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# PATIENT RECORD STORAGE AND ORGAN/BLOOD DONATION TRANSACTION SYSTEM

Implementation of Blockchain for a  
hassle-free methodology

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# What Problem We Are Trying To Solve?

- Excessive amount of patient records in paper format and lack of an efficient method to update/transfer when patient switches to new doctors/hospitals
- Retrieval of necessary blood/organs in the shortest possible time is of utmost importance when actual lives are at stake. Organ/Blood donation transactions have always been cumbersome and inefficient.
- The entire process of the transaction involving contacting and trying to find the availability of organs/blood with several vendors/hospitals(also missing out on unknown contacts) and filling the necessary transaction details/paperwork is very slow
- Extra cost for transactions and access to donations can be eliminated
- Any dishonest or malicious intent during transactions must be prevented

# What is the Solution?

- Patient records are stored in a digitalised, decentralized, transparent and secure manner using the revolutionary technology of blockchain
- All details necessary for organ/blood transactions are also stored in the format of blockchains, enabling clean and hassle-free experiences
- A Progressive Web Application(PWA) for:
  - The patients to view their health records with respective timestamps
  - The hospitals to view patient's complete record
  - The hospitals to query information about available organs/blood across all vendors/donation banks part of the network, and carry out the transaction and confirmation

# Biggest Problem we are tackling!!

With the advent of medical technology, organ donation today is feasible and has saved many lives. But the biggest challenge of organ donation is communication between donor and recipient. Today, the communication is mainly through a centralised system where recipients can send in their request and then a possible donor is then found, if possible. The problem with this is that precious time can be wasted in communication. Time that could mean life or death. Also some possible donors may not be informed of the opportunity to save someone else's life due to the tedious process in the communication by the centralised system.

# Novel Solution

Organ donors and recipients get on our blockchain network. The recipient places a request for a organ donation. This message is transmitted throughout the blockchain network. Any possible donor that matches the request is found. The network then setups the communication between the donor and recipient.

The technical aspects are explained as follows.

# Technical intricacies

In blockchain technology, by the use of not only a public ledger but also the implementation of nodes adopting the longest available chain of block, we can achieve amazing security of the organ donation. This ensures that there is no fraudulent donor or recipient that is messing with the working of our technology.

Even if the people with malicious intentions want to alter the ledger. They will have to solve a complex mathematical problem, in which they are in a race against the entire network. As a result, to be able to solve the problem would require a high computation power(beyond that of imagination today), even with which the chances of being able to pull it off are near zero.

# Problem of changing hospitals for a patient

Let's say A is a patient diagnosed with a disease/illness called D, in a hospital called X. Let the doctor treating A be B. If for some reason A wishes to change to another hospital, let's say Y. With today's existing mechanism, the patient A would have to go to hospital X and get his/her medical records through hospital X. Then go to hospital Y and submit these records. This is laborious and also there are chances where there could be loss of information, due to A losing their documents, which means he/she has to undergo all the tests again. This could prove to be costly and time-consuming, which in many cases could be a matter of life and death. Another issue is malicious changing of patient data which could cause false diagnosis.

