Ideation Phase
Brainstorm & Idea Prioritization Template

Date	17 September 2022
Team ID	PNT2022TMID54322
Project Name	Signs with Smart Connectivity for Better Road Safety
Maximum Marks	4 Marks

Problem Statement: Signs with Smart Connectivity for Better Road Safety

Idea Listing:

1. The current systems have static speed limits and road markers. Road signs, however, can occasionally be altered. If there are road diversions as a result of high traffic or accidents, we can take those into consideration and, if the signs are digital, modify them to reflect the situation. This idea suggests a system with dynamically changing signs on digital sign boards. The speed limit would be lowered if it were raining because slippery roads would result. There is a web tool that allows you to submit information about detours from the main route, accident-prone regions, and informational signboards. The sign boards retrieve and show this information. Because it is open-source hardware and works with any operating system, we are using Embedded C coupled with the Arduino IDE software in this case. The hardware utilised is the ESP8266, which is inexpensive, has a small board size, built-in support for wireless networks, and uses less energy.

2. The proposed system converts standard signboards to smart signboards, which send data to an installed system inside the vehicle and generate a user-friendly voice alert to protect riders from unexpected, hazardous, or unusual features of the road, which may be missed by the driver due to various factors such as night, fog, rain, traffic, and so on, and leads to tragic accidents, smashes, or life-threatening situations. To avoid this, our proposed system framework will automatically communicate with traffic signs and will provide an advance alert to slow down the speed and related information on the screen, as well as translate that information to a user-friendly voice message. The proposed framework includes two main units: a car/vehicle unit and a traffic sign board unit. Our framework requires that the existing Traffic Sign Board unit be equipped with a UHF (Ultra High Frequency) RFID Tag. Another unit that will be installed in cars will be equipped with a UHF RFID reader linked to an Arduino UNO unit linked to an LED display unit with a voice system.

3. Many intelligent transportation systems (ITS) must be developed in order to reduce traffic congestion and improve public transportation efficiency. The proposed STSC system's core is the roadside unit (RSU) controller, and the system architecture, middleware, control algorithms, and peripheral modules are all discussed in detail in this paper. It is compatible with existing traffic signal controllers, allowing for quick and cost-effective deployment. The RSU controller connects to a signal controller and reads the traffic signal plan on a regular basis, which contains information about the signal state, phase separation, steps, seconds, and control strategy. The RSU controller can send commands to the signal controller, such as extending or terminating the green period. The RSU controller broadcasts the real-time signal plan on a regular basis via 802.11p or Bluetooth/Wi-Fi interface, and any OBU or smart phone App within the radio signal coverage range can receive and react to the signal plan data. Vehicles, for example, can take action prior to a signal change and perform eco-driving or re-routing.