Architecture of AutoBlockiot

The accident forensics is used to find out what all things happen in a vehicle accident.The accident can occur with a single vehicle or two or three vehicles involved.

Here we collaborate blockchain within the hardware of the vehicle such as OBD port ,from the OBD port we take the vehicle data such as speed,tilt,vehicle reg no.,location,direction,force of impact(mathematical calculation) etc.From there we forward the data to the hyperledger fabric network.

RSU -Road side unit,which is a router which participates in the network,takes the data from the vehicle and forward to the BC network.

STAKEHOLDERS:

Forensics

Police

Insurance

Manufacturer

RSU

->Initially the network will be created with existing stakeholders,where RSU will be the orderer org and all other stakeholders will act as other organizations.

->The network will be initiated,by running in the docker containers,ie ,each organization will be working in each separate docker container.

->Next step is to create the chaincode or the business logic for each method in this blockchain network.

->Methods contain:

->To fetch the data from the vehicle

->Methods for forensics department to communicate with the network and to transfer

data to it.

->Methods for police department to communicate with the network and to transfer

data to it.

->Methods for Insurance department to communicate with the network and to transfer

data to it.

->Methods for Manufacturer department to communicate with the network and to transfer

data to it.

So before the method creation the data which are to be generated from the vehicle are:

\*Speed of the accident vehicle just before the accident which is generated in the OBD

port .

\*Tilt of the accident vehicle.

\*Vehicle registration number

\*Location

\*Vehicle chassis number,year of manufacture ,other manufactured details.

\*Direction of the vehicle.

\*Weather conditions

\*Time and distance(Trip is on)

\*Camera reading from the CCTV,or from the neighbour vehicle.

\*Number of passengers in the vehicle.

\*Bent in the vehicle if any external sensors are used.

Method 1:Data fetching

Data from the vehicle is obtained,i.e from the OBD port connected in the vehicle.Chaincode will be written to fetch the data as soon as an accident or accident like scenario got triggered,i.e,airbag get activated ,or a small crash occurred.Initially the data such as reading from accelerometer,GPS location,vehicle number details are retrieved to the blockchain network as a file.Chaincode to retrieve the above mentioned data is the key part of this method.

Method2:Forensics department

After all the data is put into the network containing all the stakeholders,the next step is to deliver the required data to the corresponding stakeholder.

Here data for the forensics department such as accelerometer reading,tilt,direction of the vehicle,bent in the sides and back ,number of passengers,camera readings,weather conditions,time and distance etc.So we will write the method to forward the data to the forensics department which is one of the organizations in the network,using the channel created by the orderer RSU and the forensics department.

The Forensics department will then take the required data by entering the vehicle no. as the acknowledge detail ,so that they can take the data from the blockchain network and forensic department can stimulate and clearly analyze the accident.

Method3:Police department

Police department will receive datas such as chassis number,owner details,speed at the time of accident,location and relevant other details to create an FIR of the accident,also data from other witness vehicles to create a strong evidence of the accident without any alteration.Police input data will be the vehicle number.They can file the FIR online a can upload to the network.So we will create the method to forward the above mentioned data to the police department as soon as the vehicle number is inputted from the police department portal.

Method4:Insurance department

Insurance department will get the details of the owner,accident severity i.e about the bents,crash occurred points ,chassis number.There will be a channel between RSU and insurance and also between insurance and the manufacture organization.Insurance department can login using vehicle number through the portal ,they can send the details to the manufacturer(service center) through the channel without any alteration of the severity of the accident.

Also after receiving the invoice from the service center they can create the insurance amount depending on the policy of the owner of the vehicle.

Method5:Manufacture department

Manufacture department will receive the data directly from the RSU through the channel between RSU and manufacture org and also from insurance org.

The service center will receive data about the owner details,external crash details and all so they can create the total invoice to repair the vehicle to the network ,so that no one can tamper the invoice details or do any fraud in the amount.