

Blockchain is Coming

What CAEs Need to Know About the Impact



AEC Knowledge Brief

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“Blockchain is not a particular product and it’s not a particular piece of software. It’s also not synonymous with Bitcoin. If you looked closely at 20 different proofs of concept, you would likely find 20 different blockchain variants and several different architectures. Moreover, most would have nothing to do with digital currency,” says A. Michael Smith, PwC Partner, U.S. National Leader for Internal Technology Audit Solutions.

So what is blockchain and how should internal audit be approaching it?

“Blockchain is a form of computer science, specifically a form of applied cryptography. When implemented correctly, you can create processing systems with higher than standard levels of trust, and internal audit should be poised to play a key role in its implementation within organizations,” says Smith.

“There is no standardization, no common set of products, no common way of orienting the technology, and no standard use of the technology,” Smith says. “To make matters worse, there are no established frameworks for blockchain.

“Because of the lack of standardization, internal audit needs to start increasing its IQ in the area of applied cryptography and then look specifically at the blockchain variant being implemented at their organization in order to provide the most value,” says Smith

Understand Cryptography

In a session at The IIA’s 2017 Financial Services Exchange, Smith described a growing environment of exotic blockchain uses that layer complex types of cryptography one on top of the other. A foundational

SUMMARY

The use of blockchain technology is escalating in organizations, and internal audit must be prepared to review its complicated processes. A greater knowledge of applied cryptography will help internal audit perform a detailed analysis of the technical architecture being used in their organizations and provide value, says PwC Partner A. Michael Smith at the 2017 Financial Services Exchange.

challenge to providing assurance over these transactions is that internal auditors don’t have the luxury of a standard audit program to work with. A referential framework does not exist that everyone accepts and can point to.

“Unfortunately you or someone on your team is going to have to spend a lot of time understanding cryptography,” he tells internal auditors in attendance. “Even if one part of your company is doing a proof of concept using blockchain, you may find out through normal diligence that another part of the company is also doing something with blockchain using completely different vendors and with completely different architectures.”

“When you process transactions in a blockchain environment, you always have two things: irrefutable transaction history and irrefutable transaction integrity,” Smith says. “Because everything is mathematically linked and encrypted, there is a high level of security. However, this high level of security through blockchain works both ways as the complexity of the underlying ledger makes point in time, forensic analysis very challenging,” he says. “This structure does not lend itself well to data manipulation or transparency and, although some variants are starting to include report writing capabilities, it quite often isn’t sufficient to meet the needs of audit or compliance.”

Shift to a Continuous Audit Perspective

What has been happening is that a blockchain proof of concept is ready to go live and some combination of audit, risk, legal, or compliance raises a question about proof that it is functioning as intended and that is where troubles can begin.

Audit must be technically prepared to perform a detailed analysis of the technical architecture and then have some

strategy for obtaining the necessary transparency and visualization without adding overhead back to the project.

To be successful, a shift to a continuous audit perspective will be important. “We have a situation where technology mandates that you have to think about audit in a continuous manner. The goal should be for transaction-level assurance,” Smith says. “And that means it’s going to have to be automated.”

BLOCKCHAIN AND THE BOARD

Digital disruption takes on many forms, making it a formidable risk area to approach in boardroom conversation, says The National Association of Corporate Directors (NACD) in an article titled “How Blockchain Could Upset, Facilitate Business.” Yet, the article explains that while blockchain’s newness and technical complexity may seem especially daunting, its disruptive potential demands that it be addressed at the boardroom table.

“Companies today that do nothing about blockchain are at risk because you have consumers running hard on adopting new technology,” says Stuart R. Levine, chair and CEO of international consulting firm Stuart Levine & Associates and a director of Broadridge Financial Solutions. “You have legal issues that are implied in this conversation for business relationships and risk management of not being engaged in the right conversations with your customers. If you’re not engaged in these conversations from a strategic point of view, there is a risk on the horizon of not understanding the changes that are coming,” he says in the NACD Directorship [article](#).

