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

Date	22 October 2022
Team ID	PNT2022TMID50923
Project Name	Project – Smart Waste Management For Metropolitan Cities
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Portal	HTML,CSS,NodeRed, Javascript and so on etc
2.	Application Logic-1	To calculate the distance of dreck and show the real time level in web portal, information getting via ultrasonic sensor and the alert message activate with python script to web portal	Ultrasonic sensor / Python
3.	Application Logic-2	To calculate the weight of the garbage and show the real time weight in web portal, this info getting via load cell and the alert message activate with python to web portal	Load cell / Python
4.	Application Logic-3	Getting location of the Garbage	GSM / GPS
5.	Database	Data Type, Configurations etc	MySQL, NoSQL, etc
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc
7.	File Storage	File storage requirements	Github,Local file system

8.	External API-1	Firebase is a set of hosting services for any type of application. It offers NoSQL and real-time hosting of databases, content, social authentication, and notifications or services such as a real-time communication server	Firebase
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Machine Learning Model	To throw alert message when garbage is getting full	Distance Recognition Model
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration:Local Host Cloud Server Configuration:Local Host,Firebase	Local Host,Web portal

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 for example used 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 audiovideo jack, 2x USB 2.0, 2x USB 3.0, Ethernet Dimensions: 88mm x 58mm x 19.5mm, 46g	IOT

S.No	Characteristics	Description	Technology
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