

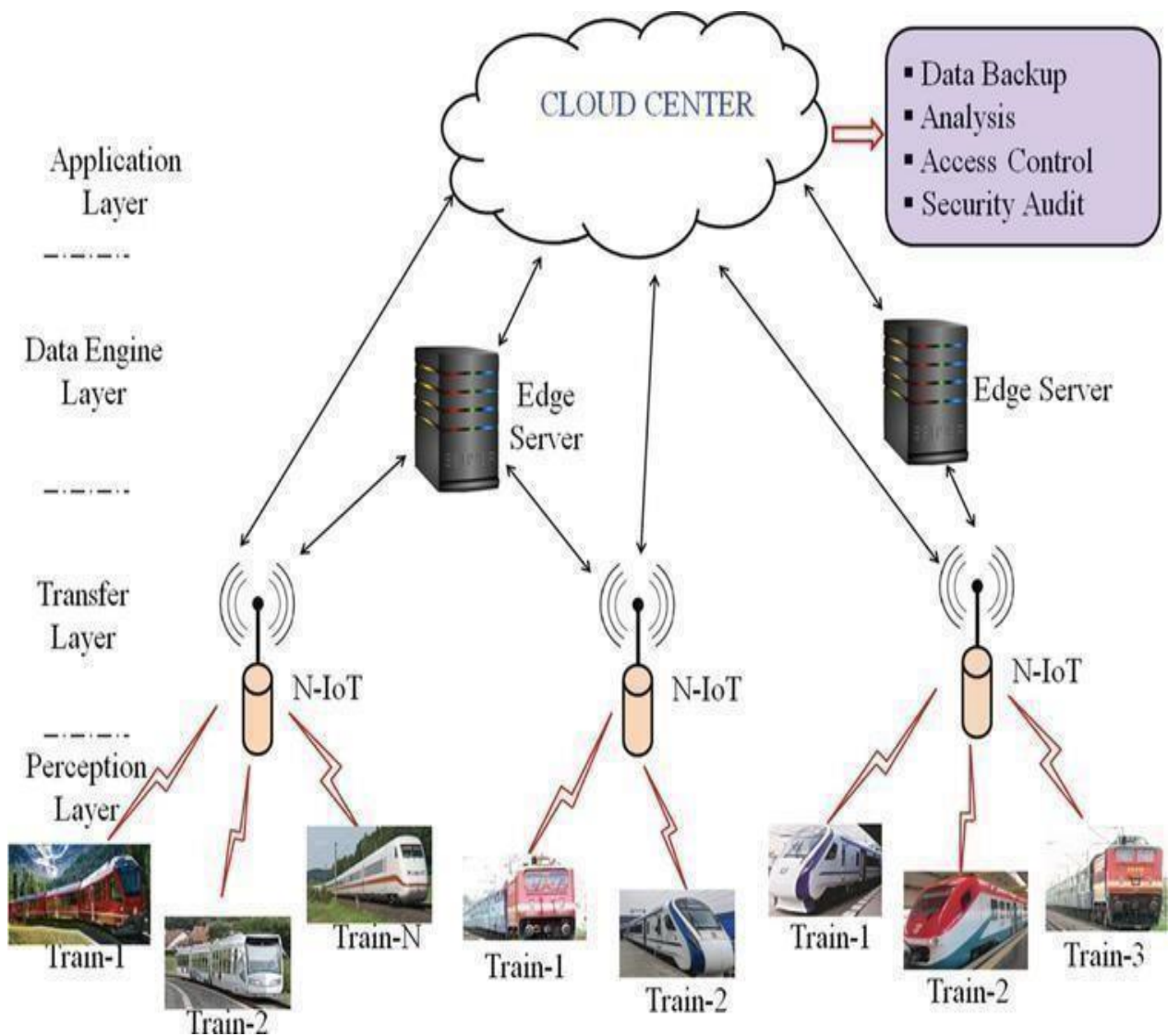
# PROJECT DEVELOPMENT PHASE

## SPRINT-2

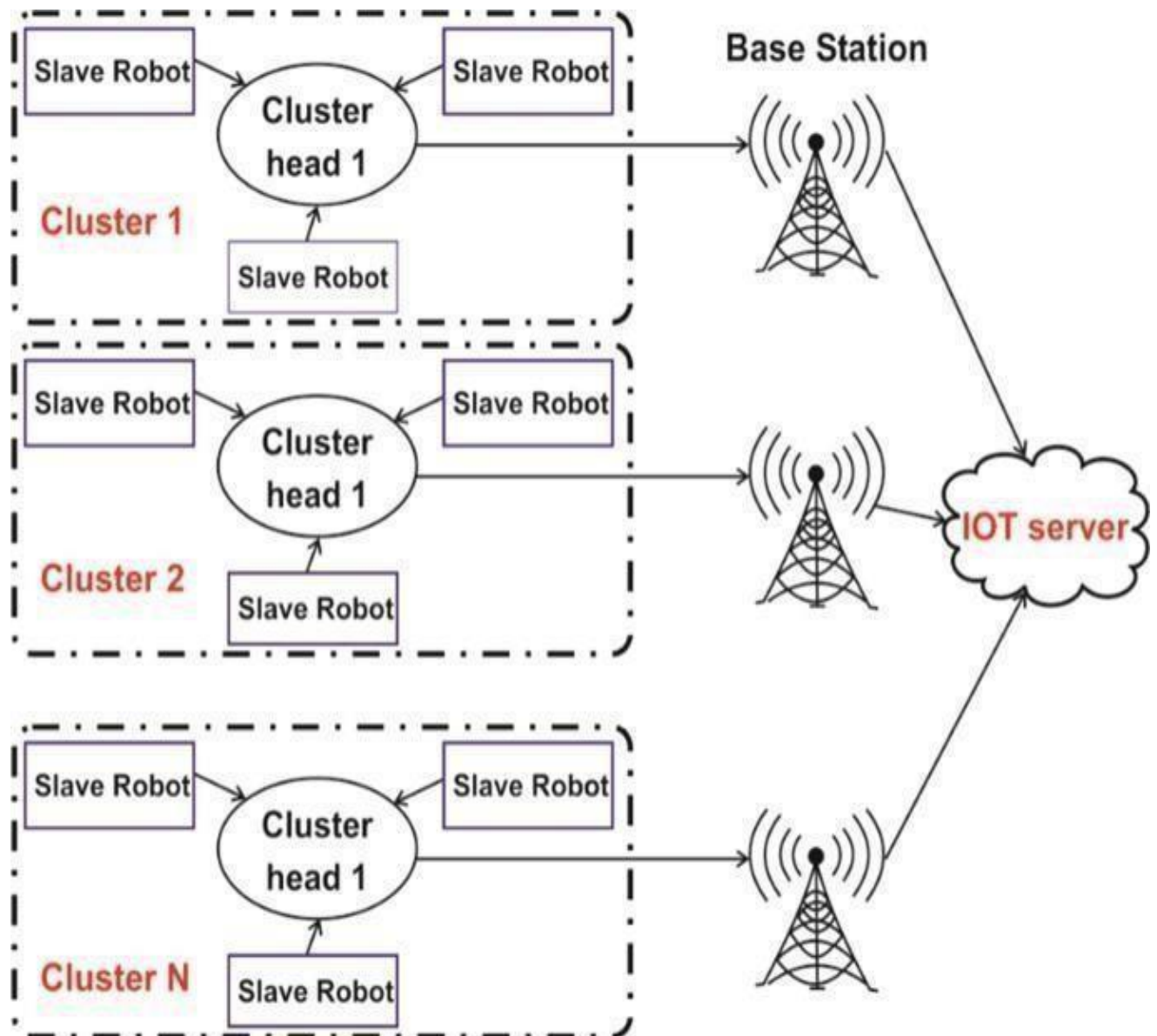
**Project Title:** Smart Solution for Railways

**Team ID:** PNT2022TMID14632

### Proposed architecture for smart track monitoring system.



## Structural health monitoring of railway tracks using IOT-based multi robot system:



## Main Program:

```
import wiotp.sdk.device
import time
import random
myConfig = {
    "identity": {
        "orgId": "gagtey",
        "typeId": "GPS",
        "deviceId": "12345"
    },
    "auth": {
        "token": "12345678"
    }
}

def myCommandCallback(cmd):
    print("message received from IBM IoT Platform: %s" % cmd.data['command'])
    m = cmd.data['command']
    client = wiotp.sdk.device.deviceclient(config=myConfig, logHandlers=None)
    client.connect()

def pub(data):
    client.publishEvent(eventId="status", msgFormat="json", data=mydata, qos=0,
        print("published data successfully: %s", mydata))
    while True:
        mydata = {'name': 'Train1', 'lat': 17.6387448, 'lon': 78.4754336}
        pub(mydata)
        time.sleep(3)
        # mydata = {'name': 'Train2', 'lat': 17.6387448, 'lon': 78.4754336}
        # pub(mydata)
        # time.sleep(3)
        mydata = {'name': 'Train1', 'lat': 17.6341908, 'lon': 78.4744722}
        pub(mydata)
        time.sleep(3)
        mydata = {'name': 'Train1', 'lat': 17.6340889, 'lon': 78.4745052}
        pub(mydata)
        time.sleep(3)
        mydata = {'name': 'Train1', 'lat': 17.6248626, 'lon': 78.4720259}
        pub(mydata)
