

Practical Blockchain: A Gartner Trend Insight Report



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Blockchain is evolving from a digital currency infrastructure into a platform for digital transformation. This report helps CIOs understand its use, and whether the hype is true about how it can help with transaction costs, integration, technology readiness, business-model creation and efficiency.

Opportunities and Challenges

- Blockchain technologies offer a radical departure from the current transaction and record-keeping mechanisms and can serve as a foundation of disruptive digital businesses, for both established enterprises and startups.
- Blockchain technologies enable a standard trust architecture that allows untrusted entities (both human and nonhuman) to undertake commercial transactions and exchange value with a diverse range of assets.
- Many blockchain technology and foundational concepts are immature, poorly understood and unproven in mission-critical, scaled business operations.
- Blockchain technology has operated outside traditional legal, accounting and institutional governance frameworks, threatening long-standing working practices.

What You Need to Know

CIOs involved in building and expanding a digital business must be aware that:

- Blockchain is an alternate computing model that uses distributed and decentralized computing networks to potentially offer greater levels of security and lower costs than traditional methods.
- Blockchain offers a new way to manage trust between untrusted parties by supporting an immutable record of transactions and other types of value exchange.
- Many blockchain technologies are not fully developed, are untested, and will require early adopters to accept significantly increased levels of operational risk over the next five to seven years.

- The vendor ecosystem is neither cohesive, nor fully formed, and consortia are jockeying for attention with professional services firms and startups requiring careful, multilayered evaluation of the market.

Insight From the Analyst

The Blockchain Revolution Promises to Touch Every Industry



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"The blockchain revolution began with bitcoin, which used distributed ledger technology to foster trust in a currency and transaction mechanism not backed by any government or traditional institution."

Visionary entrepreneurs and CIOs building and expanding digital businesses are keeping the flow of transformation going. Their goal is to reinvent the very nature of commercial activity by removing intermediaries and enabling more-fluid business processes to be conducted in diverse ecosystems. This report explains the practical realities facing CIOs, business leaders, developers and other potential adopters of blockchain technology.

This is not just a new technology to improve existing transaction mechanisms; blockchain provides greater levels of security, it creates new forms of assets, and it offers unquestionable provenance of anything conveyed over the network. Financial services was the first industry sector to recognize the technology's promise, particularly its potential for cost reduction (for intercompany reconciliation, for example). However, blockchain technology has applicability to many business areas including government, healthcare, education, manufacturing, energy and supply chain.

The anticipated benefits from these use cases raise a conundrum, in that embracing the efficiency and cost benefits of blockchain may also contribute to an enterprise or institution's demise. For example, and perhaps ironically, while financial services firms (and any other entity performing a centralized intermediary role in an industry) see the benefits of improving a variety of processes — from trade finance to securities settlements, as well as transaction and records management — they also face the ultimate threat of total disintermediation from the implementation of a decentralized, distributed P2P network that potentially makes the traditional centralized business model irrelevant. Similarly, technology vendors are faced with the threat of significant stack rationalization as the distributed network and applications, and shared, secure "golden record" of data, potentially negate the need for convoluted transaction reconciliation, databases, and assorted other technologies.

Many business leaders, however, have read magazines or seen TV reports about blockchain without fully grasping what it is, and what impact it might have on their businesses, industries and even

society. CIOs have a role to play in providing guidance in business language that allows the risks and opportunities to be properly understood. Because blockchain is not a tactical response to a standard technology problem, clear strategic foresight must be developed — and often enhanced with multiple business-use-case proofs of concept (POCs). CIOs that invest in studying and experimenting with this emerging technology will be in a better position to address their boards and senior executives with greater clarity and with a stronger fact base.

It is critical at this stage in blockchain's evolution that hype is recognized, and the emergent nature of the technology and its capabilities are clearly understood. Moreover, much of the discussion about blockchain focuses on the technology itself, and diverts attention away from the radical societal and business shifts it could enable (through the introduction of smart contracts that execute without human intervention, the facilitation of thing-to-thing, thing-to-person and thing-to-business relationships, or changing the nature of commercial identification and transaction authentication, for example).

