TRAFFIC MANAGEMENT SYSTEM USING IOT

**PHASE 1: Problem Definition and Design Thinking**

**INTRODUCTION:**

Traffic management system is one of the major proportions of a smart city. With the rapid growth of population and rapid increase of vehicles across the whole country which further leads to the traffic Congestion which is usually seen on roads. Nowadays traffic congestion is a difficult issue to deal with as number of vehicles is increasing day by day. To tackle various issues of traffic on roads and to help authorities in proper planning, a smart traffic management system using the Internet of Things (IoT).

**PROJECT DEFINITION:**

The project involves using IoT devices and data analytics to monitor traffic flow and congestion in real-time, providing commuters with access to this information through a public platform or mobile apps. The objective is to help commuters make informed decisions about their routes and alleviate traffic congestion. This project includes defining objectives, designing the IoT traffic monitoring system, developing the traffic information platform, and integrating them using IoT technology and Python.

**DESIGN THINKING:**

1. **Project Objectives:**

Traffic control has as its principal objective to manage the movement of people and goods as efficiently and safely as possible. The dual objectives, however, frequently conflict or, at least, compete.

1. **IoT Sensor Design:**

Traffic Sensors (Doppler type)  
  
These sensors use the ultrasonic Doppler effect. They detect vehicles travelling in a particular direction using a change in frequency (the Doppler effect) according to the speed of the vehicle.

1. **Real-Time Transit Information Platform:**

Real Time Traffic Management systems manage traffic behaviours in real time by utilising a network of technologies including sensors, smart cameras, global positioning systems (GPS) and Bluetooth/Wi-Fi. This can be used to efficiently reduce congestion, bottlenecks and other traffic issues.

1. **Integration Approach:**

* The main modules in the proposed framework are as follows:
* A within-day module for TC;
* A choice model which implicitly simulates the RG effect in terms of compliance within the RG module;
* An iterative procedure for anticipatory route guidance which is able to model the consistency between user behavior and traffic signal decision variables, the consistency between information (*EsTTt*) and user behavior (*ETTt − 1*), and focus on information reliability (*ERt − 1*);
* A microscopic traffic flow model able to jointly simulate the effect of users’ preferences and decision variable optimizations.

**CONCLUSION:**

**To manage traffic flows and the effects of congestion on the roading network. Traffic Management Systems do this by addressing the traffic management effects of accidents and slow moving or queuing vehicles, planned events and extreme weather.**