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Blockchain in healthcare getting a lot of attention

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As blockchain technology becomes more established in the financial arena, federal health IT officials, vendors and developers are looking at its use in healthcare.

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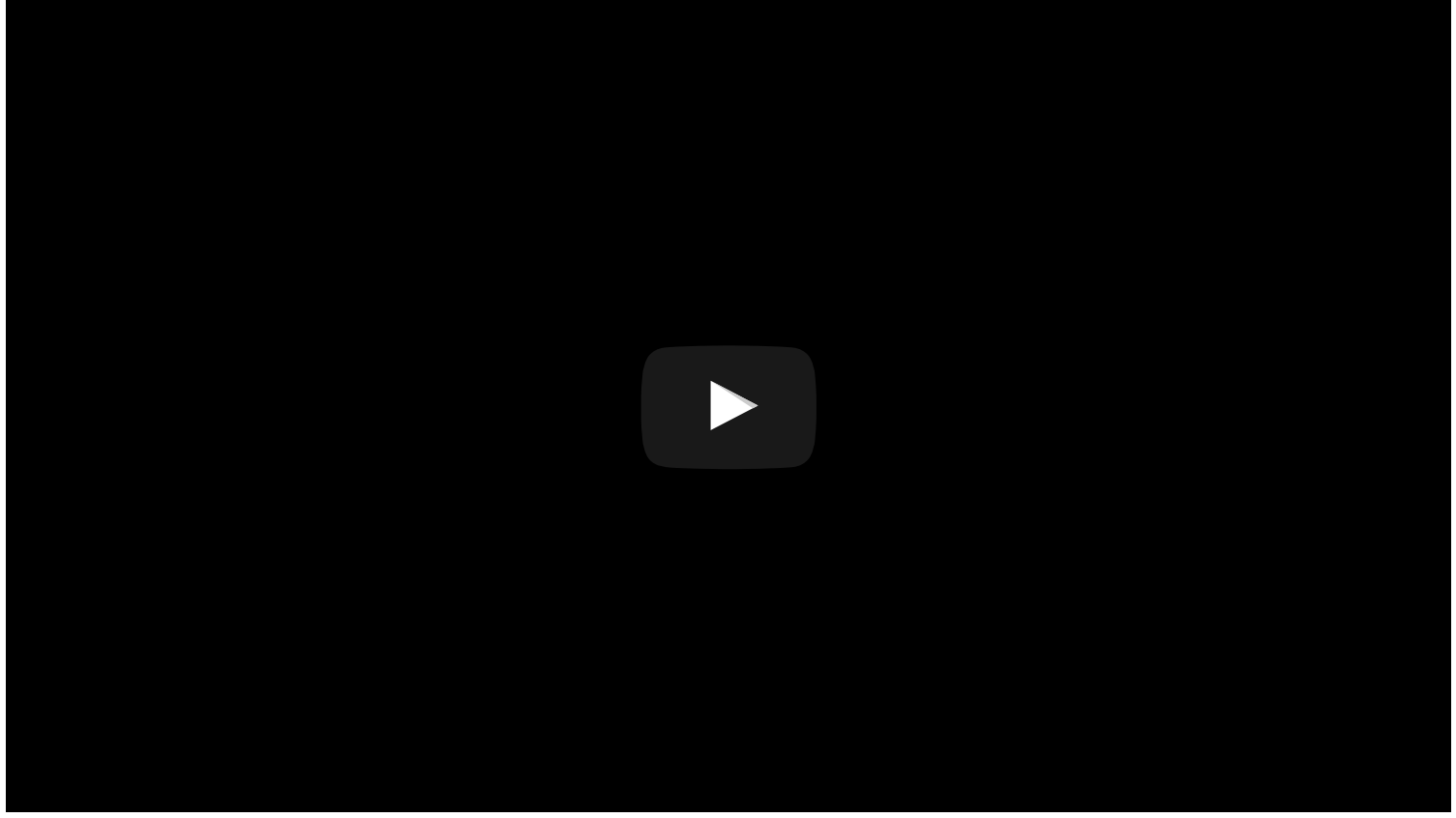
When the Office of the National Coordinator of Health Information Technology recently challenged developers and health IT thinkers to come up with uses for blockchain in healthcare, officials were surprised by the vigor of the response.

While the blockchain-backed bitcoin cryptocurrency has become a worldwide phenomenon attracting both devotion and criticism, perhaps lesser known is that thinking around blockchain in healthcare is moving past the theoretical stages and is even spurring activity from major companies and venture capitalists.

Health IT giant Philips has launched a blockchain-in-healthcare lab and joined a new blockchain-in-healthcare network led by blockchain vendor Gem. And accounting and consulting firm Deloitte has released several bullish reports on blockchain in healthcare and formed partnerships with several blockchain startups.

Blockchain is in essence a distributed public ledger linked by what supporters say is a nearly impregnable cryptographic chain. As such, they say, it has the potential to solve health IT's most intractable problems: lack of interoperability and securing the integrity, completeness and privacy of health records.

