Ready to Start Working With Blockchain? Here's What You Need to Know

I recently wrote about the potential to use blockchain technology in government contracting and that article generated quite a bit of interest. From "smart," self-executing contracts to impenetrable security, stark transparency and unprecedented efficiency, people are excited about blockchain. And they should be.

But for all the promise this technology offers the contracting community, two larger questions still loom:

When can we expect this technology to take hold and (more importantly) how can we be ready when it gets here?

To answer those questions, we need to take a deeper look at the framework necessary to run a blockchain transaction as well as the mindset required to regulate it.

A Blockchain Crash Course

Blockchain is a digital ledger or database that is distributed and maintained via a network of users, rather than at a single, central location.

The same technology that drives cryptocurrencies like Bitcoin, records are validated using a peer-to-peer cryptographic mechanism that allows said records to be added in real time by anyone and everyone with access to the database. That means that only those with access can see the records and no one can make additions to those records without all the parties knowing.

And because it's digital, blockchain can be programmed to perform a variety of tasks within those databases, including processing payments, verifying milestones and validating identities. This ability is the foundation for "smart contracts" - digital agreements that can self-execute and self-manage based on a set of pre-programmed criteria – and it's why the government has devoted substantial resources to exploring the possibilities.

Of course, as with any technology, blockchain is not without its challenges and if it's going to be the revolutionary solution it promises to be, then those challenges will need to be addressed.

System Integration

Right now, government contracting runs on a well-established system, however slow and cumbersome that system may sometimes be. To truly take advantage of all that blockchain has to offer, that system would need to be rebuilt from the ground up – that is, *designed around your blockchain platform* - and that requires considerable resources, financial and otherwise. To justify that kind of commitment, there must be a pressing need and until those needs become apparent, the urgency just isn't there.

The most likely solution to this obstacle is to introduce blockchain in smaller doses first, expanding in stages rather than tackling a major technology overhaul right off the bat. The best example of this is the four-quadrant system identified by Harvard Business Review. Created by Marco Iansiti and Karim R. Lakhani, the four quadrants illustrate the different stages of potential application – single-use, localization, substitution and finally, transformation - based on novelty (how new the technology is) and complexity (the number and diversity of users required to create value).

Both the single-use and localization quadrants identify areas where blockchain could be implemented with little disruption to current operating procedures, while still offering notable benefits. In terms of government contracting, this could equate to establishing a cryptocurrency account, reconciling various databases within your organization or using blockchain to build a local private network for your company and its vendors.

Immutability

One of the features of blockchain technology is its promise to be tamper-proof. Once a record is entered into the database, it is permanent and unchangeable, ensuring the integrity of the database. But this advantage presents two issues:

1) **How will this work with complex business contracts?** We all know blockchain has potential; the question is, how will we put that potential to use? Sure, self-executing contracts sound great in theory, but who decides on the parameters needed to code those actions? And what does that do to your ability to negotiate along the way?

   If the blockchain is immutable, then your smart contract is truly "written in stone" and that's not always a good thing, especially when you're dealing with complex government contracts that may need to adapt to new events and circumstances. The obvious solution to this would be to write code that allowed for those potential variations, but let's be honest – that could quickly become an impossible undertaking.

2) **How does this affect privacy?** Because records within a blockchain are permanent, an individual's information within that database cannot be removed, creating a potential conflict with laws that require the ability to delete said information if so requested.

   A good example of this is the EU's "right to be forgotten" law. Under this law, citizens have the right to have their private information permanently deleted from any external databases. Blockchain doesn't offer that option, so an alternative to the regulation will have to be established before use of this technology can grow.

Regulation

And since we're talking about regulations…

Not long after digital assets became a reality, we realized our laws weren't equipped to regulate how these assets were handled and protected. Ditto for ecommerce transactions and

third-party payment systems like PayPal. The same regulatory questions will be true for blockchain as well.

Granted, blockchain has the potential to solve many regulatory and compliance issues we currently face, such as streamlining our reporting processes and improving the speed of identity verification, as noted by Chami Akmeemana, Director of Regulatory Solutions at Consensys and Fintech Advisor to the Ontario Securities Commission.

But it also raises some big issues too.

In a roundtable hosted by the Centre for International Governance Innovation (CIGI), attorney Addison Cameron-Huff offered some obvious candidates for regulation – i.e., smart contracts, technical standards and the like – but also posed some larger concerns about how far that regulation would reach. "Will government authorities take a cut of transactions directly," he asked.

And that's a good question, one that state governments here are lining up to answer. North Carolina enacted House Bill 289 in June of this year, updating North Carolina's Money Transmitters Act to include Bitcoin and other blockchain-based activities related to digital currencies. Connecticut passed a similar bill in HB 7141, outlining capital requirements for money transmitters who deal in digital currencies.

Nevada on the other, went a different direction, passing SB 398 to protect blockchain transactions and preventing local governments from taxing or otherwise imposing requirements or regulations for parties using blockchain technology.

Then there's the question of jurisdiction. Blockchains are, by nature, decentralized, meaning there isn't a single location that can claim ownership of the blockchain and jurisdiction of its regulation. In a private, company database, that may not be an issue but in public databases, there could be nodes in other states and other countries, creating an interesting mix of rules and regulations. The question is, who's regulations would be given priority?

Also keep in mind, we're not just talking about regulations regarding the terms of execution. What happens for example, if the smart contract fails? With so many potential jurisdictions in play, including those of the coder, how do you determine liability and jurisdiction if a breach should occur?

Obviously, we're still waiting to see how federal governments decide to weigh in, beyond simply showing an interest in blockchain capabilities and rest assured, regulation will be coming. What kind of regulation however, remains to be seen as countries will eventually need to collaborate if the global blockchain transformation we've been promised is to be realized.

Incidentally, that kind of collaboration is not as far-fetched as it might sound. Quite the contrary, we're already seeing it on a national level. In 2015, nine major banks formed a group called R3 CEV to establish a set of industry standards for blockchain applications.

Validity

DNA evidence is now widely accepted as "legal proof" of identity and this acceptance carries weight in a court of law. But that wasn't always the case. DNA was first discovered in 1953, but it wasn't proposed as a foolproof means of identification until the 1980's and blockchain technology will have to endure the same scrutiny before its validity can be used as a legal precedence.

And here's why that matters:

Blockchains will ultimately be expected to guarantee different aspects of the contract, including the existence of assets used to secure the contract and/or facilitate its execution. Until a legal precedence is establish regarding the integrity of blockchain technology, it is unclear how issues surrounding ownership or breach will be litigated.

Also remember that blockchain is intended to replace many of the manual transactions and recordings currently associated with contracts. Until validity is established, we will need a clear and effective way to tie digital contracts to their real-world counterparts, i.e., how do we know that *this record* reflects *that lease*? Right now, we don't and it's this uncertainty we'll have to address.

All of Which Means What?

Having laid out some of the bigger challenges of blockchain technology, you might now be wondering if it's worth the trouble. The answer to that question is YES; blockchain will most certainly play a role in government contracting. It's just not going to happen overnight.

In the meantime, you can begin preparing for this next gen technology by exploring your options and looking for smaller ways to implement private blockchain networks within your organization.

IBM offers a list of key considerations when choosing a blockchain platform, including economic viability and compatibility with your adjacent systems, and knowing *how you plan to use it* will help drive that decision as well.

From cloud storage to payroll and vendor payment options (think foreign contractors!) to some of the single-use and localized options we mentioned earlier, there's plenty of ways to integrate blockchain into your company. Doing so now will allow you to grow as the technology grows, so you'll be ready for the revolution when it finally arrives.