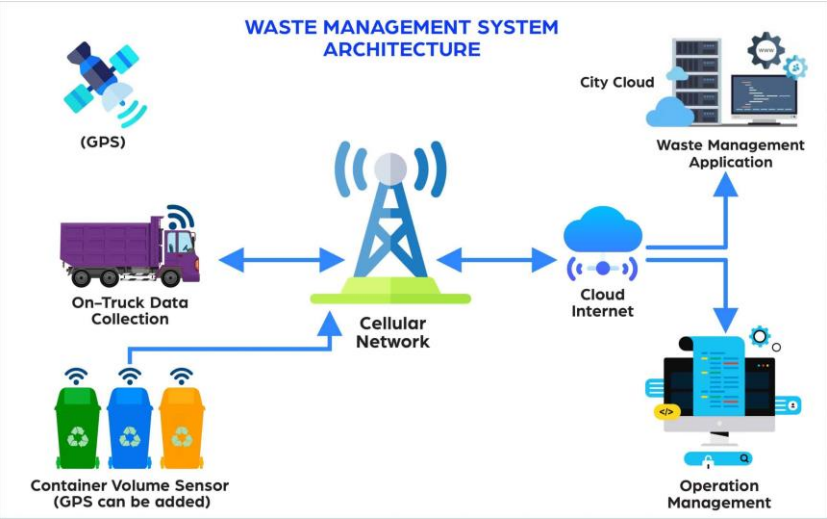
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID27943
Project Name	Project-Smart Waste Management System For Metropolitan Cities
Maximum Marks	4 Marks

Technical Architecture:



Guidelines:

1. Include all the processes (As an application logic / Technology Block)
2. Provide infrastructural demarcation (Local / Cloud)
3. Indicate external interfaces (third party API's etc.)
4. Indicate Data Storage components / services
5. Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web UI, Node-RED, MIT app.	IBM IoT platform, IBM Node Red, IBM cloud.
2.	Application Logic-1	Create IBM Watson IoT platform and create node-red service.	IBM Watson,IBM Cloud and service, IBM node-red.
3.	Application Logic-2	Develop python script to publish and subscribe to IBM IoT platform.	Python
4.	Application Logic-3	Build a web application using node-red service.	IBM Node-red.
5.	Database	Data Type, Configurations etc.	MySQL.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloud ant etc.
7.	File Storage	Developing mobile application to store and receive the sensors information and to react accordingly.	Web UI, Python.
8.	External API-1	Using this IBM intelligent waste management system, to reduce the waste management costs and sends the message immediately to the main server indicating to clean the waste in the bin.	IBM Intelligent waste management system.
9.	External API-2	With IBM sensors, it senses the distance between the lid of the Smart Garbage Bin and the authorities are notified with the required data.	IBM sensors
10.	Machine Learning Model	Using this we can derive the object recognition model.	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: Cloud Server Configuration :	IBM cloudant, IBM IoT platform.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	MIT app inventor	MIT license
2.	Security Implementations	IBM services	Encryption, IBM control.
3.	Scalable Architecture	Sensor-IOT cloud based architecture.	Cloud computing and AI.
4.	Availability	Mobile, laptop, desktop.	MIT app
5.	Performance	Monitors the waste level in the bin, indicates to the main server if the bin fills.	Sensors, GPS system.