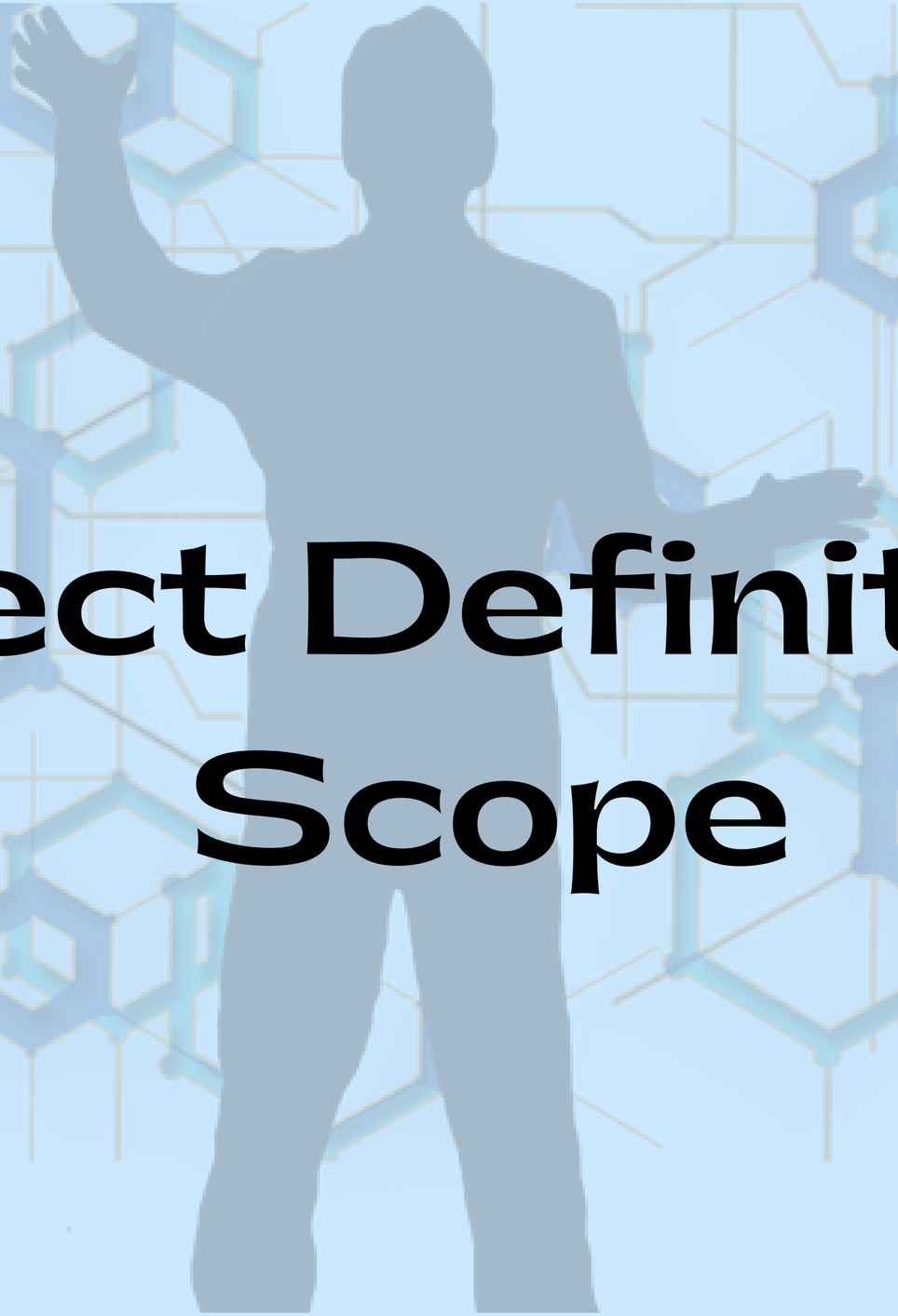
Team BLOCKWIZZ !

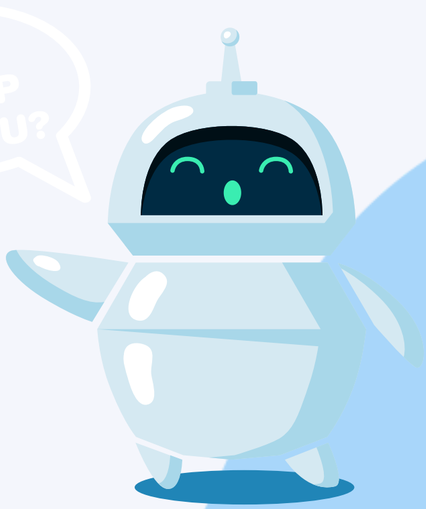
PROBLEM STATEMENT

Management - Fully Verifiable Logistics Records



Project Definition & Scope

Google Developer Student Clubs
Vellore Institute of Technology, Chennai
HOUSE OF DEVELOPERS



- Our project mainly focuses on how we can fortify the security of traditional well-known GPS tracking (Global Positioning System), to a more modern advanced, secure and reliable environment. This can be done via smart contracts to create a verifiable and immutable record of the movement of our package.