This report explains the practical realities facing CIOs, business leaders, developers and adopters of blockchain. It is the first of two Trend Insight Reports that will be published in 2017, giving clients a firm basis from which to start business conversations, develop their thinking, and refine their approaches to using blockchain as the foundation for building and enhancing a digital business and creating a new civilian infrastructure.



Executive Overview

Definition

Blockchain promises genuine long-term potential for the global transformation of economies and industries that, over time, will lead to the era of the programmable economy (see "Maverick* Research: The Programmable Economy Is the Ultimate Destination for Digital Business"). A practical approach to blockchain development demands a clear understanding of the business opportunity, the capabilities and limitations of blockchain technology, a trust architecture, and the necessary skills to implement the technology. Blockchain technology addresses use cases across every industry and government.

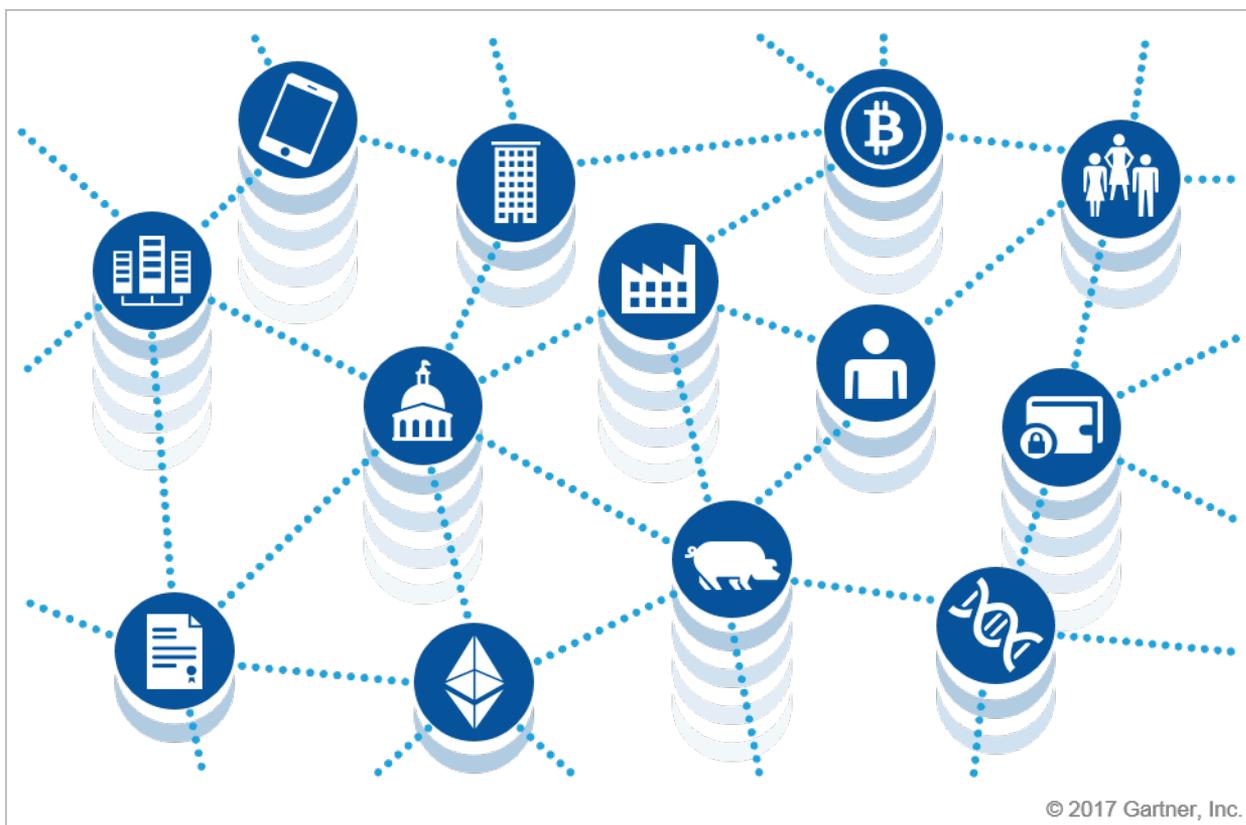
Blockchain's key attributes and potential benefits are:

- Improved cash flow
- Lower transaction costs

- Asset provenance
- Native asset creation
- New trust models

In the first-generation model, blockchain is a type of distributed ledger in which value-exchange transactions (in bitcoins or other digital tokens) are sequentially grouped into blocks. Each block is chained to the previous block and immutably recorded across a peer-to-peer network, using cryptographic trust and assurance mechanisms. Depending on the type of ledger and implementation, transactions can include programmable behavior.