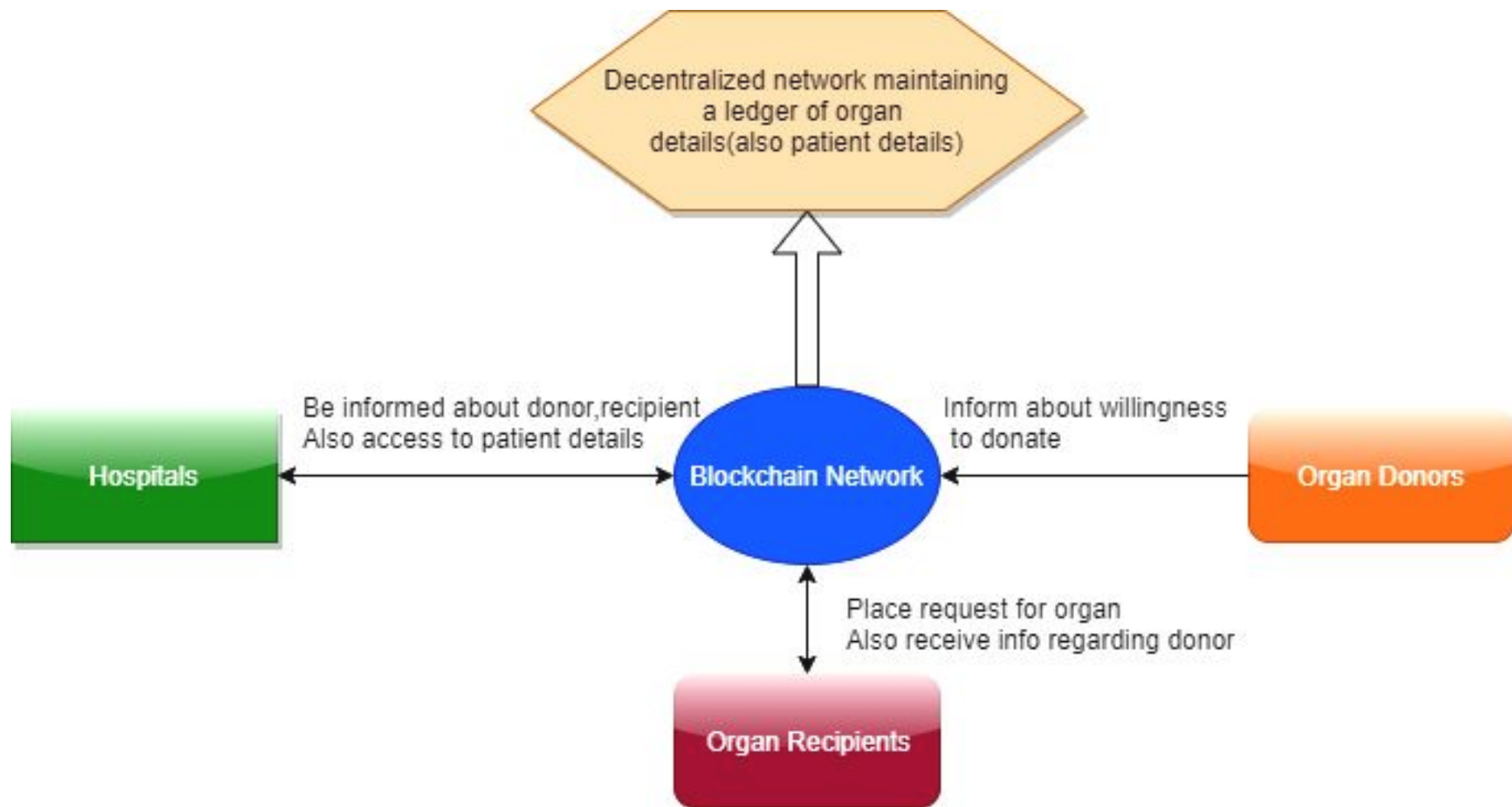
This is where our solution can revolutionize the healthcare industry.

# Our solution

By using the blockchain already existing for organ donation we can implement the following.

The blockchain network among hospitals would allow the patient A to easily change from hospital X to Y. By facilitating the blockchain, we allow for not only an instantaneous transfer of data from hospital to another, but also a secure platform which can be used to make sure no malicious changes are made to the patients data.

This also allows healthcare organisations to keep track of what is happening in the healthcare business. Hence a check on the prices of services can be maintained, allowing for better and cheaper treatment for patients.



# Features and Advantages of Blockchain in the Solution

- A completely decentralized system with data stored cryptographically ensures data is available to everyone with the right permissions
- Data stored in the form of blockchains are immutable, meaning no one can tamper with the data with malicious intent
- More efficient way for large hospitals to manage thousands of patient records with years of history, enabling better diagnosis with complete data available

# Features and Advantages of Blockchain in the Solution

- Using Blockchain, all intermediate transaction costs between the hospitals and the donation banks are cut down, since all transactions are completely free and transparent(the complete history of any transaction is available to all)
- Transactions are confirmed based on the availability and not based on name of the hospital or any such preferred choices
- However impartial parameters such as proximity, price are considered before a transaction is confirmed
- Since any transaction can be viewed, this makes pricing transparent and thus prevents horrendous price tags(which is quite common in times of emergencies)

# CONCLUSION

- This solution tries to bring about the most efficient system in storing thousands of patient records in a digital format, at the same time, preserving integrity by providing secure and transparent solutions thanks to blockchain technology
- Blockchain technology also brings about the imperative ease and transparency required in organ/blood donation transactions across thousands of hospitals, across different areas too
- Thus, this provides an imperative solution to the problems in the Healthcare domain