As we know, the security of any logistic operation depends on the ability to verify the location of the package at real-time and is therefore a pressing need to create trustworthy and immutable transactions to keep track of the exact location of goods

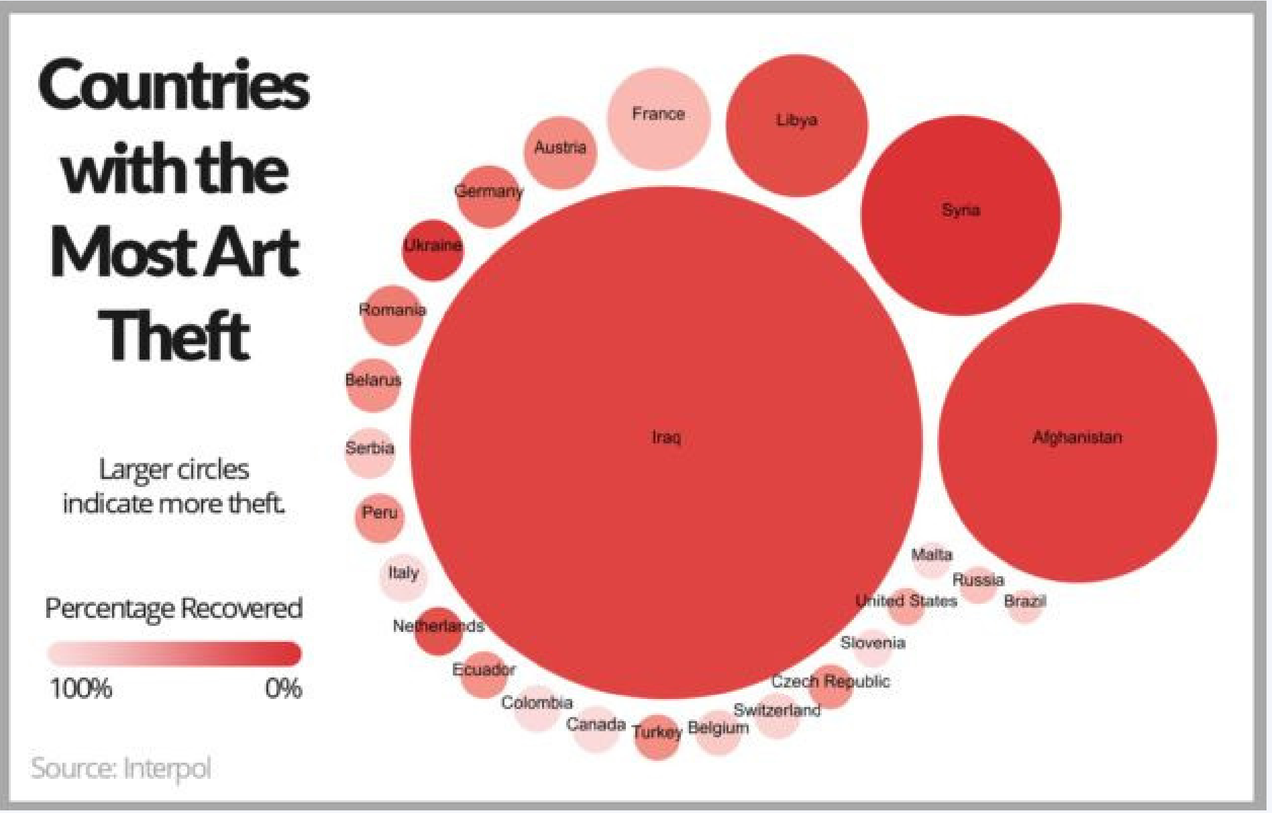
Introduction :

