Blockchain Powered Procurement System for GAIL

ORGANIZATION NAME: GAIL

TEAM NAME: CRYPTO-BUDS

TEAM LEADER NAME: DEVAISHI TIWARI

COLLEGE: IIT GUWAHATI

COLLEGE CODE:

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.

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

CURRENT SCENARIO

Report by Government of India

- The flaw is in the implementation stage of the procurement. Malpractices and lack of accountability have been widely considered the main problems of procurement.
- Malpractices take place at various stages of the procurement process, despite vigilance from the competent authorities. Therefore, the need of the hour is to put in place a transparent and competitive procurement system for the benefit of all.
- Such a system will ensure efficiency of the system and further contribute in providing value for money to the taxpayers.

'Govt tendering, procurement systems not start-up friendly'

Most cannot meet eligibility norms such as turnover in previous years

Despite the government's focus on nurturing the start-up ecosystem, getting a government contract continues to be challenge for start-ups. According to industry experts, while the tendering process itself is a difficult nut to crack, it is equally hard to put a price on innovation.

Sangeetha Gupta, Senior Vice-President, Nasscom, said that it is difficult to get a government contract for start-ups due to the government's tendering process. Governments insist on a minimum security amount for participating in the bidding process. Most start-ups cannot meet the eligibility criterion such as turnover in the previous years as they are new in business.

THE IDEA

- A multi-user and multi-platform **Mobile** and **Web application** that makes the process of public procurement paperless and more reliable with the help of **Smart Contracts** and **Blockchain** technology.
- The app would enable the **contractors** to submit their bids on the current **tenders** floated by the GAIL which would automatically get **evaluated**, increasing the **transparency** in the process.
- In an effort to simplify the current **shipping** procedure, we intend to use the **blockchain** technology which would enable **trusted financial** transactions between the parties without the need for any intermediary.

" This app will prove to be the ultimate and most powerful tool for the contractors to break the cycle of systematic corruption and ignorance in order to set new standards of national integrity. "

TECH-STACK

HTML & CSS

JavaScript

NodeJS

Android Studio

Hyperledger

RabbitMQ

Firebase

Smart Contracts

TECHNICAL WORKFLOW

<<App>>
Contractor

+ Contractor Information
+ Accepted projects
+ Current bids

+ Apply for bid
+ Register/login
+ Update project status
+ Update shipment status
+ Apply for insurance
+ Review sendback status of project

Projects

+ Project information
+ Completion Status
+ Shippable
+ Shipment details

«Client-side»
Android App

RabbitMQ

«Server-side»
NodeJS

«Secondary database»
Firebase (Optional)

<<Website>>
GAIL

+ User information
+ List of active projects
+ List of floated tenders

+ Float tenders
+ Contractor selection
+ Accept or reject product
+ Initiate payment

«Client-side»
HTML/CSS/Javascript/Bootstrap

«Smart Contract»
Select best contractor
(between Contractor and GAIL)

«Smart Contract»
Initiate payment
(between Contractor and GAIL)

«Smart Contract»
Initiate insurance transaction
(between Contractor and Insurance)

<<Website>>
Insurance Company

+ List of ongoing insurances
+ Project tracking details

+ Confirm insurance
+ Initiate transaction

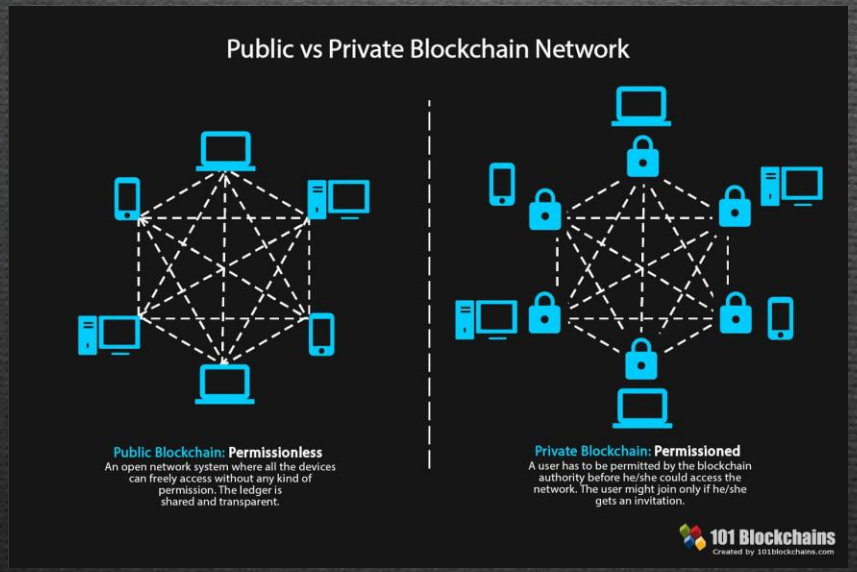
«Blockchain interface»
Hyperledger Fabric

Why Blockchain?

