

Individual Health Data on Blockchain

#12: Helen - Jincheng - Joseph - Jaime Blockathon 2019



Jincheng Du
Graduate Student, USC
Blockchain Enthesitis, Fast Learner,
Video Game Lover



Jaime Torres
Drayage Expert
Father of Four, Gentlemen, Guitar
Master



Joseph Polk
Double Major Undergraduate, USC
Avid Learner, Proud Dog Owner,
Surfer



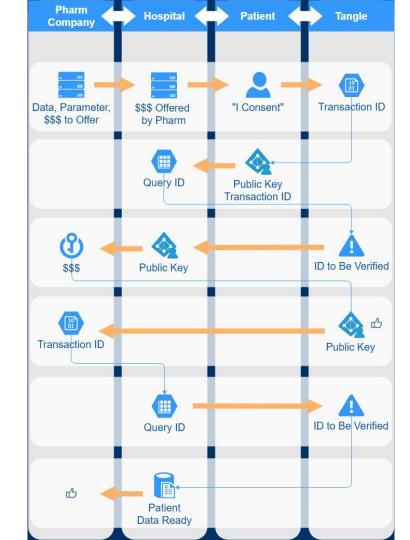
Helen Ma PhD
CEO, Ji Informatics L.L.C.
Biotech Entrepreneur, Team Builder,
Educational Game Developer

The Problem

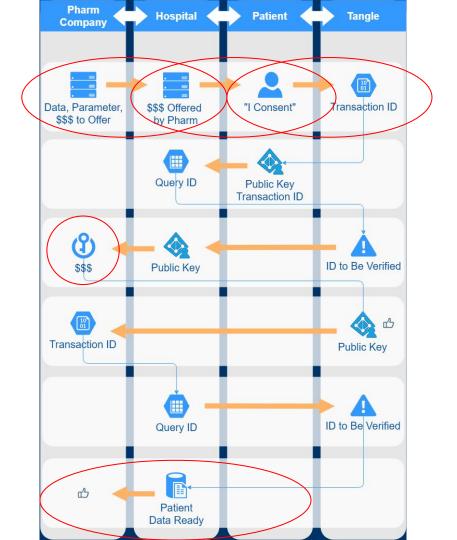
- Pharma companies: We need data! Clinical trials are costly!
 - GSK spent \$300,000,000 to get access to 23andMe data
 - IMS Health is a billion dollar business that logs healthcare data and sells it to pharmaceuticals for marketing and analysis
- Data owner (you): I should be paid for sharing my data!
 - The 23andMe sale and similar activities have sparked a negative backlash

The Cure via IOTA

- Let individuals sell their own data directly on the blockchain chain
- Dramatically decreased overhead costs



Prototyping



```
const privateInfo = require('./privateInfo');
     transactions sendTransaction(privateInfo seed, 'XJPLMYDD9Z0YTXJCKSSAIUDSKKHMLEDZYZPDV0EGHMFGEJIWKGSU0FGKZWZBGQYYHDXBWHHYL0JGIZAZW', 'Hi , I am
     willing to pay 1000i for 50 lung cancer patients data, 20i each')
`GetNewAddressOptions`: 1 options are deprecated and will be removed in v.2.0.0.
Your address is: ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA
send address: ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA
Transfer successfully sent
{ hash:
  *VVSBGIJINSCOABHCNMDNWJYDYTRESWOLWHJUHWIMOH9BFNPCDLSSQKTUYITMBKRRTCUBEFJCUJYYAU999',
 signatureMessageFragment:
  *RCPCBDRCTCFDZBPCHDXCTCBDHDGDPDKBVBKBNBKBYBUBRBLBCCYBLBKBQBLBOBACCBPBQB9CDCVBPBYBRBIC9C9CECWBCCCCRBSBPBQBQB0BBCBCQBHC0BLBLBGCBCSBYB0BCCPBCBMB0BUB0BPBHCZB
address:
  'ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA',
 value: 0,
 timestamp: 1550442199.
 currentIndex: 0.
 lastIndex: 0,
6 results found for 'transa'
```

const transactions = require('./transactions.js');

```
const privateInfo = require('./privateInfo');
    transactions receive ransaction ('ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA', 'yay, a message')
                                                                                                                             [□] X
address:
  'ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA',
 value: 0,
 timestamp: 1550442199,
 currentIndex: 0,
 lastIndex: 0,
 bundle:
  'BYDWLSDIPSRHTBJWSRPLSCGKXVEGHZ9GU9VNWCITWDRTYGCKEBXSDHPLCNALCXVRGILDVFGJQEAFQ9CVX',
 trunkTransaction:
  'FYSRLBBR9UPLBQHYHCMQB9U9HM0QWJ0ZBFMHXZLRPRW00XLHQ9ZHDUEWQCECZHPXQPADSZJFCF9YTQ999',
 branchTransaction:
  'FYSRLBBR9UPLB0HYHCM0B9U9HM00WJ0ZBFMHXZLRPRW00XLH09ZHDUEW0CECZHPX0PADSZJFCF9YT0999'.
 attachmentTimestamp: 1550442200896,
 attachmentTimestampLowerBound: 0,
 attachmentTimestampUpperBound: 11,
 nonce: 'POWSRVIO9K999999UMEVNNNNNP' }
~/dev/hackathon/UscBlockathon2019-Team13/team-13/hospital(master*) »
~/dev/hackathon/UscBlockathon2019-Team13/team-13/hospital(master*) » node app.js
message received
      statement: cancerPatients
      next time reach me at: ALADAOKHBTOBAGBER9FGQULFOHZQQVMTTHIFGGESSGYEBBXSIOETF9CEKEFYPEPWWAZPJZAVMZY9KLJMA
```

const transactions = require('./transactions.js');

In Summary

- Closely collaborate with hospitals
 - Quality control
 - Flexibility



- Our ecosystem benefits everyone involved
 - Consumers
 - Reviewers
 - Data suppliers
 - Data purchasers
- Extra expertise in health science informations
- Extra security with the most advanced blockchain technology IOTA
 - Streaming Data Payment Protocol (SDPP)

Acknowledgement

- Special thanks to
 - Lewis Freiberg, who helped us build the IOTA workflow
 - Zhun Shen, who helped us go over the workflow
 - Eric Chung, who helped us smooth out the thinking and code
 - Gowri Ramachandran, who taught us the concept of SDPP
- All organizers and mentors from 2018 Hackathon USC!