Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID38378
Project Name	Signs with Smart Connectivity for Better Road Safety
Marks	4 marks

Technical Architecture:

Table-1 : Components & Technologies:

S. NO	Component	Description	Technology
1.	User Interface	Web Portal	HTML, CSS, Node-Red, Java script or on
2,	Application Logic-1	To calculate the distance of the dreck and show the real-time level in the webportal, information gets via ultrasonic sensor and the alert message activates with a python script to the web portal.	Ultrasonic sensor/Python.
3.	Application Logic-2	To calculate the weight of the garbage and show the real-time weight in the web portal, this info gets via load cell and the alertmessage activate with python to the web portal.	Load cell/Python.
4.	Application Logic-3	Getting the location of the road safety measure.	GSM / GPS.
5.	Cloud Database.	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
6.	File Storage	File storage requirements	GitHub, Local filesystem.
7.	External API-1.	Firebase is a set of hosting services forany type of application. It offers	Firebase.

		NoSQL and real-time hosting of databases, content, social authentication, notifications, or services, such as a real-time communication server.	
8.	Ultrasoni cSensor.	To throw an alert message whenthere is an accident or traffic on the road.	Distance RecognitionModel.
9.	Infrastructur e(Server / Cloud)	Application Deployment on LocalSystem / Cloud Local Server Configuration: localhost Cloud Server Configuration: Localhost, Firebase.	Localhost, Web portal.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Node-Red, Python, IBM Simulator.	IoT
2.	Security Implementations	Raspberry Pi is connected to the internet and for example, used to broadcast live data, further security measures are recommended by using the UFW(uncomplicated Firewall).	IoT
3.	Scalable Architecture	Raspberry pi: Specifications Soc: rspi ZERO W CPU: 32-bit computer with a 1 GHz ARMv6 RAM: 512MB Networking: Wi-Fi Bluetooth: Bluetooth 5.0, Bluetooth Low Energy (BLE). Storage: MicroSD GPIO: 40-pin GPIO header, populated Ports: micro HDMI 2.0, 3.5mm analogue audio-video jack, 2x USB 2.0, 2x USB 3.0, Ethernet Dimensions: 88mm x 58mm x 19.5mm, 46g	IoT

4.	Availability	These smart road safety measures use sensors like ultrasonic and load cells to send alert messages about the road safety level recognitiontechnology, and artificial intelligence, enabling them to automatically sort the problem to divert people to take another road for the better.	IoT
5.	Performance	A number of requests: RPI manages to execute 129-139 read requests per second. Use of Cache:512MB Use of CDNs: Real-time	IoT