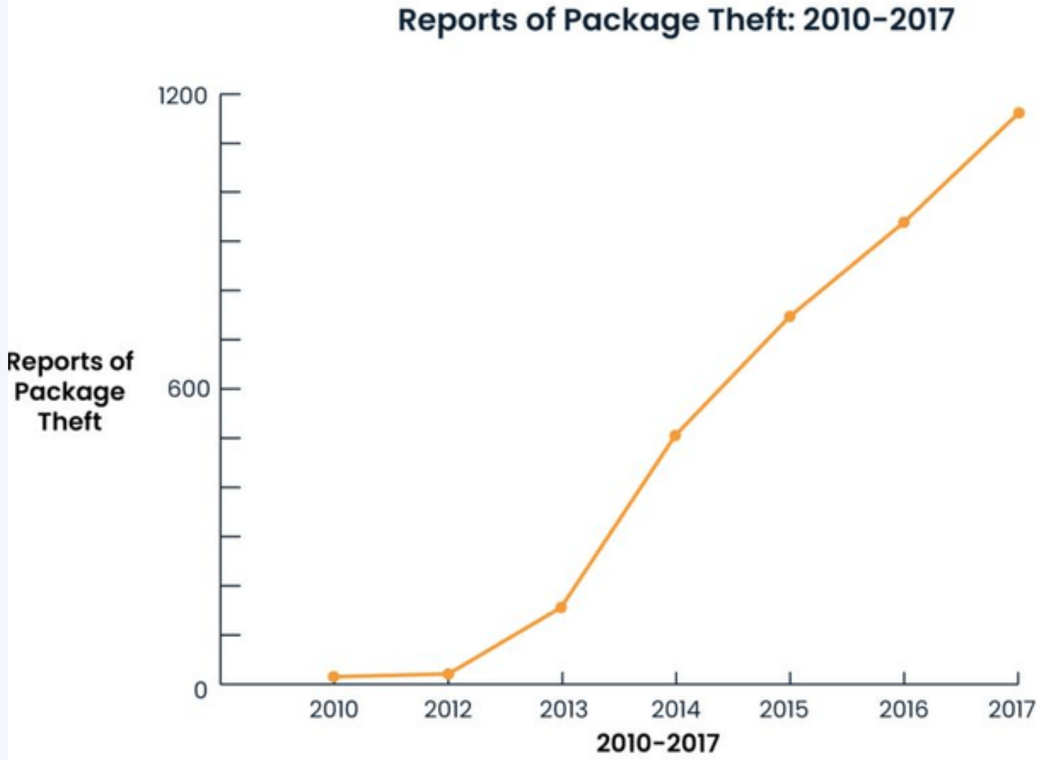
Blockchain technology offers some benefits over Traditional Centralized GPS. It provides higher levels of transparency, is less likely to be hacked, and enables faster data processing. we log the data provided throught gps asset tracking system on blockchain. The data is transmitted via AES- 256 encryption standard. Geo-tags can be used to determine the tracking and logging of transportation of high-value materials like minerals, parcels, luggage, containers, fuels, money transported from bank to bank, etc.

CASE !

Art theft, sometimes called artnapping, is the stealing of paintings, sculptures, or other forms of visual art from galleries, museums or other public and private locations.
Only a small percentage of stolen art is recovered.

Some famous art theft cases include the robbery of the Mona Lisa from the Louvre. The largest-value art theft occurred at the Isabella Stewart Gardner Museum in Boston, when 13 works, worth a combined $500 million were stolen in 1990.The case remains unsolved.





A brief view of statistics around art theft over past few years.

Thus to secure and recover these assets, we employ blockchain. We use Communication in a GPS-enabled asset tracking system : a GPS device that can communicate with NFC.

We attach a high-grade GPS tracker to a delivery vehicle or the location or the piece is stored. Products inside are equipped with an NFC chip each that communicates with the GPS. The GPS sends data about each product from their NFC chips to the blockchain platform.

Why Blockchain ?

GPS mapping requires processing and storing vast amounts of data, and this data is usually stored in a centralized server. This could cause latency issues while accessing and sharing data. On the other hand, blockchain-based de-centralised applications distribute data across devices (nodes) on the network. This will reduce latency and ensure seamless access to data. Spoofing GPS location is seemingly easy nowadays, apart from that editing GPS logs to hide the evidences is also feasible.

