DESIGN DECISIONS

This project is based on a Permissioned Private Blockchain in the healthcare industry, built using the technologies:

1. NodeJS
2. Angular v7.0
3. Rest API web service
4. Docker Infrastructure
5. Hyperledger Sawtooth v1.0

Here in this project is composed of a simple WebApp with three main components, they include:

Donor Page: Organ donors are usually individuals who are willing to donate their organs, and in recent times have been targeted by certain groups as their information has become vulnerable.Here the users are able to add his/her information which includes name, age, gender, blood type, organ type, contact information into the individual blocks. Thus they are immutable and tamper proof and only the trusted Administrator is able to change any and all permissions. Hence making entered information invulnerable.

Recipient Page: A recipient is an individual who is in a certain state of decline of his health or is facing a reduced quality of life due to damage or disease of a particular organ or organs. In our project we aim for them to add their information from the independent hospitals and thus added into the block thus making priority in a First Come First Serve basis ending bureaucratic pressures(In future scenarios on chain voting in order to increase priority can be made possible).

NHS(National Health Service): Here its primary function is to get blood type and organ type from the client side and then request for information,It is then fetched from previous added blocks of donor and recipient list and then the information is verified and matched, the administrator part where we match patient and organs to donors and recipient respectively.

Working :

The address to be packaged inside the payload function, which would be further sent to the validator, through the proper REST API.

The validator, then propagate the same to the hygieia Transaction Processor for processing the transaction through protobuf serialisation.

Frontend / Client side Design Decisions : Hygieia

1) Namespace is created using the hash of family name: ‘hygieia’

2) Encoded data/ Payload:It is encoding of the computation of comma separated variables such as name, date of birth, blood type, organ type, gender,’nhs’ and action.

3) Address Generation:

```
address=_hash("hygieia").substr(0,6)+_hash(pl.proc).substr(0,16)+_hash(pl.bgroup).substr(0,16)+_hash(pl.part).substr(0,16)+_hash(pl.idNo).substr(0,16)
```

Backend /Server side Design Decisions : hygieia-processor

1) The transaction received through validator is then received for Processing

2) For the address of the donor part, the message inside the payload is extracted – for the blood type, organ type of the donor and the family name is taken.

3)For the address of the recipient part, the message inside the payload is extracted – for the blood type, organ type of the recipient and the family name is taken.

4)Then the decode data is separated and matched to produce a verification status which is returned citing success or failure. The apply function then further accept or reject(match).