Blockchain Model for Health Care

I. INTRODUCTION

Blockchain technology has the potential to address the interoperability challenges currently present in health IT systems and to be the technical standard that enables individuals, health care providers, health care entities and medical researchers to securely share electronic health data. Several patients lose their valuable records and reports of several tests multiple times and as of course these reports should be present somewhere in the network where it can stay immutable and secure from outsources.

II. PROPOSAL

My proposal involves the use of a public blockchain as an access control manager to health records of patients that are stored across the blockchain. This Blockchain for health care would need to be public and would also include technological solutions for three key elements scalability, access security and data privacy.

(a)Scalablity

It will be a distributed blockchain that would contains health records, documents or images that would have data storage implications.Transactions in the blocks would contain a user's unique identifier, an encrypted linked to the health record and a timestamp for when the transaction was created. To improve data access efficiency, the transaction would contain the type of data contained in the health record and any other metadata that would help in frequently accessing that data using queries.The health blockchain would contain a complete indexed history of all medical data, including formal medical records as well as health data from mobile applications and wearable sensors, and would follow an individual user throughout his life. All information stored in the Blockchain would be encrypted and digitally signed to ensure privacy and authenticity of the information.

When a health care provider creates a medical record for example..prescription, lab test, pathology result or MRI, a digital signature would be created to verify authenticity of the document or image. The health data would be encrypted and sent to the data lake for storage.Every time information is saved to the data lake the health record is registered in the blockchain along with the user's unique identity or Token.

(b) Access Security and Data Privacy

The user would have full access to his data and control over how his data would be shared. The user would assign a set of access permissions and designate who can query and write data to his blockchain. A mobile dashboard application would allow the user to see who has permission to access his blockchain. The user would also be able to view an audit log of who accessed his blockchain, including when and what data was accessed.

Any Patient can also allow a doctor or a health care provider to visit his /her records by allowing access to his records.The user would setup specific, detailed transactions about who has access, the allotted time frame for access and the particular types of data that can be accessed from his Blockchain.

III. TECHNICAL ADVANTAGE

Blockchain is based on opensource software, commodity hardware, and Open API's. These components facilitate faster and easier interoperability between systems and can efficiently scale to handle larger volumes of data and more blockchain users.This provides an environment of transparency and allows the user to make all decisions about what data is collected and how the data can be shared.

IV.CONCLUSION

Utilization of the proposed health blockchain described in this paper has the potential to engage millions of individuals, health care providers, health care entities and medical researchers to share vast amounts of genetic, diet, lifestyle, environmental and health data with guaranteed security and privacy protection.

A shared distributed infrastructure that provides a comprehensive view of an individual's health data across a lifetime is an equally essential component of interoperable health IT systems.

Blockchain technology definitely has a place in the health IT ecosystem and its implementation can be an evolutionary change in Medical Sciences and Technology.

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