way to draft a smart contract accounting for all possible contingencies, especially in complex commercial scenarios. Questions include how disputes should be resolved, how consumers should be protected and how the contracts should be linked with the physical world.
- **The need for consortiums** — For a DLT solution to be optimized, organizations must form consortiums to establish the Blockchain’s capability and provide the framework for legal contracts between all members.
- **Risk sharing and ownership** — Another benefit of Blockchain is that it can bring together diverse groups of people to pool resources. For example, in a shared-economy approach to insurance, users could pool their adjustable payments to reflect rising and falling risk levels.
- **Regulatory issues** — Still unanswered are questions about whether smart contracts should be further regulated and enforced, and how the privacy of Blockchain users can be reconciled with EU data protection regulation. In response, analysts predict the advent of a semi-automated service that will lower the contractual risk of fraud and lack of legal capacity.
- **Removing infrastructure from business solutions** — When using DLT, users choose how much distributed infrastructure they wish to share with partners, ranging from fully centralized to fully decentralized (i.e., public vs. permissioned vs. private). The more decentralized the infrastructure, the less trust is required between participants; however, decentralized systems tend to be less efficient in terms of computing power because of additional verification requirements.

The sooner you can identify and create real world minimal viable product (MVP) solutions that begin to address a practical business problem like onboarding, the more you will realize the efficiency, security and financial soundness of DLT as framework for solving long-standing client experience problems.



## How can Magenic help design and build a Blockchain MVP?

Many companies need help navigating the new and abstract territory that is Blockchain technology. Magenic can specifically engage with your firm using a value driven, agile approach to Blockchain technology that starts with a two-week backlog grooming and roadmapping workshop process to collaboratively define a quick hit MVP sprint plan that delivers an implementation of a blockchain solution that addresses the conditions presented in this paper.



## About Magenic

Magenic is a leader in business technology consulting. We understand the challenges companies are facing and can apply the right technology to transform their business.

Visit us at [magenic.com](http://magenic.com) or call us at **877.277.1044** to learn more or to engage Magenic today.

## Moving forward with a Blockchain MVP?

The initial investment in producing a Blockchain MVP is usually covered by Magenic. Coming out of the two week process, you will have a detailed timeline, resource plan, budget and aligned understanding of what will be delivered when and for what benefit. These outputs have proven to be critical in obtaining executive buy-in to move forward practical business solutions that innovatively use distributed ledger technology.



This white paper is for informational purposes only. Magenic Technologies, Inc., makes no warranties, express or implied, in this summary. Other product and company names mentioned herein might be the trademarks of their respective owners. © 2017 Magenic Technologies Inc. All rights reserved.

