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

Date	19 October 2022
Team ID	PNT2022TMID02664
Project Name	Smart Waste Management System For Metropolitan Cities
Maximum Marks	4 Marks

Technical Architecture:

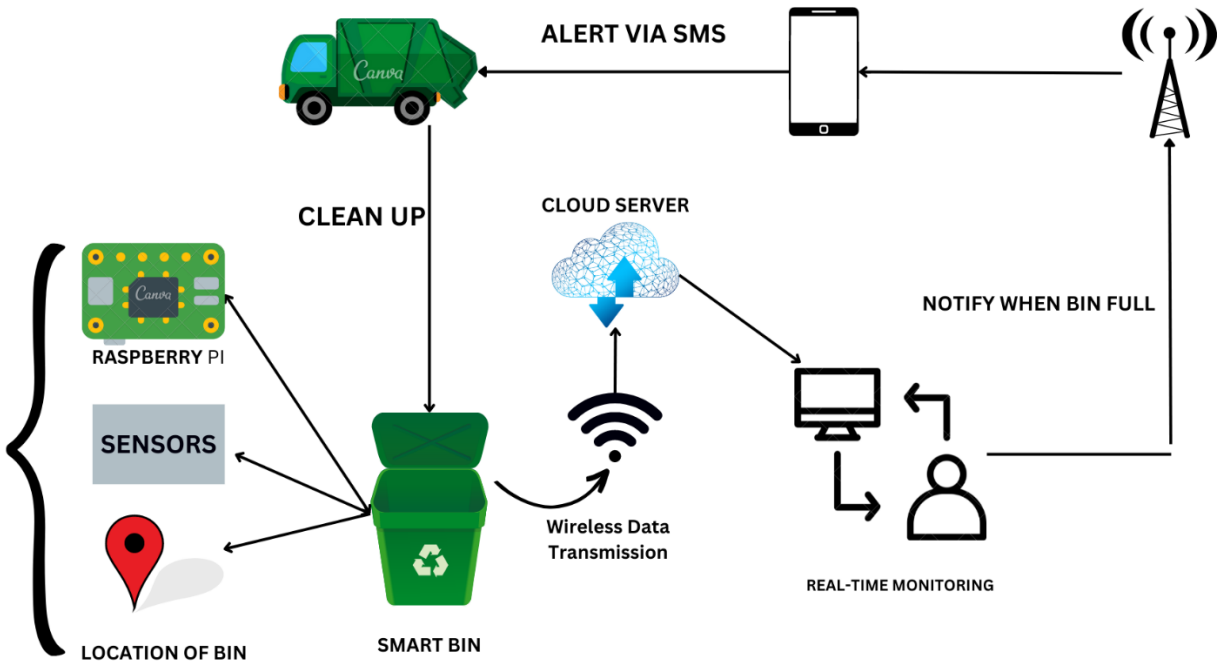

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Application	HTML, CSS, JavaScript, React Js
2.	Application Logic-1	The information from the weight sensor /load cell is used to calculate the real time weight of the bins and display the same on the web application & to alert the authorities is done using python.	Weight sensor /Load cell Python
3.	Application Logic-2	The information from the ultrasonic sensor is used to display the real time level of the bins in the web application & to alert the authorities is done using python	Level Sensor Python
4.	Application Logic-3	To locate the garbage bins	GPS module
5.	Cloud Database	Database Service on Cloud	IBM DB2 IBM Cloudant
6.	File Storage	File storage requirements	Git Hub Repository
7.	External API-1	Load cell and level sensors are used to monitor and to give alerts whenever the bins are full	Sensor Technology
8.	External API-2		Aadhar API, etc.
9.	Infrastructure (Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: localhost Cloud Server Configuration: IBM Configuration	Local, Web application

Table-2: Application Characteristics:

S. No.	Characteristics	Description	Technology
1.	Open-Source Frameworks	IBM Cloud, Python	IoT
2.	Security Implementations	Role based access control Provide security at the application level	RBAC Firewall
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 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	Load cell and level sensors are used by these smart bins to alert message when the level of bins reaches a threshold and avoid overflowing of bins.	IoT
5.	Performance	Number of requests: RPI manages to execute 129-139 read requests per second. Use of Cache:512mb Use of CDN's: Real time	IoT