        time.sleep(3)
        mydata = {'name': 'Train1', 'lat': 17.6188577, 'lon': 78.4698726}
        pub(mydata)
        time.sleep(3)
        mydata = {'name': 'Train1', 'lat': 17.6132382, 'lon': 78.4707318}
        pub(mydata)
        time.sleep(3)
    client.commandCallback = myCommandCallback
    client.disconnect()
```

**Code:**

```
import cv2
import numpy as np
import time
import pyzbar.pyzbar as pyzbar
from ibmcloudant.cloudant_v1 import CloudantV1
from ibmcloudant import CouchDbSessionAuthenticator
from ibm_cloud_sdk_core.authenticators import BasicAuthenticator
authenticator = BasicAuthenticator('apikey-v2-16u3crmdpkghxefdikvpssoh5fwezrmuup5fv5g3ubz', 'b0ab119f45d3e6255eabb978')
service = CloudantV1(authenticator=authenticator)
service.set_service_url('https://apikey-v2-16u3crmdpkghxefdikvpssoh5fwezrmuup5fv5g3ubz:b0ab119f45d3e6255eabb978@cloudant.com')
cap = cv2.VideoCapture(0)
font = cv2.FONT_HERSHEY_PLAIN
while True:
    _, frame = cap.read()
    decode_objects = pyzbar.decode(frame)
    for obj in decode_objects:
        # print("Data", obj.data)
        a = obj.data.decode('UTF-8')
        cv2.putText(frame, "Ticket", (50, 50), font, 2, (255, 0, 0), 3)
        # print(a)
    try:
        response = service.get_document(db='booking', doc_id=a).get_result()
        print(response)
        time.sleep(5)
    except Exception as e:
        print("Not valid Ticket")
        time.sleep(5)
    cap.imshow("Frame", frame)
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break
    cap.release()
cv2.destroyAllWindows()
client.disconnect()
```