Figure 1. Blockchain Instills Trust in all Parts of a Transaction Chain



Source: Gartner (March 2017)

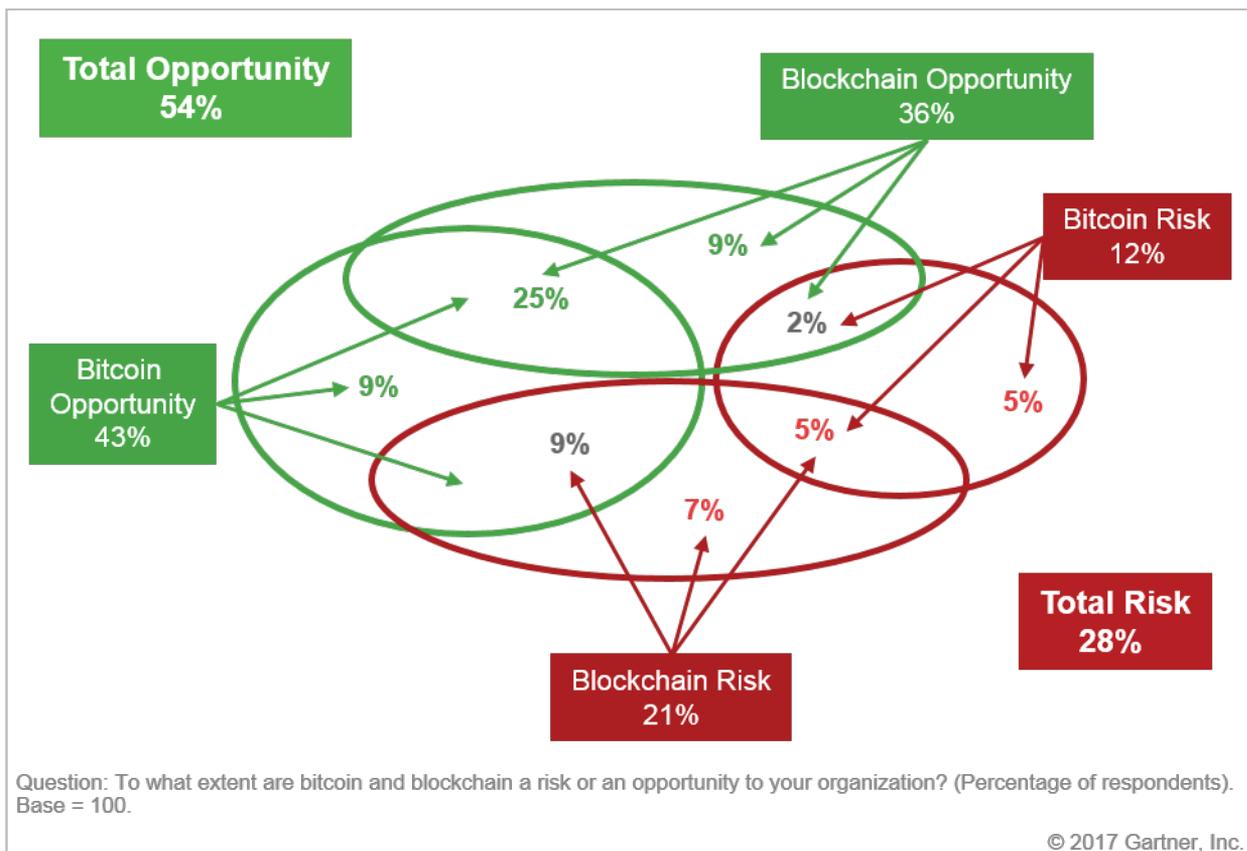
Research Highlights

Priming the Pump: Get Your Enterprise Ready

"Blockchain is generating huge interest from multiple industries and continues to rank as one of the highest growth searches on gartner.com."

