

Blockchain + Smart Contracts in Healthcare

By Jordan Byrne

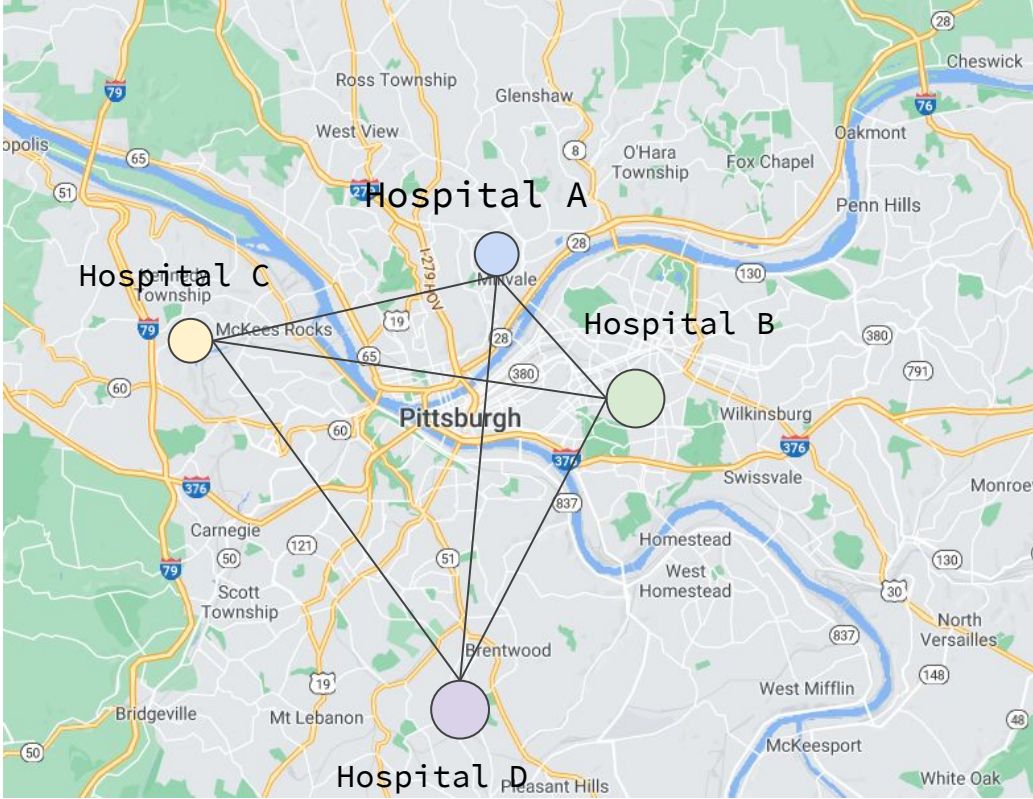
Blockchain Concept to store medical data



- Utilize a private blockchain to securely store medical data in a decentralized fashion
- Utilize smart contracts to intelligently ensure that all authorized parties can access private medical data ie: (patients, insurance, doctors, family members, etc.)
- Utilize blockchain + encryption to ensure all data is secure and anonymous

Advantages:

- Improved security and privacy since all blocks are identified by an anonymous public key
- Decentralization improves data reliability even if one server goes down (important for avoiding ransomware attacks that take down hospital systems)
- Immutable nature of blockchain ensures data reliability



Blockchain + Smart Contract

— — —

Block 1

Public Key:
1ah245bapbvwl0s
Conditions:
Seasonal allergy
Medications:
fexofenadine
Appointments: 2/22/21
Insurance: Allstate
Address: 520 N Main
St, Meadville, PA

Block 2

Public Key:
a39nblseibvk39bow0
Conditions:
Type 2 Diabetes
Medications:
Insulin aspart
Appointments:
Insurance: Liberty
Mutual
Address: 520 N Main
St, Meadville PA

Block 3

Public Key:
7jfv982nb85nc932kce
Conditions:
Peanut allergy
Medications:
Epinephrine
autoinjector
Appointments:
Insurance: USAA
Address: 520 N Main
St, Meadville PA

...

Doctor Accessing Patient Data Block 1

Can only access data in block 1 if:

- Patient has given authorization for data (with a digital signature generated from the private + public key)
- Patient has an appointment scheduled with the doctor

All Conditions are met! Doctor given access to records.

Access only
authorized if
requirements
in smart
contract met

Access
Attempt
Successful! ✓