Understanding problem

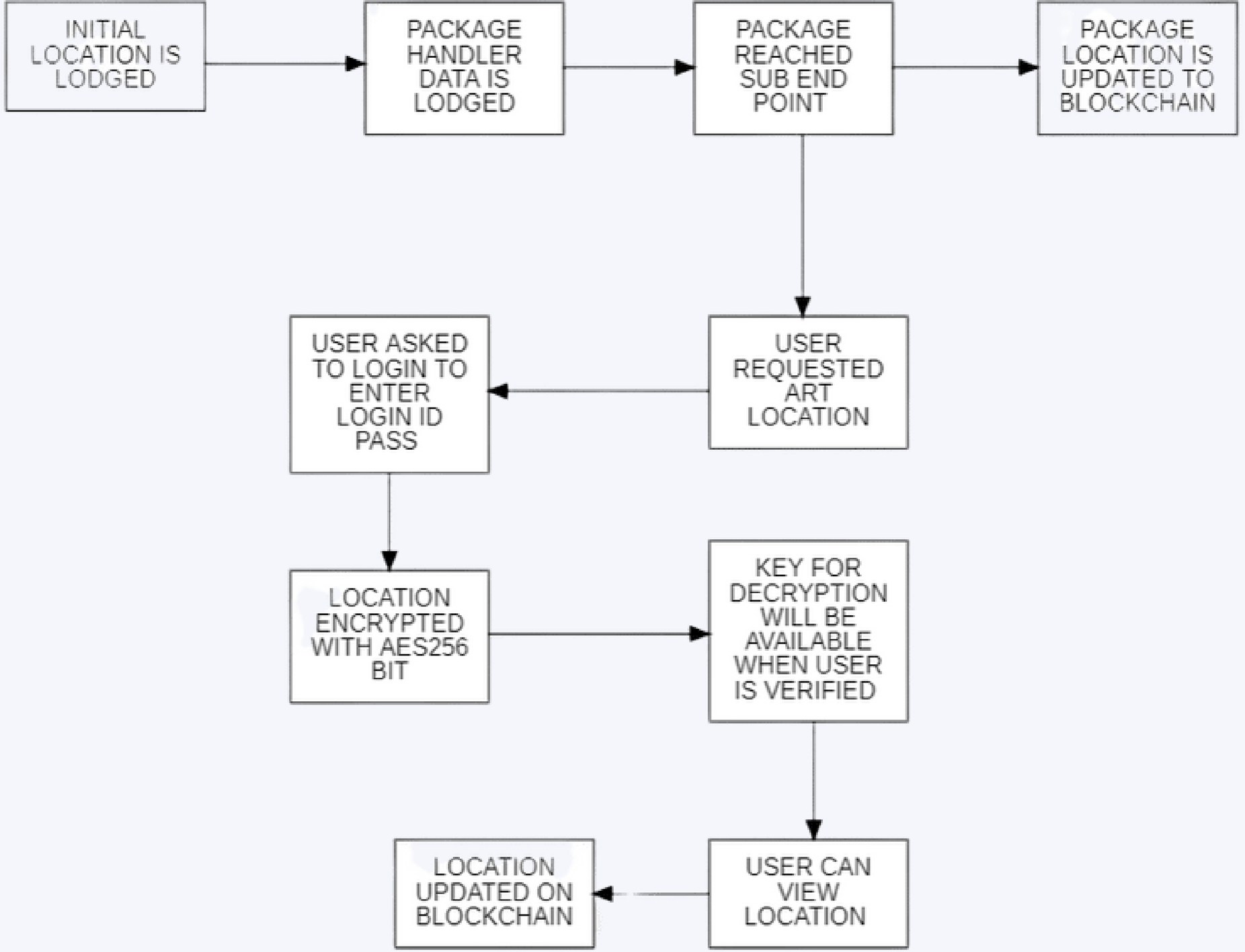
Improving the tracking and logging of the location of high-value goods has become a vital concern in today's supply-chain systems. during the transportation of high value goods there is often a chance of tampering, counterfeiting or robbery. In order to tackle these issue we propose the use of block chain technology to create immutable records of every transaction, exchange and live location of the product.

