Project Design Phase-I
Proposed Solution

Date	19 September 2022
Team ID	PNT2022TMID54322
Project Name	Signs with Smart Connectivity for Better Road Safety
Maximum Marks	2 Marks

Proposed Solution:

S.No.	Parameter	Description
1.	Problem Statement	• To replace the static signboards, smart connected sign boards are used. • These smart connected sign boards get the speed limitations from a web app using weather API and update automatically. • Based on the weather changes the speed may increase or decrease. • Based on the traffic and fatal situations the diversion signs are displayed. • Guide (Schools), Warning and Service (Hospitals, Restaurant) signs are also displayed accordingly. • Different modes of operations can be selected with the help of buttons.
2.	Idea / Solution description	Weather and temperature details are obtained from the OpenWeatherMap API. With this information, the speed limit will be automatically updated depending on the weather conditions. Furthermore, details regarding accidents and traffic jams encountered on specific roads are collected. Based on this, traffic is redirected followed by a path change on the map and traffic is cleared. So, in the road signal nodes will be placed to make it generic; where each button will function like changing predefined, warning signs and separate signs will be present for school and hospital areas. By activating this button, through the web application or through physical buttons, the sign of the board can be changed accordingly, and speed limit will also be set according to the area. In addition, pedestrians have the option to change traffic signs if they want to cross the street. If a pedestrian presses a button on a pole at the end of the street, the traffic will be analysed immediately. Therefore, traffic signs will be changed. This reduces the frequent change of traffic signs even when pedestrians are not present.

3.	Novelty / Uniqueness	Smart Dynamic Sign Board for any applications that update themselves using both buttons and web services. Pedestrians have the option to request a sign alteration for the crosswalk signal.
4.	Social Impact / Customer Satisfaction	Road users are informed about recent occurrences on the roads using smart sign boards. The customer can arrive at the desired location earlier than anticipated. Even in the dark, digital signs are readable.
5.	Business Model (Revenue Model)	This project uses a business approach where income is earned based on how long users actively interact with the product, since APIs are used to actively monitor the customer's environment. The road users can pay a subscription fee to utilise the web app, and the government can purchase this technology at a modest price.
6.	Scalability of the Solution	Future updates that are needed can be quickly applied, whether they are on the hardware side or the software side. The programming of the present product can be slightly modified and the hardware components can be directly interfaced with the microcontroller. The website application must be updated with the new capabilities in the case of software by adding a new section for the updated hardware. As a result, the product's current functionality won't be impacted, and new functionality can be added with ease. Additionally, a secondary circuit will be maintained in addition to the hardware to detect any issues and alert the online application. Additionally, a notification will be forwarded to the product service division.