The buzz around blockchain has placed it at the Peak of Inflated Expectations in Gartner's "Hype Cycle for Blockchain Technologies and the Programmable Economy, 2016." Moreover, based on Gartner's boards of directors survey (see "Survey Analysis: Boards' View of Digital Business Will Force CIOs Out of Their Comfort Zone") blockchain and digital currencies are seen as an opportunity that must be investigated (see Figure 2). This interest — at the most senior levels — is putting pressure on CIOs to quickly gain a clearer understanding of the nature of the technology, its economic potential, and its relevance to meeting business demands.

Figure 2. Board-Level Opinions on Blockchain and Digital Currencies



Source: Gartner (March 2017)

Enterprises face multiple dilemmas when contemplating the use of emerging and complicated technological developments. They are keen to exploit the advantages that blockchain purports to offer, yet they are simultaneously — and justifiably — wary of the potential risks, both from a technological and a business standpoint.

In the short term, that wariness will make all but the most pioneering firms fall behind in their development of blockchain's potential. In the long term, however, blockchain won't merely make enterprises more cost-efficient; it could change the very business models they operate under, and transform whole industries and even the larger global economy.

"While faced with uncertainty and a confusing set of messaging from vendors and promoters — as well as concerns about legality and legitimacy — Gartner believes that CIOs and business leaders should be cautious about the anticipated evolution of blockchain, and its ultimate ability to be a game-changer."

Regardless of vendor claims, Gartner anticipates that, through 2018, 85% of projects with "blockchain" in their titles will deliver business value without actually using a blockchain. Regardless of whether the technology challenges can be overcome (see "The Bitcoin Blockchain: The Magic and the Myths"), multiple business issues persist, including legal and regulatory considerations, institutional frameworks, and the very nature of how society functions in a distributed, autonomous, P2P context.

Consequently, CIOs and business leaders must take a measured approach to understanding how to balance the current reality of blockchain technology maturity, the potential for divergent (and therefore not easily interoperable) blockchains, and capturing the anticipated business opportunities. A SWOT analysis (see Figure 3) can ground conversations with senior executives and prepare their enterprises for more radical change as part of their digital business transformation initiatives.

Gartner Analysts Supporting This Trend



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Related Resources

Webinars

["The Blockchain Scenario: Algorithmic Business and the New Economy"](#)

["Blockchain: How Real Is the Market?"](#)

Podcasts

["Is Blockchain Really Ready for Prime-Time?"](#)

Gartner Peer Connect

["The Future of Blockchain: Viability and Evolution"](#)

Articles

["Top 10 Mistakes in Enterprise Blockchain Projects"](#)

["Blockchain Goes Beyond Financial Services"](#)

["Blockchain Combines Innovation With Risk"](#)

["The CIO's Guide to Blockchain"](#)

Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Core Banking Renewal: Use This Readiness Maturity Model to Avoid Program Failure"

"Five Key Digital Assessment Trends in U.S. K-12 Education"

"Toolkit: Digital Maturity Assessment for Life and P&C Insurers 2.0"

"Without Adequate Organizational Readiness, Electronic Health Records Program Success Is Unlikely"

"Toolkit: A Checklist Approach to Digital Workplace Execution"

"Retail Digital Workplace Transformation Imperatives"

Evidence

¹ Gartner's Blockchain SteerCo is a peer exchange steering committee initiative to facilitate exploration of blockchain technology and business/government use cases, exploitation opportunities and their attendant risks. These meetings, co-managed by a selected panel of global and regional institutions, and facilitated by Gartner, are intended to cover internal and interenterprise cooperative use cases built on blockchain infrastructure. Attendance is by invitation only, to senior executives (CDOs, COOs, CTOs, CIOs heads of blockchain programs and chief innovation officers). The meetings operate under Chatham House rules to protect confidentiality, and enable meaningful peer-level interactions. They are hosted at Gartner client locations around the world.

² ["90% of Startups Fail: Here's What You Need to Know About the 10%,"](#) Forbes, 16 January 2015.

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