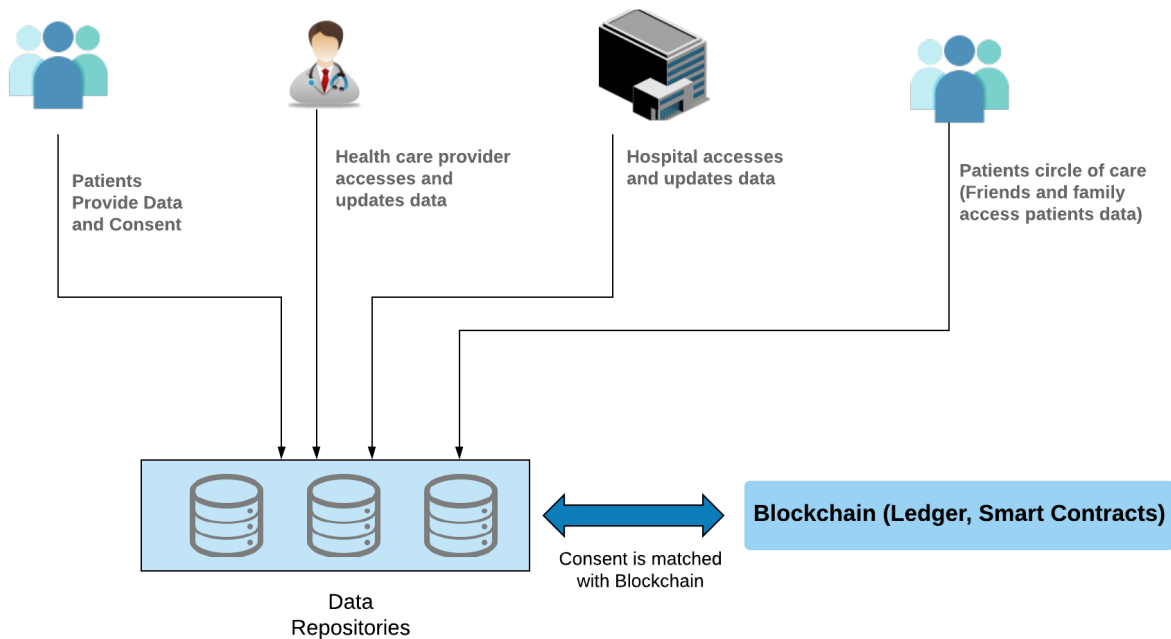Group Assignment – dApps1

Secure Management and Sharing of Electronic Health Records

Every day, citizens suffer due incorrect EHR (Electronic Health Record) or lack of access to their own medical health data for sharing[1]. The use of EHR in U.S. alone is up from 9% in 2008 to 96% in 2019. The pressing problem though remains multi folds. The falseness in the EHR data, Patient's access to his/her own health record and verified consent before sharing the data with authorized stakeholders in the EHR eco-system. All these problems are opportunity for decentralized solutions like Hyperledger Blockchain to ensure data integrity, security and consent before sharing mechanism.

In this blockchain use case, we will be trying to solve the problem of patient consent to data sharing by using Hyperledger Fabric based blockchain. we will be working to develop a decentralized solution that will act as a consent gateway between patient, researcher and the data sources (Govt., Hospitals and Private entities such as Pharmas etc.). The following architecture defines the role of blockchain in the context of patient consent.

Patients Provide Data and Consent

Health care provider accesses and updates data

Hospital accesses and updates data

Patients circle of care (Friends and family access patients data)

Blockchain (Ledger, Smart Contracts)

Consent is matched with Blockchain

Data Repositories

It is to consider in the above use case who can write the consent on the blockchain and who can read. Justify the consideration with the narrative you feel like is important in this context.

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[1] https://khn.org/news/death-by-a-thousand-clicks/

Group Assignment – dApps1

Please submit your assignment via GitHub.com with the following components:

1. Model the business case using the modeling techniques learned in the class.
2. Develop the blockchain architecture which include
   a. Peers
   b. CA (Certificates and Users)
   c. Orderer/s
   d. Channel/s
   e. MSPs
3. Develop the Smart Contracts
4. Develop the API to communicate with Smart Contracts using Fabric SDK
5. Use a front-end built on react/JS/Postman etc. to communicate with API and read/write from Blockchain.
6. Develop a governance document for the project.
7. Develop a Solution Design Document.

Feel free to use other additional components like PDCs (Private Data Collections) and ACLs (Access Control List) etc. Describe those components in Solution Design Document.