



**CASE STUDY OF BLOCKCHAIN**  
IN MEDICAL SECTOR





## **What comprises a health care system?**

Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment.

## **What are the major drawbacks of Health Care System?**

- Tamper of data which leads to inaccuracy of data which will be used to treat a patient.
- The identify of a patient stored as computer data can be leaked due to bug in a program or software which means the privacy of a patient may or may not be compromised.
- The time consumed while transferring a patient's report from one unit to other or between hospitals.

## **How Blockchain can solve the issues?**

- Blockchain can help hospitals in maintaining the patient data which is tamper proof as well as its secure in a transparent environment like blockchain which can be accessed via private key which is unique to every patient and the doctor could use the public key to the contract to access the patient's information.
- The Genome data which is a massive amount of data which can be used at any point of time in future for the study of genomics can be stored in blockchain due to its immutable nature which helps the data to be accessed at any point of time in future.



•Blockchain can also improve the patient - healthcare provider communication because blockchain helps to store data on multiple nodes in a network which will help to alert all the participants of that particular network, that is, the doctors, nurses, etc.

**Hitching Healthcare to the Chain: An Introduction to Blockchain Technology in the Healthcare Sector** by **Mark A. Engelhardt**, a detailed research of healthcare sector in blockchain, quotes **“Blockchains are Decentralized, Immutable, Private, and Agents of Trust”**

Blockchain technology has been emerged in the last decade and has gained a lot of interests from several sectors such as finance, government, energy, health, etc. This paper gives a broad ranging survey of the application of blockchain in healthcare domain. In fact, the ongoing research in this area is evolving rapidly. Therefore, we have identified several use cases in the state of art applying the blockchain technology, for instance for sharing electronic medical records, for remote patient monitoring, for drug supply chain, etc. We have focused also on identifying limitations of studied approaches and finally we have discussed some open research issues and the areas of future research.

### **Use cases:**

One of the fields where blockchain is considered to have great potential is healthcare. Understanding the pertinence and importance of blockchain in healthcare, in 2016, the Office of the National Coordinator for Health Information Technology (ONC), composed an ideation challenge for requesting white papers on the



potential utilization of blockchain in healthcare. This challenge brought about a few proposed healthcare applications for blockchain.

In this section, we focus on the most important studies classified by several use cases such as electronic medical records, remote patient monitoring, pharmaceutical supply chain and health insurance claims.

- The basic implementation of healthcare can provide cheaper, faster and efficient healthcare to all because blockchain can provide a distributed transaction layer for both patient and the healthcare provider due to which the miscomputation can be avoided due to which several mistakes can be prevented and this also leads to a faster diagnostic due to elimination of intermediaries.
- The interoperability of electronic healthcare data due to a single transaction layer which helps healthcare providers share data and diagnostic on a global scale which will help a patient to use the diagnostic from their home country to be examined or cross checked by a doctor or medical practitioner from different countries as a validator of the network.
- The medical record on blockchain also helps different doctors from around the world to examine the records along with the electronic data which will help a disease to be discovered at early stage because the quality of a data of the number of times it is cleaned, in short, every time as doctor validates the medical record the record is being crossed checked which will eliminate the error in diagnostic report to almost negligible.



- The implementation of blockchain in healthcare system can also prevent the medical insurance fraud because every transaction on blockchain has a timestamp and its immutable. This could also help the medical claims to be processed faster.