RAKSHAPATH

SMART INDIA HACKATHON 2024

SMART INDIA HACKATHON 2024

TITLE PAGE

- Problem Statement ID – SIH 1595
- Problem Statement Title- Creating intelligent devices to improve the commutation sector
- Theme- Smart Vehicles
- PS Category- Software
- Team ID- 111
- Team Name - RAKSHAPATH

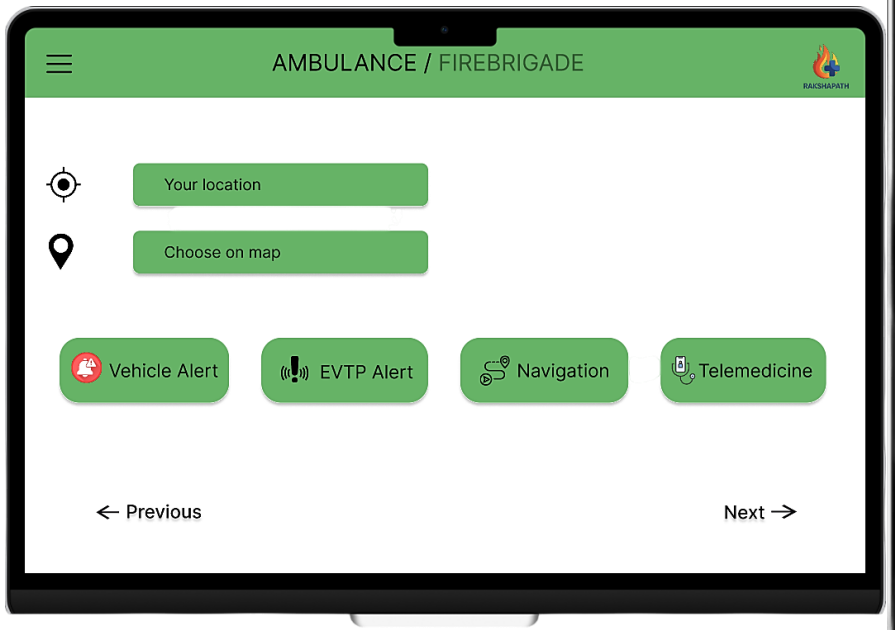
IDEA TITLE

❖ Proposed Solution (Describe your Idea/Solution/Prototype)

RAKSHAPATH is an advanced traffic management system designed to enhance the efficiency of emergency vehicle commutation using a combination of V2X communication technology and GPS navigation. By integrating both vehicle dashboards and mobile applications, RAKSHAPATH aims to streamline emergency response times and improve road safety.

To address mobile use restrictions while driving, our system integrates a vehicle audio alert feature that employs **Text-to-Speech (TTS) technology to convert text-based alerts into audible messages**, ensuring drivers receive real-time updates and routing instructions through in-car communication systems..

- **Real-Time Alerts**: Instant notifications via dashboards and mobile apps to clear routes.
- **Dynamic Routing**: GPS-based updates to optimize emergency routes.
- **Public Safety**: Enhances driver awareness.