Broadridge’s Lyell Dampeer, corporate vice president, U.S. Investor Solutions, says Broadridge is primarily

investing in specific-use cases of blockchain to do two things.

“Number one is to better understand the technology, make sure that we have the technical capabilities and people who can deploy blockchain in real-life scenarios, and make sure that we have those core competencies within our industry. We think this has the potential to be very disruptive, therefore we have to develop strong skills and knowledge.

“The second reason to do these use cases is to understand what the best instances of blockchain deployment are and where real value is being created,” he continues. “In the financial services industry as an example, there are very efficient ways to process all kinds of financial transactions. Before that is removed or replaced, everyone touching that ecosystem will want to have confidence that the distributed ledger creates new levels of transparency, reliability, and cost efficiency, but also that it actually works properly. In other words, that there is value being created. It isn’t going to do anybody any good to create another system that simply replicates what was already there.”

Use of Blockchain Escalating

While sceptics are lining up to throw doubt on the future of cryptocurrencies like Bitcoin, the best known use of blockchain, enthusiasts are embracing the underlying blockchain technology.

Smith says news reports about Bitcoin's value fluctuations, and big companies and executives weighing in on its uncertainties, give the impression that blockchain use is slowing down. "Nothing could be further from the truth," he says. "Organizations are working in the blockchain space internally, choosing to view it as highly confidential and strategically valuable for the company, particularly in banking and capital markets. There is a lot going on."

The use of blockchain in financial services is expected to impact real-time payments, foreign exchange and remittance, trade finance, asset servicing, securities settlement, and commercial lending. Prominent examples of blockchain uses that are underway include:

- The United Nations is considering blockchain as part of its Project ID 2020, a plan to enable displaced persons to get digitally verifiable legal identities.
- The United Kingdom is considering putting the equivalent of its welfare system on blockchain to reduce black-market activity.
- Shipping giant Maersk is partnering with IBM to form a new company aimed at commercializing the technology. The joint venture, announced in January 2018 and as yet unnamed, will help shippers, ports, customs offices, banks, and others in global supply chains track freight as well as replace related paperwork with tamper-resistant digital records.

Smith recommends internal auditors widen their view within their organizations, because the people driving digital innovation often are not the usual suspects. "It's a good idea to build relationships with those responsible for digital innovation or product design. This is quite often where the earliest use cases of emerging technologies like blockchain, Artificial Intelligence (AI) and Internet of Things (IoT) begin."

As organizations adapt to advance their sophistication with these emerging technologies, internal audit must continue to evolve as well. The IIA released a [three-part series](#) that explores internal audit's role in AI by discussing associated risks and opportunities. The paper also introduces an AI Auditing Framework comprised of three components, AI Strategy, Governance, and the Human Factor.

Automation Necessary

Launching an audit automation program is a good start, as this provides the flexibility to deal with the needs of these emerging technologies and also enhance the audit coverage of an ever increasing volume of transactions. Smith says if you did a person-on-the-street survey and described two systems for determining the accuracy of data — draw a handful of samples from a broad population or look at every transaction — a non-auditor would 100 percent of the time chose the latter.

"Auditors can sometimes struggle with moving from forensic to continuous transaction analysis," Smith says.

"We have to make that mind shift as a profession," he says. "We are in a situation where technology is mandating the virtualization of the audit activity."

AUDIT FOCUS

IIA Standard 1210: Proficiency

Internal auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities. The internal audit activity collectively must possess or obtain the knowledge, skills, and other competencies needed to perform its responsibilities.

IIA Standard 2120: Risk Management

The internal audit activity must evaluate the effectiveness and contribute to the improvement of risk management processes.

IIA Standard 2130: Control

The internal audit activity must assist the organization in maintaining effective controls by evaluating their effectiveness and efficiency and by promoting continuous improvement.

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The IIA's Audit Executive Center® (AEC®) is the essential resource to empower CAEs to be more successful. The Center's suite of information, products, and services enables CAEs to respond to the unique challenges and emerging risks of the profession. For more information on the Center, visit www.theiia.org/AEC.

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