- A blockchain is a distributed, append-only database (ledger), maintained by a decentralized computing network running software that determines the consensus state of the database.
- It's easiest just to think of a blockchain as a decentralized database, where there is no central administrator, but every computer in the network keeps a full copy of the database and processes every transaction.

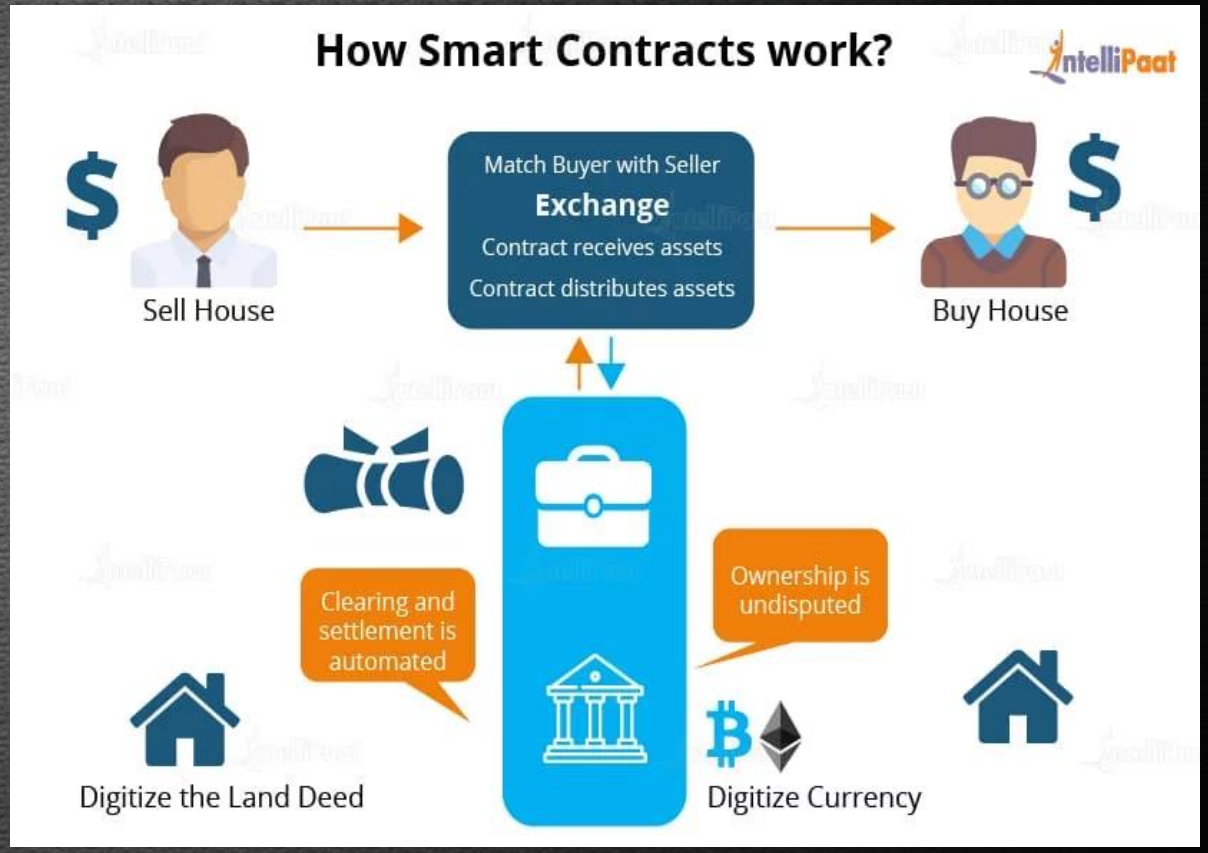
Public vs Private Blockchain

- Firstly, as has been extremely well documented, the blocks in bitcoin and Ethereum have a **storage issue**.
- Then we have the **throughput** problems which have been well-documented. Big enterprises need to deal with millions of transactions per day with near 0 latency.
- **Public blockchains**, especially the ones that follow the **proof-of-work** protocol require an immense amount of **computational power** to solve hard puzzles.
- Finally, the openness of the public chains is itself a detriment. Think about it. If you have a company which runs on a blockchain which can be accessed by **malicious actors and trolls**, would you really want to integrate a system like that?