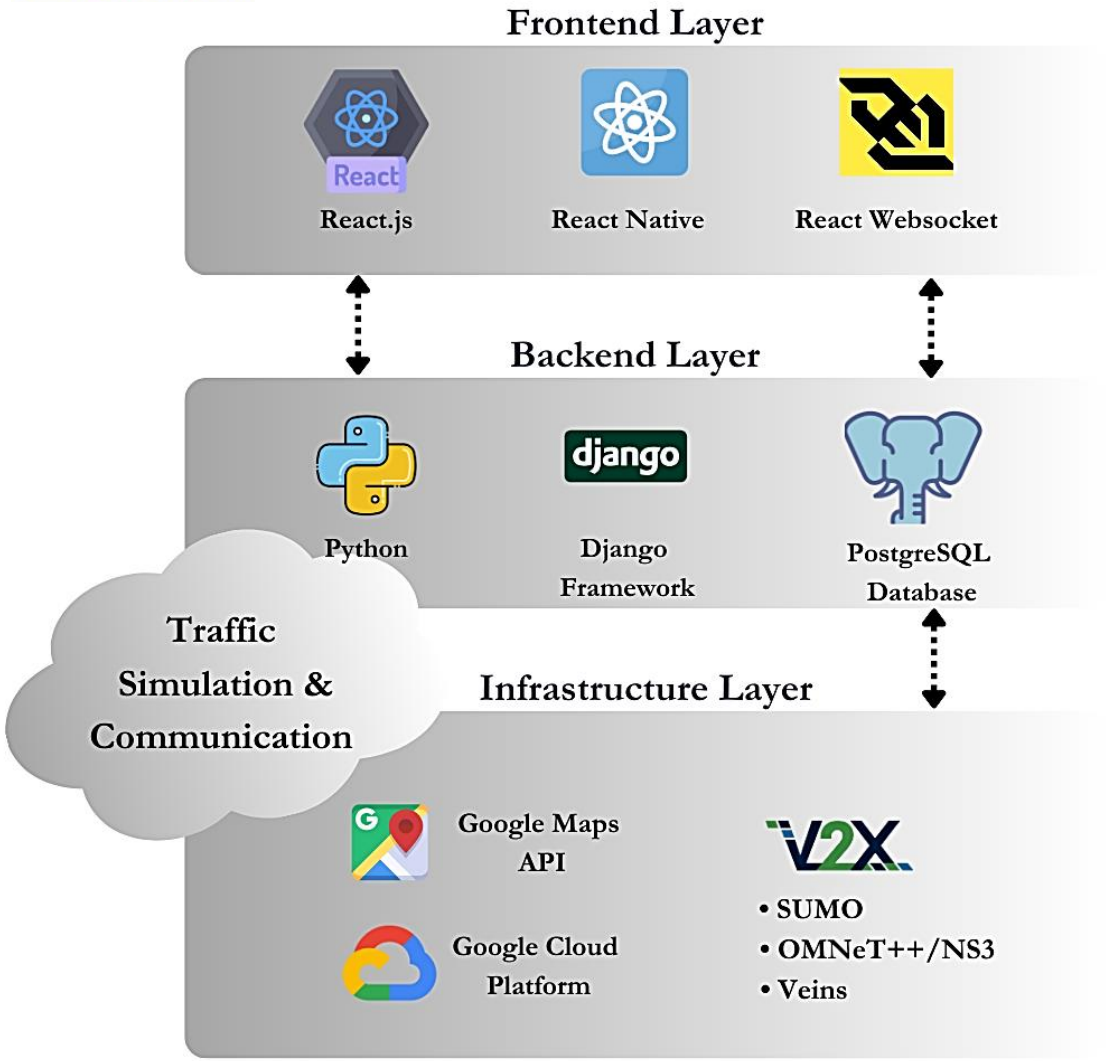
Dashboard of Ambulance

TECHNICAL APPROACH

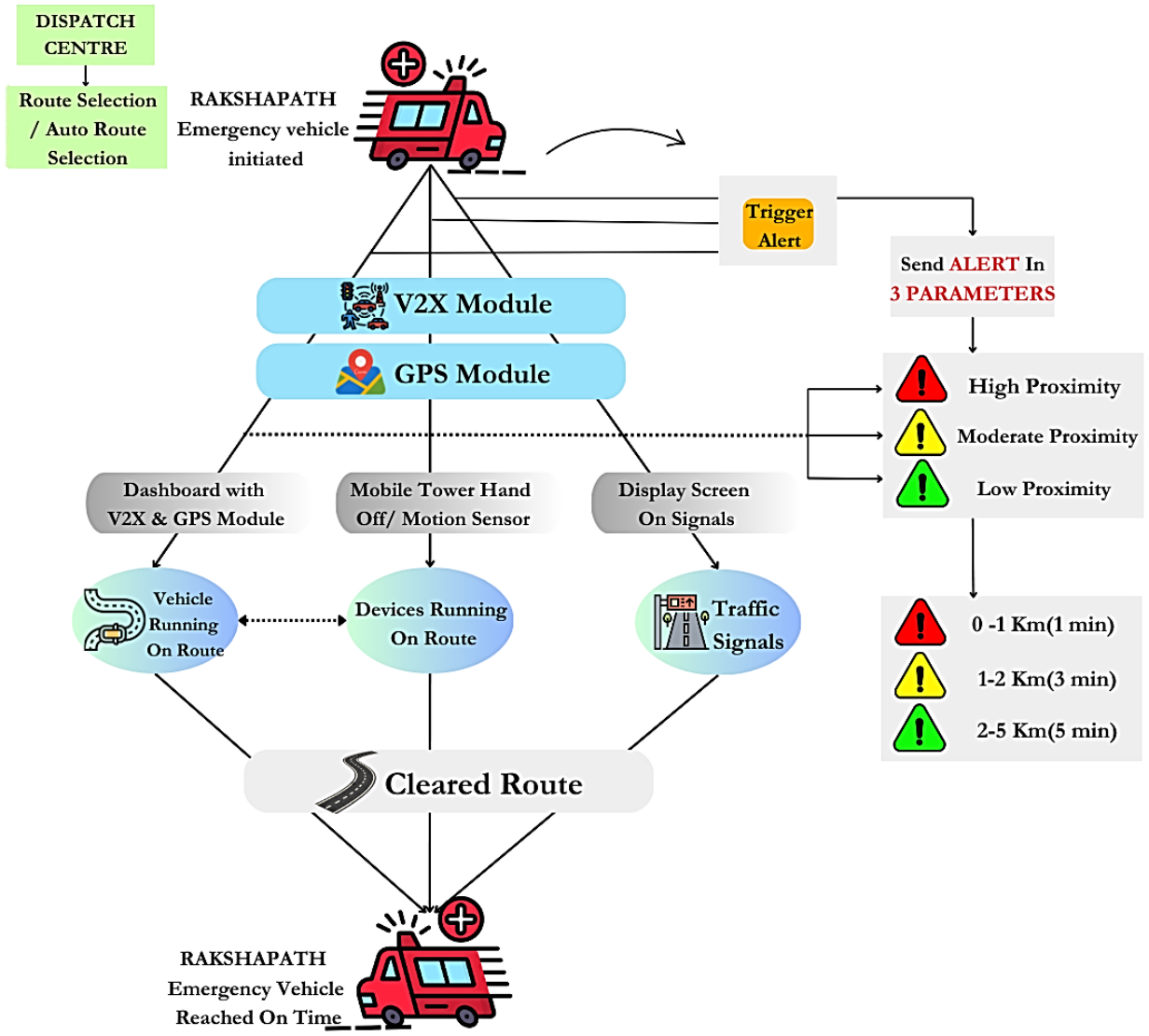
RAKSHAPATH

SMART INDIA HACKATHON 2024

Technologies to be Used :



FLOW-CHART:



FEASIBILITY AND VIABILITY

RAKSHAPATH

SMART INDIA HACKATHON 2024

Feasibility

V2X Communication: Reduces traffic congestion by 25%, minimizing emergency vehicle delays.

Dashboard Integration: Preferred by 7 out of 10 responders for critical operations.

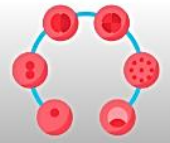
Mobile Supplement: Extends system coverage to 1 in 4 vehicles not equipped with dashboards.

Infrastructure Upgrades: Requires minimal modifications to existing traffic systems.

Scalability: Incremental rollout reduces upfront expenses compared to full deployment.

Viability

Cost Effectiveness



Phased Deployment

Vehicle Integration

System Longevity

Government Backing

IMPACT AND BENEFITS

RAKSHAPATH

SMART INDIA HACKATHON 2024

Potential impact on the target audience:

- **Faster Response Time**: RAKSHAPATH reduces emergency response times by 35-40%, getting help to victims faster and saving lives in critical situations.
- **Better Driver Awareness**: About 70% of drivers respond to real-time alerts, clearing paths for emergency vehicles, helping victims receive medical aid more quickly.
