NextGen V2V

vehicle-to-vehicle communication

Smart Detection of Road Hazards.

Category : Students

Team Name : Ebon_Stars

Team Members' Names :
1.Vishal K S,
2.Kirthick M S,
3.Madhuresh S S

Team Mentor :
1.M.Vengateshwaran AP/CSE
2.Dr.T.Sethukarasi HOD/CSE

Problem Statement:

With rapid urbanization and rising vehicular traffic in Coimbatore, road safety and traffic management have become critical concerns. Traditional systems fail to detect hazards or manage traffic proactively, leading to frequent accidents and congestion, especially on busy roads like Avinashi Road and Gandhipuram. For instance, a sudden stop by a vehicle due to a pothole can cause a chain reaction of collisions and delays.

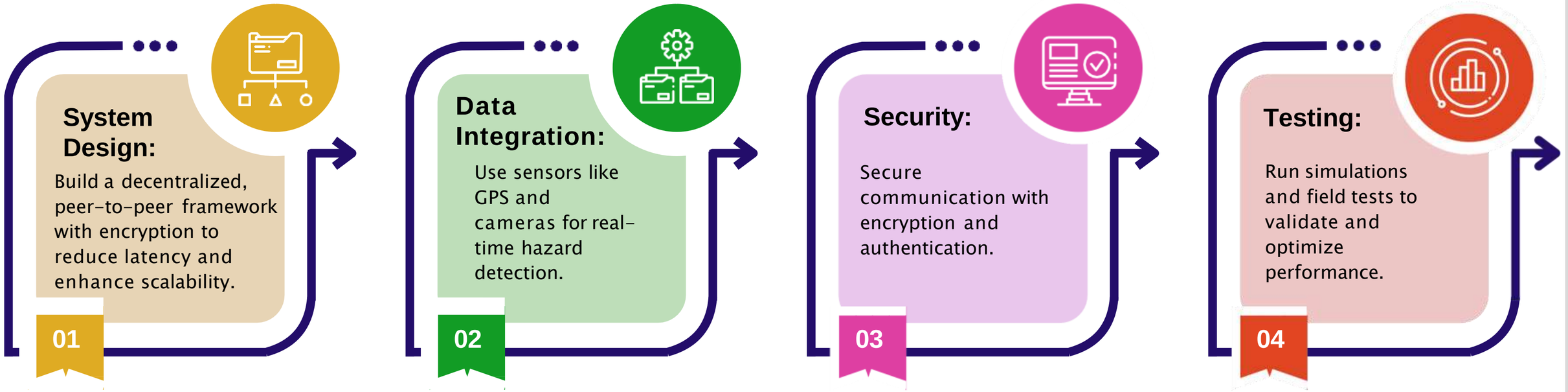
Objective:

To enhance road safety and traffic efficiency in Coimbatore by implementing a cost-effective Vehicle-to-Vehicle (V2V) communication system

- **Smart Urban Mobility**
- **Public Awareness and Engagement**
- **Cost-Effective Traffic Solutions**
- **Improve Data-Driven Decision Making**

Methodology:

- Our proposed system aims to proactively identify and alert authorities and commuters about potential hazards like potholes, accidents, weather-related issues, obstructions, and traffic congestion.
- By utilizing real-time data from sensors, cameras, and traffic monitoring systems, the proposed solution can significantly enhance road safety, reduce accidents, and improve traffic management.
- Additionally, this system supports real-time notifications to drivers, enabling them to make informed decisions and avoid dangerous situations.



Novelty /Contribution

Expected Outcome:

- Improving Coimbatore’s road safety with real-time V2V communication.
- Optimizing traffic with secure data sharing.
- Scaling systems for Coimbatore’s growth.
- Modernizing road safety with V2V tech.
- Enabling smarter, safer transport in Coimbatore.

Execution difficulties:

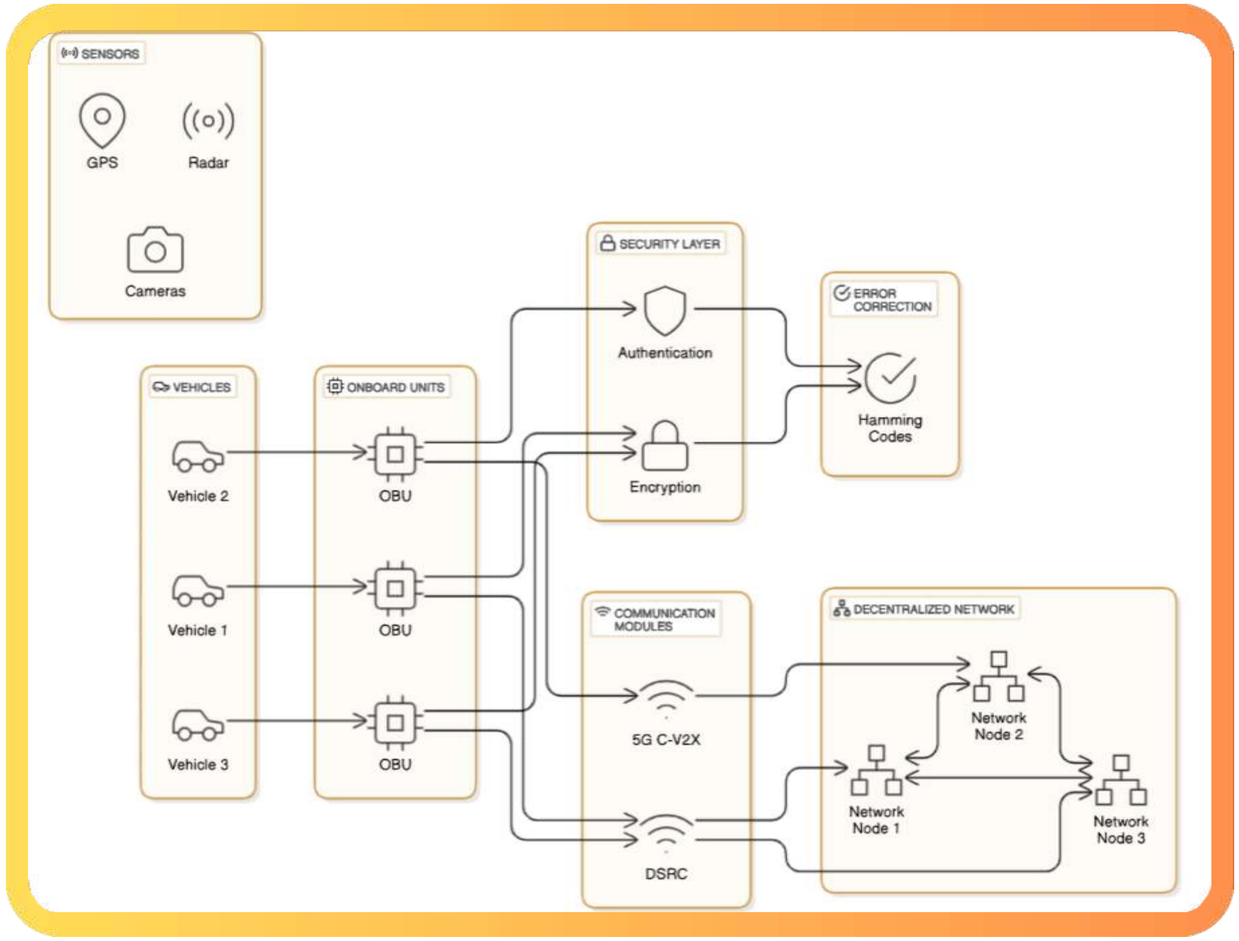
Coimbatore's dense and unpredictable traffic

Adoption of V2V technology among vehicle owners and local authorities

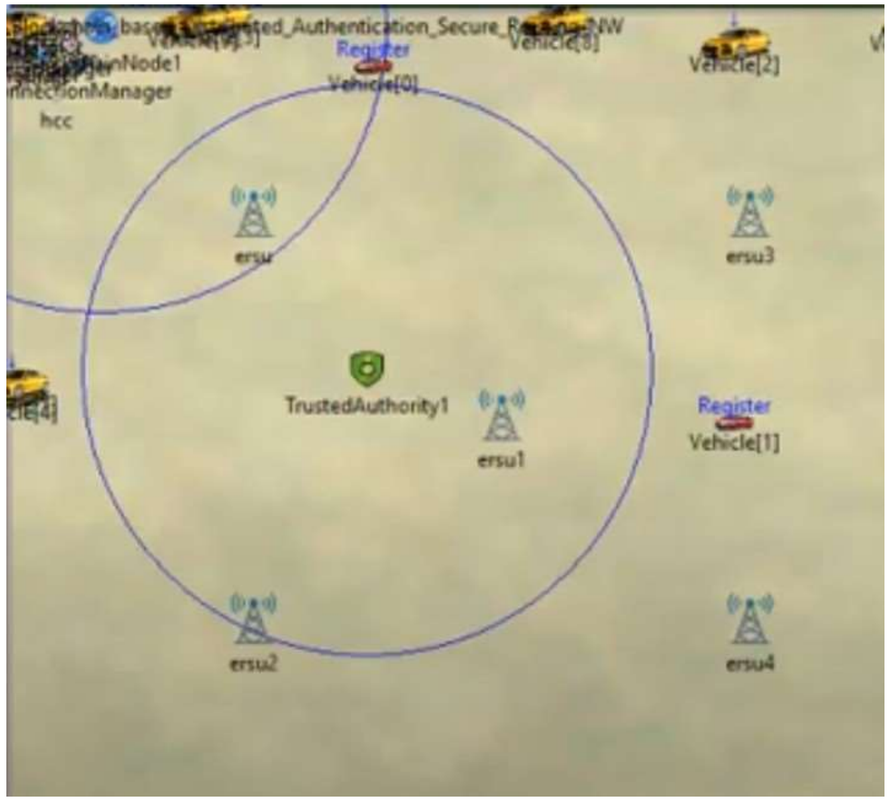
Older vehicles without advanced technology

