Blockchain Powered Procurement System for GAIL

Ministry/ Organization name: GAIL

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Description of Problem Statement

GAIL procures most of the raw materials, items, office supplies and services through public procurement portal based on tendering system. We need to develop a **Blockchain secured system** to control this procurement process.

As an example,

Developer shall implement end-to-end process for Steel-pipes, that contains steps like A)procurement from Indian/Overseas vendor B)Shipping C) Transportation in intermediary points D) acceptance at GAIL store E) Payment to Vendor using smart contracts

The implementation should use Open source technologies like **Ethereum** or equivalent and be able to show simple and good UI + clear documentation with out of the box thinking

Problem with Existing System

1. Provenance Tracking (Hard to track down)
2. Corruption by middle men
3. Lack of trust
4. Excessive cost due volatility and discrepancies
5. Lack of improvisation ability
6. The Governmental agency executives awarding the tenders can indulge in corruption by accepting bribes from a particular organisation and awarding them the tender in spite of poor proposals and high costs.
7. Taxpayers of the country have very little knowledge of how and where our tax money is used.

Our Approach

Functional :

Supply Chain :
Blockchain maintains state of each item in supply chain. Complete Supply chain is maintained/accessed/updated through Ethereum only.

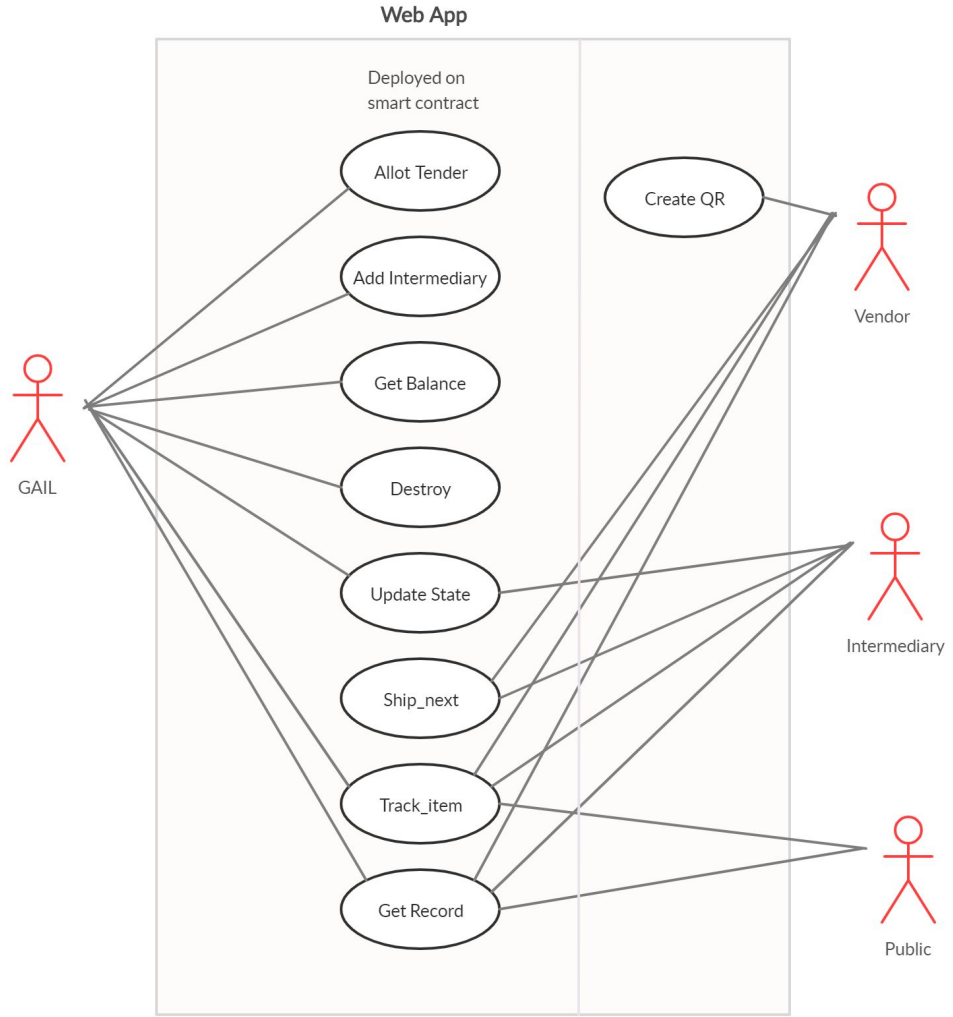
Procurement :
Tenders are created, allotted on public network only. Bidders can bid with their bid and quotation.