Novelty in the approach used to solve the problem

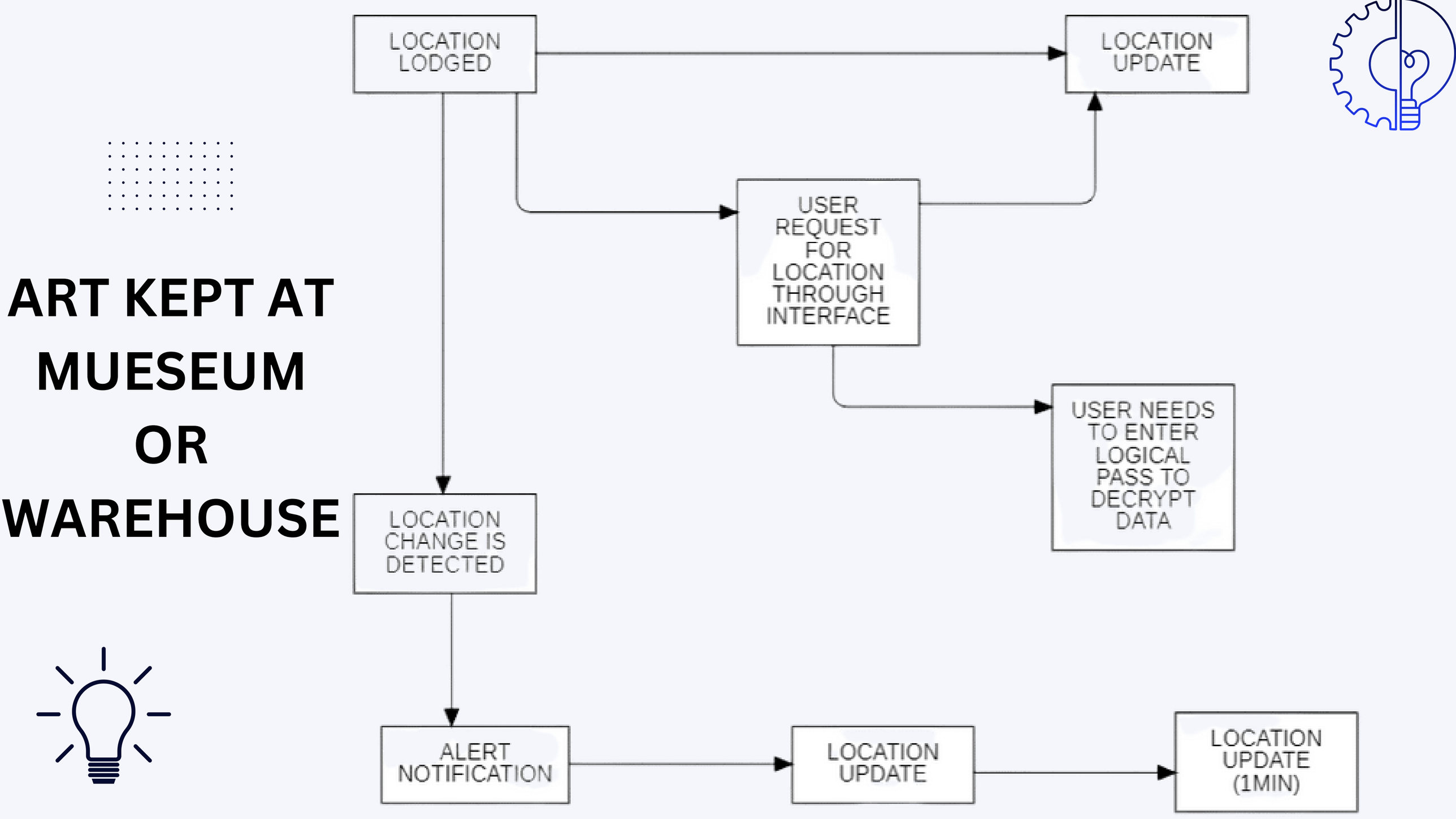
- Hidden NFC chips or RFID tags that interact with a GPS chip
- Immutable logs of recorded location data.
- Scannable bar codes on package linked to a block chain system to prevent counterfeiting of product.
- Communication via a "GPS-enabled asset tracking" system
- End-point and hourly location logging to blockchain system
- Encrypting the location data being transmitted using AES-256 bit encryption.
- Secured data transmission.
- User interface to get and log real time data
- smart-contracts
- Incase theft is detected an alert will be sent to local authorities with the live location via fail safe system

- NFC tags can be sneaked in the transport vehicles to prevent it from being noticed while it still performing the job of tracking by interacting with GPS.
- Immutable i.e. un modifiable logs of location data will be stored so as to prevent it from being tampered.
- Scannable barcodes on packages will carry the information of the goods inside to ensure the avoidance of counterfeiting of the goods.
- Location will be provided end-to-end point along with hourly updating of the current location.
- Location data will be encrypted using AES-256 bit and will be accessible only through the private key. The private key will be provided only when the user logins in his account, the details of which will be hashed and saved to make it more secure.
- Furthermore an inbuilt immutable location information system can be stored on board where incase of gps failure or gps spoofing is detected. it will provide accurate location tracking to the system.

ART IN TRANSIT



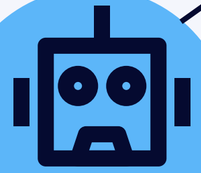
ART KEPT AT MUESEUM OR WAREHOUSE



Future scope

With the upcoming FOAM technology, we can easily eliminate middlemen and need to rely on GPS and entire tracking process can only be implemented through a strong, resilient blockchain system.

It can also be extended to implement payment between vendors. Any transaction that happens will be set as a smart contract.



Military Transportations

Minerals Transportations

It can be used to create verifiable exchange of goods between two entities.

Thank You