"One of the pretty obvious use cases for blockchain is the ability to identify when there's been data manipulation and when there's been a disruption in that flow," said Peter Nichol, co-author of a recent paper submitted to the ONC blockchain in healthcare challenge and former IT chief of the Connecticut state health insurance exchange.



Interest now, disruption later

More evidence for the intense interest in blockchain in healthcare is that in the depths of summer, with only few weeks to meet the submission deadline, ONC has already received more than 70 detailed conceptualizations of use cases for the technology.

Blockchain-in-healthcare advocates maintain that the technology has the potential to be as disruptive as the cloud or EHRs -- not immediately, but over the next few years.

"Short term in the next three years it's going to be slow traction. Between 2016 and 2020, we're still going to have inflated expectations," said Nichol, now a healthcare expert with PA Consulting Group. "After that we're probably going to see emergence in the consumer interaction area with products and software and the underlying technology will be commonplace."

In their 10-page paper, Nichol and co-author Jeff Brandt, a noted California health IT developer, describe blockchain in healthcare as transformative, disruptive to traditional heath IT systems and inevitable.

In their ONC paper, Nichol and Brandt argue that one of blockchain's most wide-ranging applications will be to reduce Medicare fraud, which has been estimated at nearly $30 billion over the last two decades.

"Open ledger technology such as blockchain can reduce this waste by providing a complete audit trail of transactions to reduce and eliminate fraud in prescriptions, billing and security breaches that drive patient identity fraud," they write in the paper.

"It's very difficult to hack the chain, because there's nothing on the chain," Brandt said in interview with SearchHealthIT. "What's stored on the chain is references ... pointers to where the records are."

These reference points on nodes on a blockchain are called "hashes." Individuals and organizations hold keys that unlock the records they are entitled to see, and any changes to data within a chain must be agreed to collectively by everyone on the chain.

Security assurances, yet majority might rule

As for the recent hack of Bitfinex, a Hong Kong Bitcoin exchange -- in which about $72 billion worth of bitcoin was stolen -- Brandt argued that it was not the blockchain that was hacked but the exchange application layered above it.

Meanwhile, Bill Briggs, chief technology officer for Deloitte Consulting LLP, said that he thinks blockchain will eventually be widely adopted in healthcare, but that blockchain security could be compromised by an entity that controls the majority of nodes in a chain.

"How do you put safeguards in place to control that ecosystem?" Briggs said. "There are tech implications and governance implications."

For Nichol and Brandt, and other blockchain thinkers and developers, government most likely would have to be involved for blockchain in healthcare to work on a large scale, if only in the role of mandating blockchain as a storage and interoperability standard.

Also, healthcare providers and EHR vendors -- now locked in competition and often resistant to sharing health data within their systems -- would also need to agree to use blockchain. In the financial industry, a consortium of 42 of the world's largest banks is exploring just that kind of an arrangement, according to a recent Deloitte report.

Aiming for all-encompassing health record

One recipient of the more than $1 billion in venture funding that has been injected into blockchain-related startups over the past year or so is Factom, a blockchain vendor in Austin, Texas, that recently entered into a deal with cloud health record services provider HealthNautica.

Factom uses the existing bitcoin blockchain, the world's largest with about 5,300 nodes, or servers, as well as linking to conventional enterprise networks.

Under the deal with HealthNautica -- which is still in development as Factom works on building its bandwidth capabilities, according to company executives -- Factom's blockchain technology will verify and time-stamp health records and claims for HealthNautica's physician and hospital clients.

Factom founder Paul Snow asserted that blockchain can enable for the first time the long sought longitudinal health record that contains every episode of care from childhood to old age in every location healthcare was delivered. This capability would radically reduce medical errors and improve care quality as well as empower individuals to have full control over their own health records, he said.

"There's no doubt that blockchain can save lives by ensuring that all the available health information has been evaluated in a quick and efficient fashion," Snow said.

ONC wades through the hype

One common criticism of blockchain is that it consumes too many computing resources and is therefore cumbersome and expensive.

However, "the computing infrastructure for supporting blockchain is there today," Brandt said.

That infrastructure is the bitcoin network, Brandt said.

For their part, the ONC officials involved in the blockchain initiative, speaking on background because they had not yet finished evaluating all the proposals, said the intent of the project is to ascertain where blockchain in healthcare really is, beyond the hype.

One official who is close to the undertaking said developments in blockchain in healthcare have been so volatile that that the agency wants to try to "level set" and see where the most interest is.

That official said from the government's perspective, blockchain holds significant potential in terms of moving forward privacy, security, auditing and integrity of health data.

The official said ONC expects the private sector, not the government, to evolve the technology -- a similar stance federal health IT officials have taken with EHRs.

ONC and the National Institute for Science and Technology are holding a workshop on the blockchain-in-healthcare proposals Sept. 26-27.

The U.S. government is not the first to evaluate blockchain for healthcare. The United Kingdom, Australia and Estonia have seen considerable government involvement with the technology.

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