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

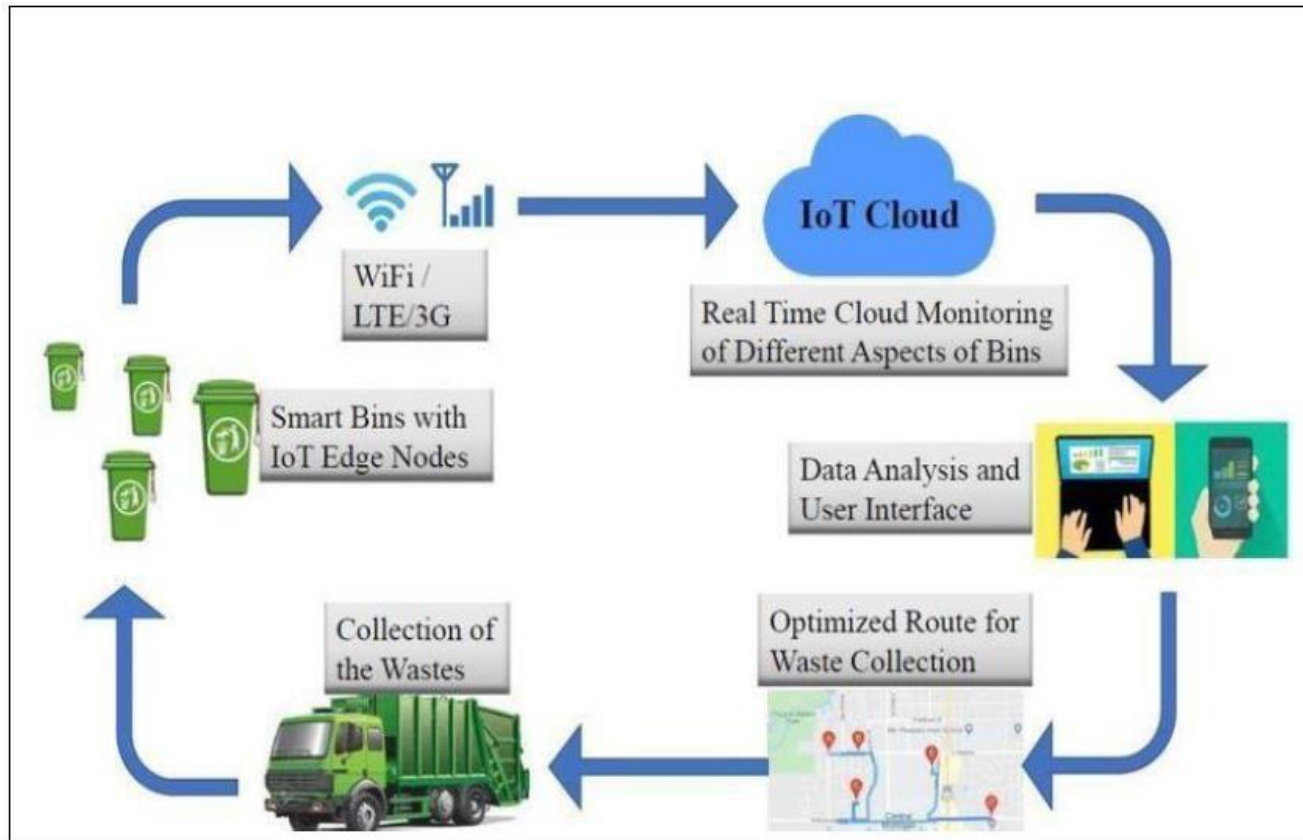| Date	28 October2022
Team ID	PNT2022TMID05290
Project Name	Project – SMART WASTE MANAGEMENT SYSTEM
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Website for Admin users and garbage collectors to interact with the application.	HTML, CSS, React JS
2.	Application Logic-1	To detect the level of the dumpster and display the real time level in web portal. Detected by ultrasonic sensor, data transmitted and the alert message generated with python script to web portal to notify the garbage collectors.	Ultrasonic sensors
3.	Application Logic-2	To determine the weight of the garbage and show the real time weight in web portal. This info provided by load cell, alert message activated with python to web portal. This allows the admin users to determine the appropriate vehicle to be sent to collect the garbage.	Force Sensors
4.	Application Logic - 3	To identify the location of each Garbage bin	GPS/ Geolocation API
5.	User Interface for users	Application to guide the truck drivers to the location of the dumpster.	HTML, CSS, React Native
6.	Cloud Database	To store the data like level, weight of the garbage, location of truck and dumpster to track the collection of wastes.	IBM DB2
7.	File Storage	File storage requirements	GitHub

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	NodeRed,Python,IBM Simulator.	IoT
2.	Security Implementations	Raspberry Pi is connected to the internet and in order to broadcast live data, further security measures are recommended and use 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 bins use sensors like ultrasonic and load cell to send alert message about the trash level recognition technology, and artificial intelligence, enabling them to automatically sort and categorize recycling litter into one of its smaller bin.	IoT.

5.	Performance	Number of request:RPI manages to execute 129- 139 read requests per second. Use of Cache:512mb Use of CDN's:Real time	IoT/Web portal.