Team Name: HackByte

Theme: Blockchain

Team Members:

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Idea: Track the LifeCycle of Product

Objective:
Received Raw Material or Intentionally changed raw material to damage a product or to gain profit is a serious problem for the Manufacturers and for the Merchant.

Manufacturers face a lot of issues with their supply of products. Some manufacturers who are making the product around the world are not getting the same results from everywhere. Few factory workers change the product ingredients and send the product to the market. Overall brand value gets decreased. Particular factory gets profit for a short time but Overall Brand faces the reputation issue of the product. Merchant also gets stuck in all this and faces the problem. Investigation becomes tough when it comes to tracking from which factory this particular product was made, there is often no uniform method of recording, storing, and exchanging data.

Here Blockchain can be the best tool to track the product and to gain the trust of customers, stockholders and distributors. Blockchain has the power to build better, smarter, and more secure supply chains, tracking a product's journey every step on the way. No longer do individuals within a supply chain have to wonder when materials shipped out, who handled them, and when they'll arrive; the trail is audited with real-time visibility and recorded as blocks in a chain.

Why to use Blockchain:

- cost saving
- enhanced traceability
- enhanced transparency

WorkFlow:

Step 1: Hash generated by Merchant

Merchants will have to first sign in on the platform and will upload the requirement in the distributed database. Hash will be generated via IPFS and Merchant will share the hash to the Manufacturer for the order request.

Time-stamped records of transactions maintained by the Blockchain, it will become easy to track what transaction occurred at what time and date.

Step 2: Order received by the manufacturer

Manufacturers can access the stored data with the help of generated hash shared by the Merchant.

The manufacturer can contact the suppliers to deliver the demand product, After accessing the product requirements.

When the manufacturer will add the rest of the details like type of material or quantity, a particular smart contract will get triggered and it notifies the supplier about the new order.

Blockchain is immutable and traceable, it will enable the merchant to know from where it is coming and how it is coming.

Step 3: Order received by the suppliers

Supplier will access all the information via blockchain only. Invoice will be added along with the raw materials images so the stakeholders remain informed. When Manufactures will send the approval from his side, the supplier will get a notification to pack the order.

At the time of packaging all the information like type and quantity of the raw material and date of packaging will be updated on Blockchain. Once everything is done from the supplier's side, he will mark status “Packed” and inform logistics service providers to distribute.

Step 4: Parcel details are added to the blockchain by the logistic service provider.

Logistic Service provider will add the information like driver name, vehicle number, dispatch time, number of cartons and product type.

IoT enabled vehicles can help manufacturers track and add the info to the Blockchain to get the real-time location of the vehicle.

Step 5: Order received by the manufacturer

After receiving the order, manufacturer will examine everything. If found something is wrong then the recall request would be sent. If found everything okay then will do the payment and everything again will get record on Blockchain like product received and payment done.

Step 6: Order received by the Merchant

Now Merchant will examine everything and get it certified that everything is okay or not. If product is accurate then money will be transferred to the Manufacturer. If something is wrong then Merchant can easily backtrace the entire product's life cycle in the whole blockchain supply chain system.

Technologies:

- Ethereum
- Solidity Language
- Truffle Framework
- Nodejs
- Ganache