Focus on Blockchain in Healthcare

distributed ledger technologies

Friday, September 15th, 2017

Panel: Roy Wyman Jim O'Hare Joe Bormel Linda Segal

Agenda

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Moderator's Framing:

- Where can a distributed ledger create new value?

- New solutions to old issues - privacy and confidentiality?

- What happens with trust?

Harvard Business Review



TECHNOLOGY

The Truth About Blockchain

by Marco Iansiti and Karim R. Lakhani

FROM THE JANUARY-FEBRUARY 2017 ISSUE

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How Blockchain Works

Here are five basic principles underlying the technology.

1. Distributed Database

Each party on a blockchain has access to the entire database and its complete history. No single party controls the data or the information. Every party can verify the records of its transaction partners directly, without an intermediary.

2. Peer-to-Peer Transmission

Communication occurs directly between peers instead of through a central node. Each node stores and forwards information to all other nodes.

3. Transparency with Pseudonymity

Every transaction and its associated value are visible to anyone with access to the system. Each node, or user, on a blockchain has a unique 30-plus-character alphanumeric address that identifies it. Users can choose to remain anonymous or provide proof of their identity to others. Transactions occur between blockchain addresses.

4. Irreversibility of Records

Once a transaction is entered in the database and the accounts are updated, the records cannot be altered, because they're linked to every transaction record that came before them (hence the term "chain"). Various computational algorithms and approaches are deployed to ensure that the recording on the database is permanent, chronologically ordered, and available to all others on the network.

5. Computational Logic

The digital nature of the ledger means that blockchain transactions can be tied to computational logic and in essence programmed. So users can set up algorithms and rules that automatically trigger transactions between nodes.





GPI			
Home	About GPII	Why the Nee	
Mission Statement			
Who are we?			
Business Approach			
History			

Accurately linking patie medical records is key prerequisite to all her activities. If that link fai attempts to provide care more harm than goo

Who is GPII?

We are a not-for-profit company offer solely to the healthcare industry. Our

- To deliver a service to accurately link patients to their healthcare records. This will improve the quality and reduce the cost of medical care.
- While providing a platform on which the privacy of health-related data can be placed in the control of the patient and the provider.

Many people think you can have accurate identification or privacy of health information, but not both. We believe that any acceptable solution must provide both.

- 2008 GPII is formed as a not-for-profit corporation to create a private enterprise identifier alternative since the federal government remains bound by its self-imposed prohibition concerning unique identifiers. GPII takes the approach that the use of *<prTags>* should be voluntary whenever possible giving the patient the ability to decide whether or not to obtain one. The Voluntary Universal Healthcare IDentifier project is launched. You will see the "VUHID system" referred to in much of our literature published over the past five years. (We now use the term GPII Services to refer to the VUHID system and *<prTags>* to refer to GPII unique identifiers.)
- 1998 The Veteran's Administration decides to do an internal implementation of the standard and it has served as the basis for VA patient identification ever since.
- 1998 The federal individual identifier mandate is reversed by a federal prohibition against using any federal resources to promulgate a standard healthcare identifier for individuals and that prohibition has persisted to the present.

Note: In our opinion the prohibition made sense at that time because insufficient attention was paid to privacy issues. GPII now considers its current (2013) privacy protection superior to any other available.

- 1996 The United States HIPAA legislation mandates the creation of a unique individual healthcare identifier.
- 1995 The standard, E 1714, is published with the intent of being the model for a national healthcare identifier.
- 1990 Dr. Hieb begins work on an ASTM medical informatics standard for a U.S. patient identifier. ..





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BARRY HIEB - CHIEF SCIENTIST

Dr. Hieb is the Chief Scientist for Global Patient Identifiers Inc. Prior to that he was a research director for 10 years in the Gartner Healthcare Industry Research and Advisory Service. He has worked for a number of employers including Washington University in St. Louis, Digital Equipment Corporation, and Sunquest Information Systems. He is a physician with over 35 years' experience in medical informatics. Dr Hieb received his BA from Bethel College in Newton, Kansas and his Medical Degree and Master's Degree in Computer Science from Washington University in Saint Louis. Dr. Hieb has been a long-term participant in the ASTM E31 standards group where he has focused on requirements for a national healthcare identification system.

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The Failure Modes of Decentralized Things

These insights help us understand the recent problems of Bitcoin, the blockchain, Ethereum, and The DAO discussed earlier in this chapter. The blockchain was designed from the start to be as decentralized and uncontrollable as possible; it was meant to be the ultimate antihierarchy. But then, what recourse is available to its enthusiasts if it evolves in a direction they don't like—if, for example, it begins to operate more and more behind the great firewall of China? This is in many ways the opposite of the original vision for the cryptocurrency and its distributed ledger. But it's also virtually impossible for the original Bitcoin enthusiasts to change or undo—about as hard as it would be for a small group of traders to change the trend of an entire stock market.

It's bad enough that Bitcoin and blockchain programmers have split into two adversarial camps without any single authority (either a formal or an informal one) to make final decisions. It's still worse when their creation increasingly falls under the control of an authoritarian government with a track record of heavy interventions in both technologies and markets. The contracts that hold the blockchain together, embedded entirely in code and supported by math, didn't specify what would or should be done if the mining network became too geographically concentrated. And there was no owner to fall back on once this contractual incompleteness became an obvious issue.

The DAO (organization)

From Wikipedia, the free encyclopedia

For DAOs in general, see Decentralized autonomous organization.

The DAO was a digital decentralized autonomous organization and a form of investor-directed venture capital fund.^[5]

The DAO had an objective to provide a new decentralized business model for organizing both commercial and non-profit enterprises.^{[6][7]} It was instantiated on the Ethereum blockchain, and had no conventional management structure or board of directors.^[6] The code of the DAO is open-source.^[8]

The DAO was stateless, and not tied to any particular nation state. As a result, many questions of how government regulators would deal with a stateless fund were yet to be dealt with.^[9]

The DAO was crowdfunded via a token sale in May 2016. It set the record for the largest crowdfunding campaign in history.^[5]

In June 2016, users exploited a vulnerability in the DAO code to enable them to siphon off one third of The DAO's funds to a subsidiary account. On 20 July 2016, the Ethereum community decided to hard-fork the Ethereum blockchain to restore virtually all funds to the original contract.^[10] This was controversial, and led to a fork in Ethereum, where the original unforked blockchain was maintained as Ethereum Classic, thus breaking Ethereum into two separate active blockchains, each with its own cryptocurrency.^{[11][12]}

The DAO was delisted from trading on major exchanges such as Poloniex and Kraken in late 2016.

The DAO (organization)

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Туре	Decentralized autonomous organization	
Industry	Cryptocurrency software venture capital fund	
Founded	2016	
Area served	Earth (stateless) ^[1]	
Key people	Stephan Tual, Simon Jentzsch, Christoph Jentzsch	
Total assets	ETH 11.5 million ^[2]	
Owners	+18 000 stakeholders ^[3]	
Number of employees	0 (automated) ^[4]	
Website	daohub.org &	

The DAO (software)

Written in	Solidity
License	GNU LGPL v3+