

BLOCKCHAIN FOR HEALTHCARE: HOW THE BLOCKCHAIN CAN PUT TRUST BACK INTO THE SYSTEM

A Skcript Possibility Study

This document is a whitepaper written by the engineers and business people at Skcript. In this white paper, we try to explore the opportunities of the blockchain technology for the healthcare industry.

EXECUTIVE SUMMARY

Every transaction in the industry relies on trust. Trust is the single most important aspect for humankind, and this trust is validated with an authentic identity for each and every entity in any system. This particular aspect of the human behavior makes the blockchain technology valuable today.

Prior to the blockchain, the trust in the system was validated mostly based on certificates or signatures with which the transactions were performed. But the industry has faced humongous loss with such a system in place, where it was easy for anyone to forge or counterfeit any document in any system with less difficulty. This situation did not allow people to expose certain information and rely on the technology to handle their privacy.

Today, the blockchain is being adopted in various industries for its ability to handle information that is passed in a system with state-of-the-art security and the speed of transactions.

While we have already seen how the blockchain is revolutionizing one of our customers' supply chain management systems, we would sit down to write an extensive white paper on what the blockchain could do for the healthcare industry.

The blockchain is the new Internet. We believe that the technology would change the way technology enables trust in any system. We think blockchain would be the single best "Chain of Trust" in any transaction.

– **Varun Raj**
Chief Architect, Skript NEXT

TODAY'S HEALTHCARE CHALLENGES

A technology like blockchain gets interesting when multiple stakeholders get involved to perform a single operation in a system. Healthcare is the industry that can take really good advantage of the blockchain system.

The healthcare industry is seeking to implement new technologies to make their process more trustworthy and easier. A 2017 study from IBM states that 16% of the healthcare company executives are looking to implement a solution like blockchain.

A recently study by Skript NEXT's Research Engineers shows that the healthcare industry faces the following pain points:

1. Privacy and Security
2. Healthcare Claim Frauds
3. Process complexity and elongated approval times
4. Governance and compliance
5. Product and equipment delivery costs

WHAT IS NOT BLOCKCHAIN

Though blockchain is a very powerful technology, it might not be the ultimate solution for your problem. Like any other technology, blockchain has its own limitations and is not for every single industry that deals with transactions.

Here's what blockchain is not:

- Blockchain is not a product
- Blockchain is not a transaction processing system
- Blockchain is not just for cryptocurrencies and financial transactions
- Blockchain is not a database
- Blockchain is not for everyone

HEALTHCARE BLOCKCHAIN USE-CASES

Now that we know what blockchain is and what a technology like blockchain can do for the healthcare industry, here are some of the potential use-cases of blockchain in healthcare:

1. **Secure Electronic Medical Records (EMR);** Securing and managing personal health records in the cloud is much easier with the blockchain. Since the ledger is shared and secured, there is no way for people to tamper the information in any ledger.
2. **Counterfeit Drug Prevention;** Since there is no central authority in a blockchain the ability for anyone to modify information is not possible. With a blockchain system for managing drugs in hospitals, there is no possibility of replacing fake information to get counterfeit drugs into a system.
3. **Authentic Clinical Trial Results;** Any clinical trial needs to be authentic when the results are published. With blockchain, this can be achieved with strict consensus algorithms, that allows only authentic results to be published to people. Whenever a result is published, a blockchain has attached to that result allows for other researchers and industry experts to check the validity of that clinical trial. With blockchain, this data about a clinical trial can be made available to other researchers who are working in the same area.
4. **Notary Services;** Managing medicinal and authority related documents becomes easier with blockchain. Companies and authorities (like colleges, HIPAA, IMA and such) will have one unified secure place where they can store and authorize the authenticity of a physician.
5. **Direct access to data;** People will no longer need a Health Information Exchange (HIE) to maintain their health and insurance records. People will be able to see their original data directly as and when it is written to the blockchain, which in turn creates trust among the users and the healthcare system.
6. **Cut down transaction costs;** Now that the concept of some intermediate authority like HIE is gone, the time it takes for a transaction (fetching health records, validating doctor authority and much more) will no longer be slow and painful.

7. **Distributed secure access;** Just like unified data implementations like the Social Security Numbers (SSN) or Aadhar, people and the government can have unified implementation of health records, that are distributed and secure at the same time.

HOW THE BLOCKCHAIN'S SMART CONTRACT CAN CHANGE HEALTHCARE INDUSTRY

Smart Contracts in a blockchain network is the most powerful element of a blockchain implementation. The Smart Contracts in the consensus framework of a blockchain serves as the gateway to store essential information inside a blockchain.

Since most of the enterprise implementation would be permissioned blockchain, organizations with appropriate permissions will be able to access the data in the blockchain using an Application Program Interface (API) without any major hassle. Organizations can invoke a specific block from the blockchain anytime they would like using the API.

Smart Contracts can be considered as the business logic of a blockchain. They are unique to each and every blockchain and are specific to a business or industry. When set properly, the Smart Contracts will have the ability to validate or reject a transaction in the blockchain system.

The best example here would be to pick a transaction that is being written to our private blockchain, which has the ability to check if the certificate a physician is receiving (writing) is valid or not. When this particular transaction happens, the Smart Contract immediately checks for a certain set of rules. One of the rules could be to check the chain of custody of that certificate, to know where the certificate is coming from. If the Smart Contract is not passing through, saying that the certificate is not from a trusted authority, then the transaction is immediately invalidated (rejected) and not written in the blockchain at all.

SKSCRIPT'S INVESTMENT IN BLOCKCHAIN

Skcript is a contributor to Linux Foundation's Hyperledger Project and continues to invest time and effort to improve the standards of blockchain based frameworks with the community.

2018 was declared as the "Year of Blockchain" at Skcript, with a goal to help companies take advantage of blockchain technology to run their business efficiently.

THE NEXT STEPS

Blockchain is the new Internet. The technology is set to play a very crucial role in healthcare IT and disrupt areas to bring in efficiency to the ecosystem. For such a disruptive technology to work, the platforms have to be built on top of open international standards. Skcript is committed to helping make blockchain the most disruptive technology in the world.

The next step would be for you to get a holistic view of how blockchain can help your business and plan out a realistic implementation of the blockchain for your business.

To help companies arrive at this crucial decision, we organize the Blockchain Business Workshop. [Book your slot here →](#)

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This white paper is intended to assist companies in the healthcare industry with market research and study purpose only. It is not intended as a commitment that Skcript will further develop blockchain technology, nor that blockchain will address specific solution for your unique industry problem. Should you have any issues with this document, please take a minute to write to us at business@skcript.com.