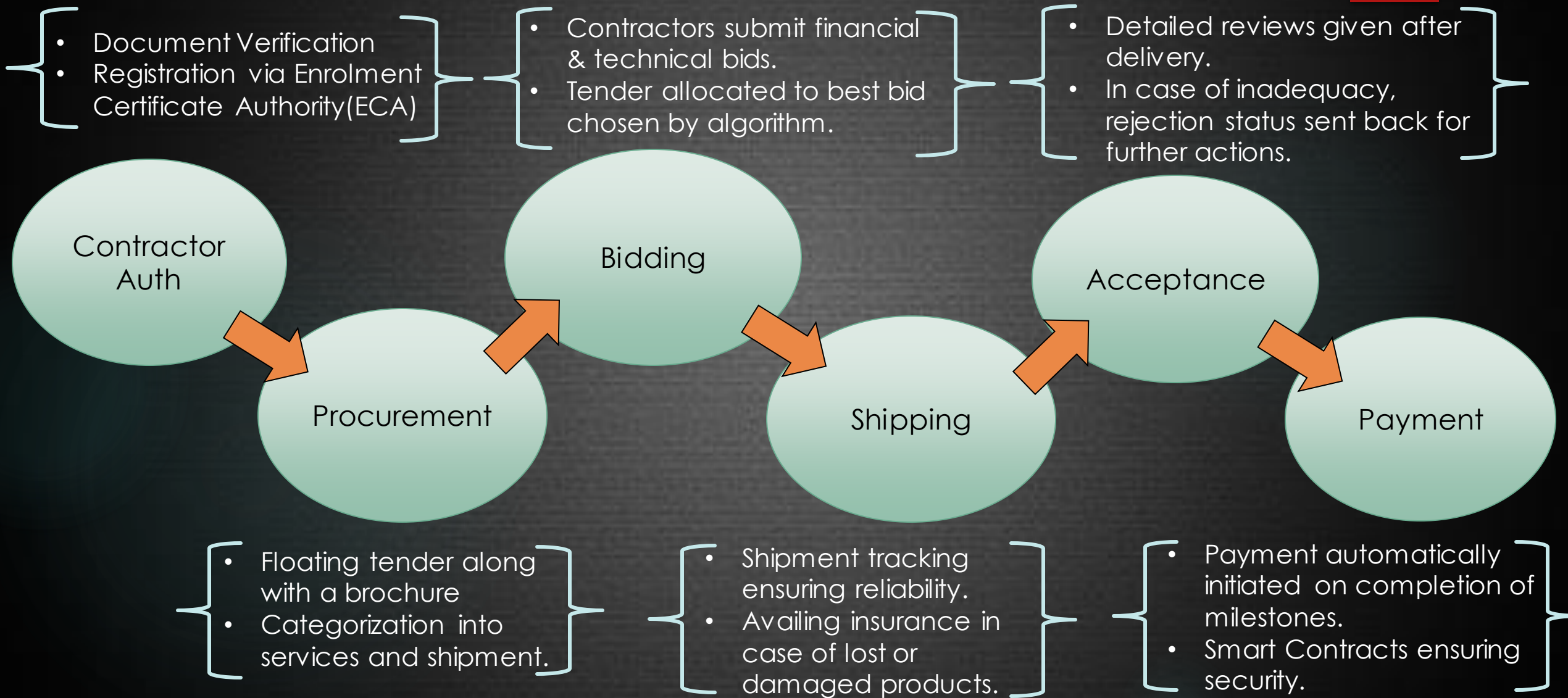


Smart Contracts

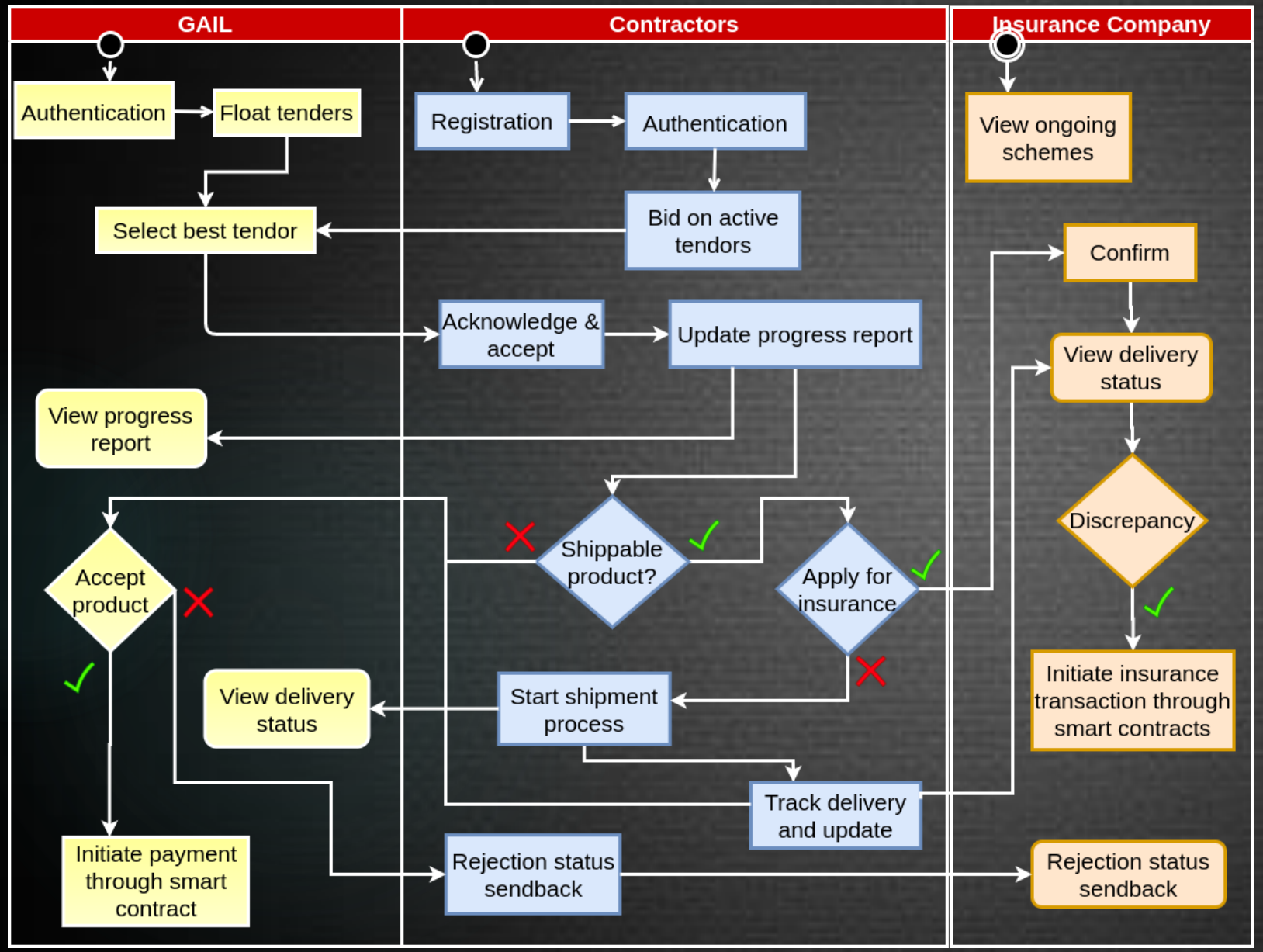
- *Smart contracts are **self-executing, self-enforcing contracts**. They are governed by the explicit terms and conditions laid out within them.*
- *The **self-executing nature** of these contracts provides a tremendous opportunity for use in any field that relies on data to drive transactions.*
- *So, whenever these **predefined rules** are met, automatically the agreement is enforced. Its purest form of **decentralized automation.***



APP PROCEDURE



USE CASES



DEPENDENCIES

- Payment gateway requires secure third-party applications.
- High distributed storage and computational resources needed.
- Shipment tracking requires manual intervention.