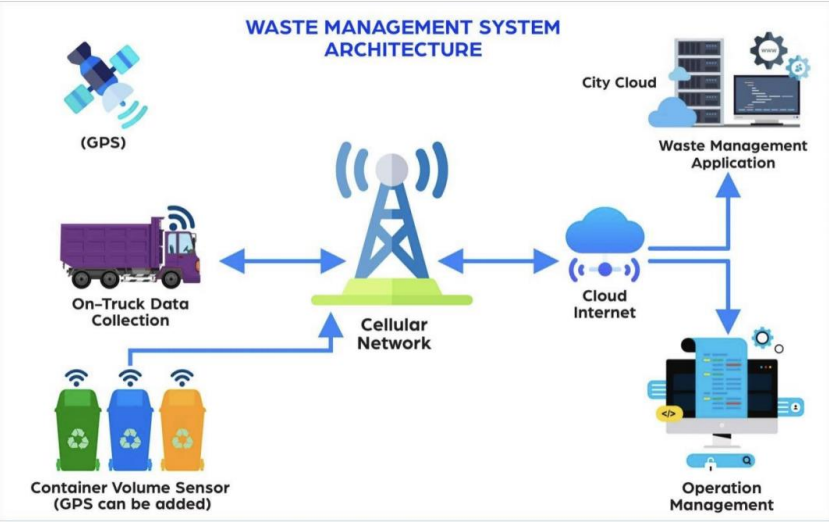
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	B7-1A3E
Project Name	Smart Waste Management System for Metropolitan Cities
Maximum Marks	4 Marks

Technical Architecture:



Guidelines:

1. Taking sensor reading from the IOT devices such as Ultrasonic and weight sensor
2. Python code is used to send random sensor data to the cloud
3. IBM Watson IoT platform is used to connect the web application to IoT device
4. Location data are stored as database in Cloudant DB
5. Display the location on the Map in Node-RED Web UI
6. Alert the garbage collector about the status of the bin

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Dynamic Web Application to show the status of the bin and its location	HTML, CSS, JavaScript
2.	Application Logic-1	Python code is used to send sensor data to the IBM cloud	Python code
3.	Application Logic-2	Connect the web application to IoT device	IBM Watson IOT service
4.	Application Logic-3	It provides service for accessing the IBM IoT Platform.	Node-RED service
5.	Cloud Database	Database Service on Cloud	IBM Cloudant DB
6.	File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
7.	External API-1	To locate the smart bins in maps	Maps API
8.	Machine Learning Model	Purpose of Machine Learning Model	Object Recognition Model, etc.
9.	Infrastructure (Server / Cloud)	Application Deployment on Users System / Retrieve data from Cloud	Local system, Cloud

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	IBM cloud services- IBM Watson Iot platform, Node-RED, Cloudant DB
2.	Security Implementations	It provides security rules to allow access to data	Firebase, firewalls
3.	Scalable Architecture	Connected to cellular network and cloud it can be accessed at any geographical location	GPS, Cloud

S.No	Characteristics	Description	Technology
4.	Availability	Developing durable smart dustbin by easily available sensors and Cloud based Web application it provides cheaper way to monitor waste efficiently	Waste level sensors
5.	Performance	The dustbins are designed to monitor the waste levels frequently. This provides real time data to web application which uses cloud platform and alerts garbage collectors	