Signal disruptions by narrow streets, crowded areas, and adverse weather conditions

Architecture Diagram:



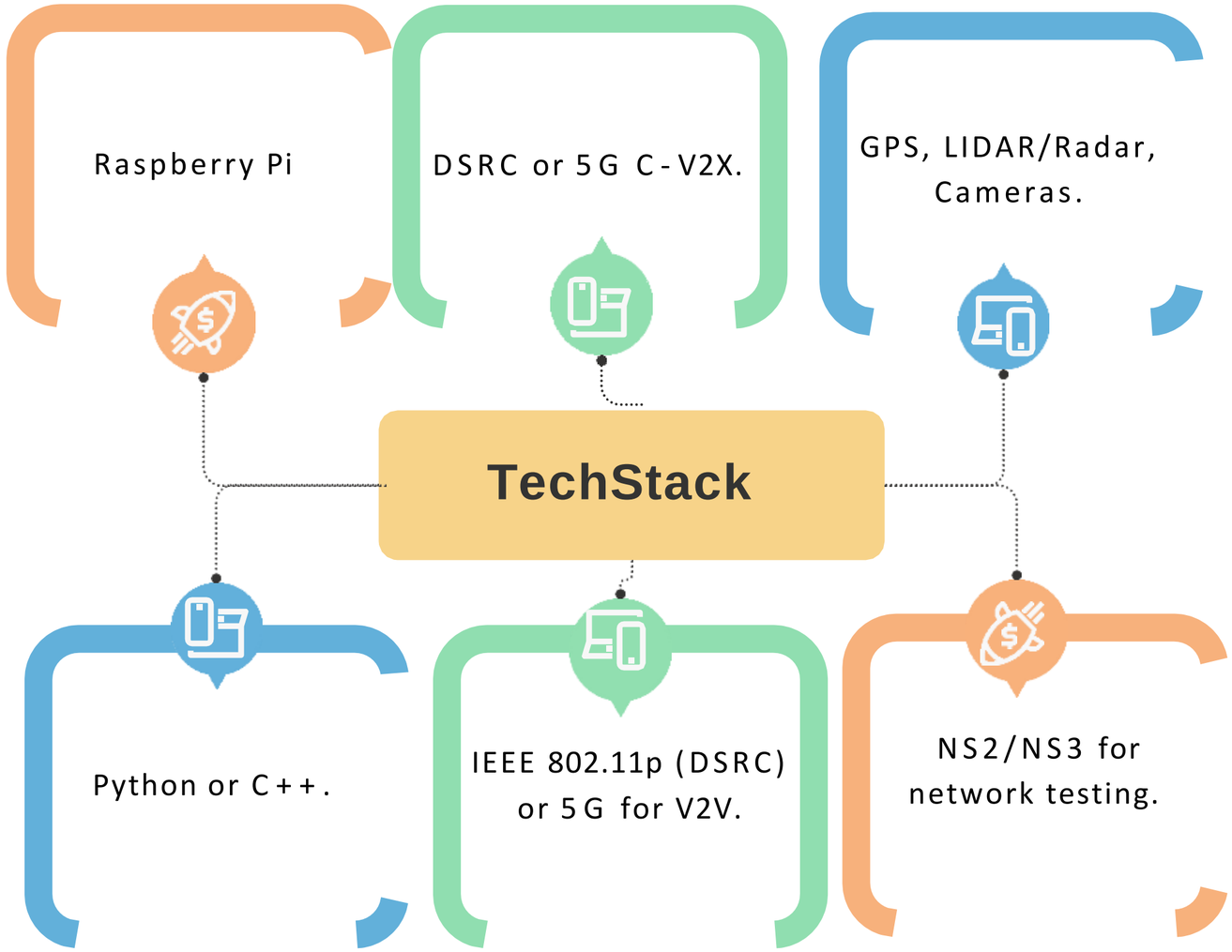
MODEL:



TRL Level: At TRL 6 , Developed and tested a functional V2V communication prototype with real-time collision avoidance, reliable data transmission, and secure, scalable interoperability, tailored for Coimbatore's urban traffic

Approximate Estimate of the Cost (If implemented):

Cost : 1.5 lakhs



Key Benefits:

- Proactive Hazard Detection
- Reduced Reaction Time
- Collision Avoidance
- Improved Situational Awareness
- Minimized Human Error
- Adaptive Traffic Flow
- Support for Autonomous Vehicles