Technical

dApp access ethereum node through infura for updating/accessing state of eth. Client side is hosted on IPFS, to make it completely decentralized application.

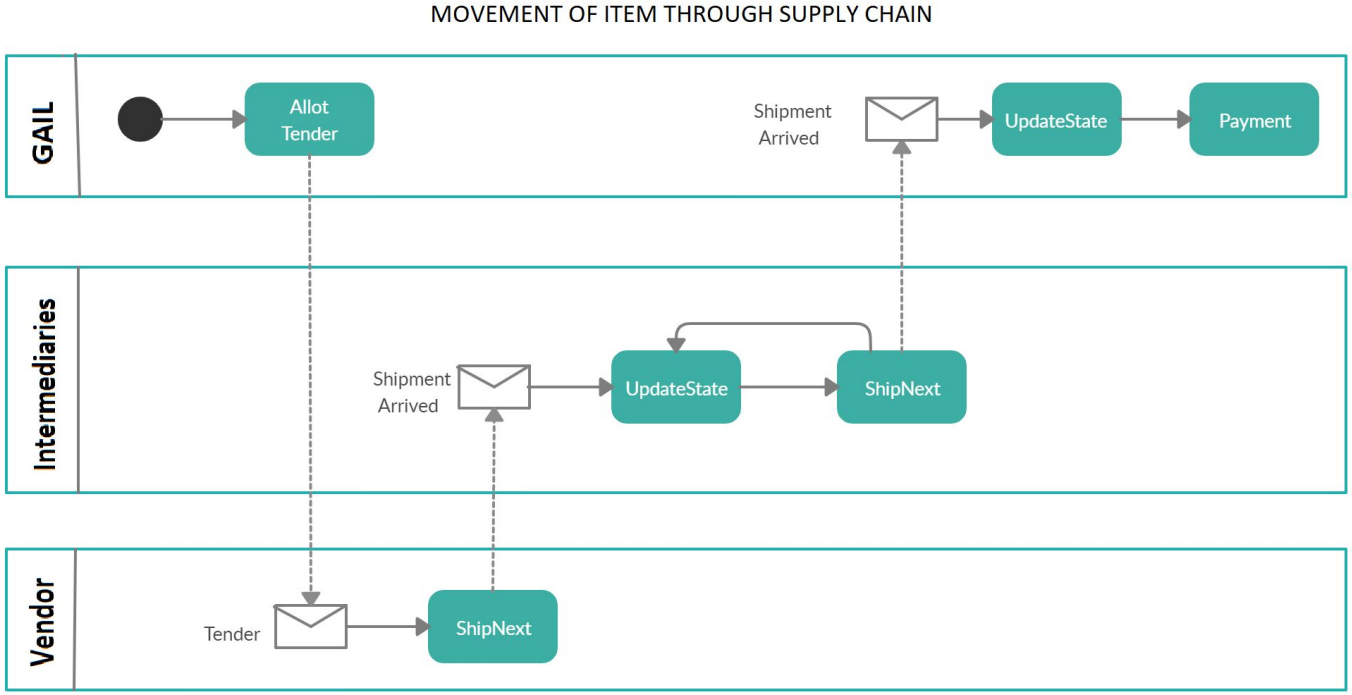
Use case Diagram

Supply Chain



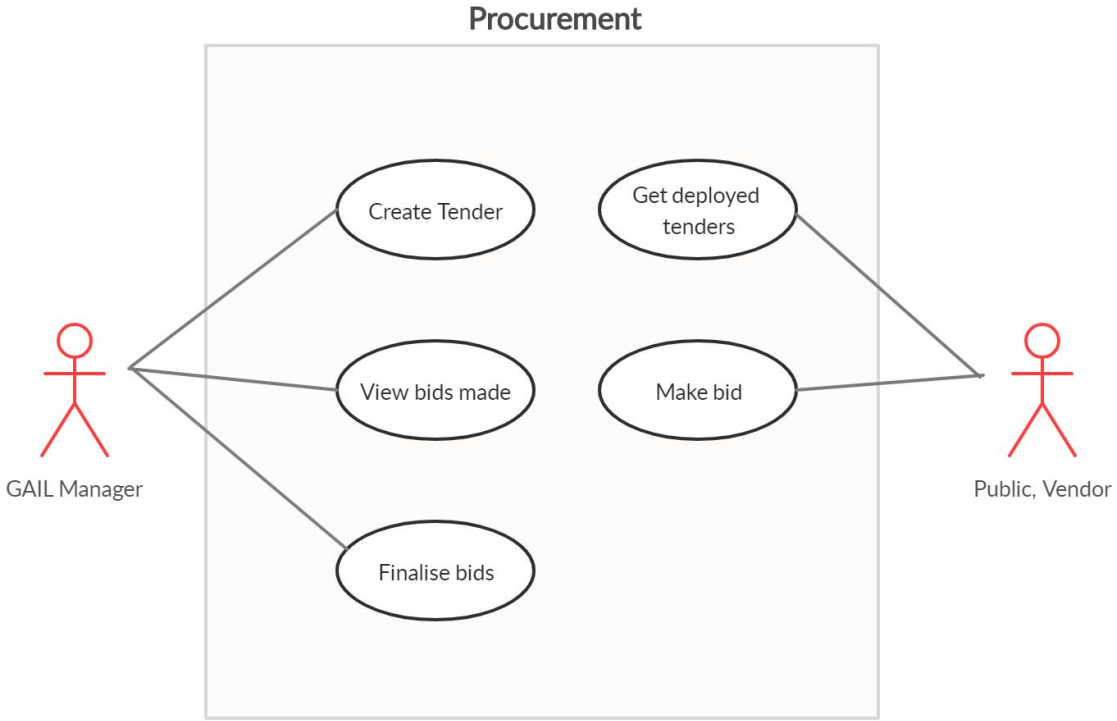
Business Process Model

Supply Chain



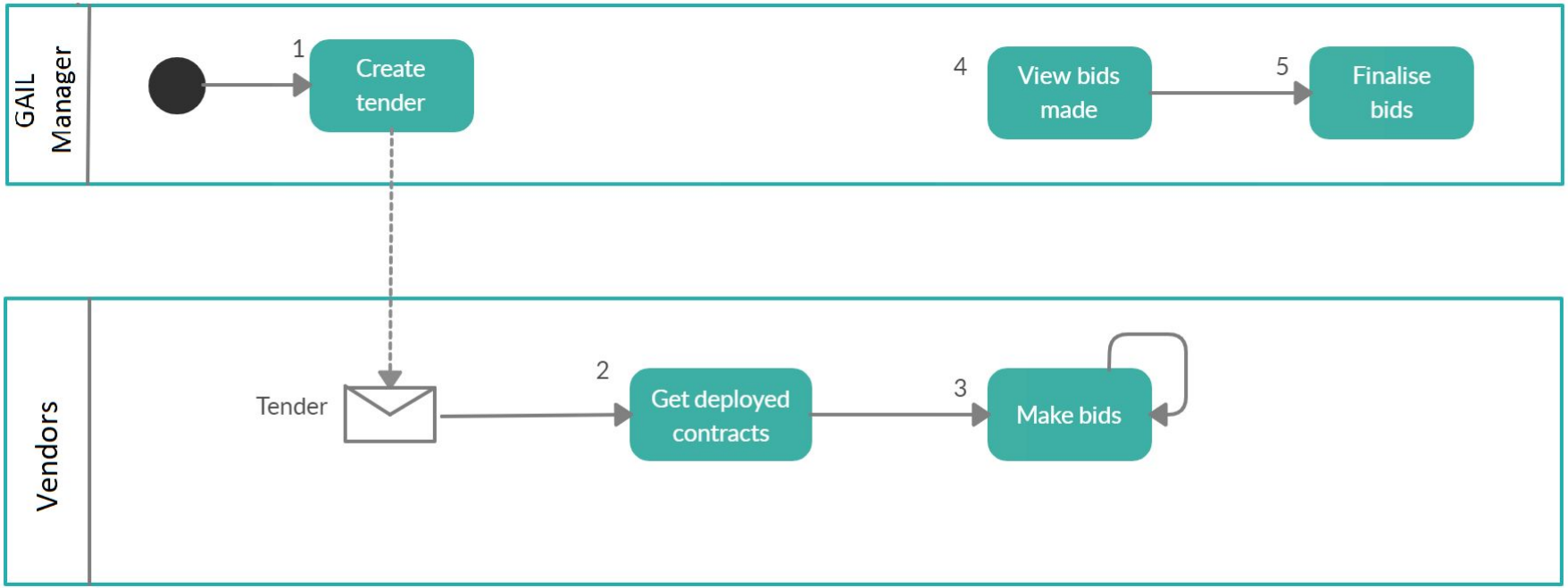
Use case Diagram

Procurement

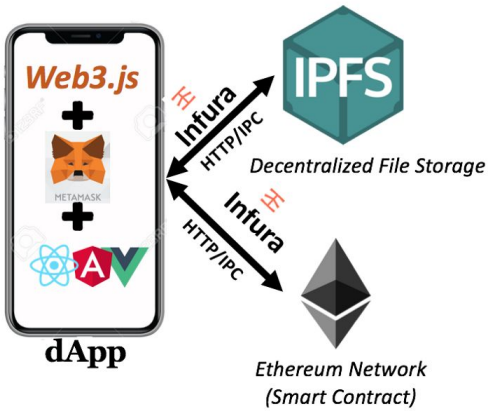


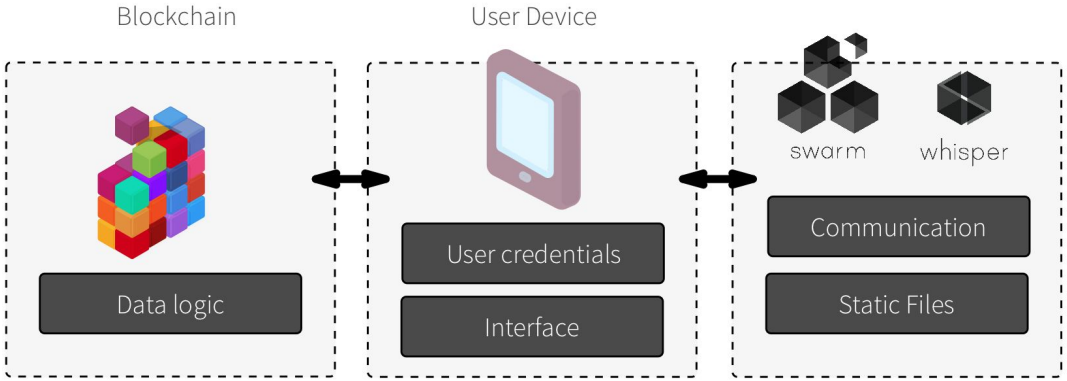
Business Process Model