- **Improved Safety**: The system can reduce emergency vehicle-related accidents by 20%, safeguarding both responders and the public.
- **Increased Public Trust**: Around 3 in 5 people feel safer in cities that use smart systems like RAKSHAPATH for emergency management.

Benefits of the RAKSHAPATH:

- **Smart Traffic Management**: Reduces traffic congestion by 25%, speeding up emergency routes and improving overall traffic flow.
- **Broad Adoption**: Expected to cover 60% of vehicles within 18-24 months, increasing effectiveness in urban areas.
- **Quicker Help**: Faster route clearing and alerts help emergency services reach victims more quickly
- **Enhanced Safety**: Improves road safety by reducing accidents and ensuring smoother commutes.
- **Connected vehicle**: This up-and-coming technology enables vehicles to communicate directly with intersections.

RESEARCH AND REFERENCES

RAKSHAPATH

SMART INDIA HACKATHON 2024

Reference and Research Work:

- Highly Reliable Warning System for Emergency Vehicles (LINK)
- An Intelligent Emergency Dispatch System for Firefighters: A System Architecture and Case Study (LINK)
- An Efficient Emergency Dispatch System using IoT for Smart Cities (LINK)
- Suzuki, Maruti Suzuki, and IIT Hyderabad jointly showcase India's 1st Demonstration of V2X (Vehicle-to-Everything) Communication (LINK)
- Electronic Media Release:
  1- V2X Concept Video: (LINK)
  2- Use Case Demonstration Video: (LINK)