Procurement

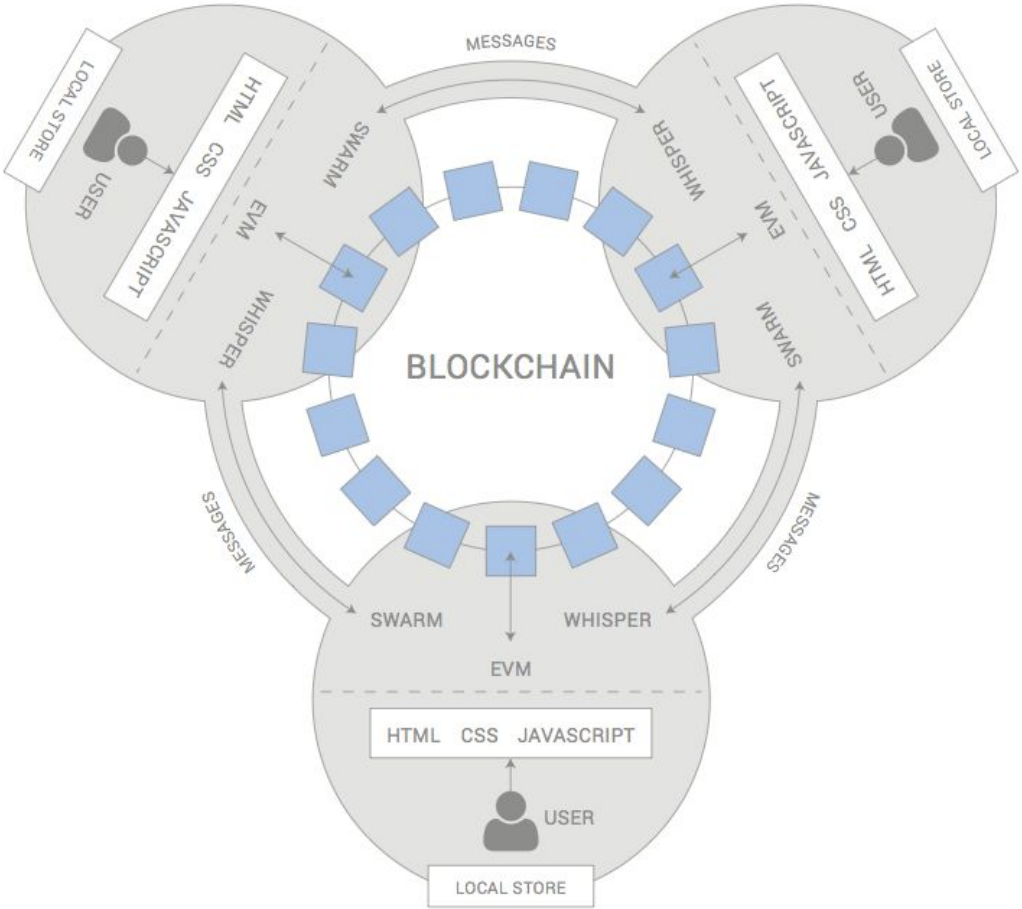


Technology Stack (Basic)





Technology Stack (Elaborated)



Lets See Implementation

Visit : https://sihvisionhome.ooowebhostapp.com/

Assumption.
User have Metamask extension installed in browser.
MetaMask (https://metamask.io/)

Benefits of our Approach

Problem with Existing Solution	
Lack of Provenance Tracking Lack of Improvisation ability	**Anyone can track with item id, can get present status as well as complete record of history**
Corruption by middle men	**Decentralization, Immutability due to blockchain**
Lack of trust	**Transparency due to blockchain**
Excessive cost	**Transparency due to blockchain**

Conclusion

Practicability	Going to save huge money for both the parties in supply chain.
Feasibility	1) Everyone have mobile phone now days 2) Public can get access with just installing Metamask
Sustainability	Approximately: 25.346 tx/s. As its Decentralized, there is no single point of failure. Ability to exist constantly
Scale of impact	Transaction is in an everlasting distributed record, and supervise the transactions more sturdily and transparently.
Future Scope	Blockchain allows right companies to succeed, by decreasing the number of bad players in the supply chain

Future Enhancements

- ➔ To attach feedback mechanism using events.
- ➔ To Improve UI by adding tracking depicted on map and developing Dashboard.
- ➔ **Using ML** for

  Predicting time of delivery

  Anomaly Detection

  ..... etc

Thank you

Questions?