Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID11434
Project Name	Project – Smart Waste Management System 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

S.No	Component	Description	Technology
1.	User Interface	IBM Watson IOT cloud platform	MQTT Protocol
2.	Application Logic-1	The waste data are collected using sensors	Python
3.	Application Logic-2	The collected data are monitored using IOT application	IBM Watson STT service
4.	Application Logic-3	Based on data's the alerting message will send to the workers for disposing the wastes.	IBM Watson Assistant
5.	Database	MySQL is a relational database that is based on a tabular design. NoSQL is non-relational and has a document-based design	MySQL, NoSQL
6.	Cloud Database	In this module will receive real time status updates from all the bins and continuously display it on web application and also push the notifications on client sides.	IBM DB2, IBM Cloud

7.	File Storage	Data storage makes it easy to back up files for safekeeping and quick recovery in the event of an unexpected computing crash or cyberattack.	IBM Block Storage or Other Storage Service
8.	External API-1	External APIs expose a project's internal resources to outside users or applications	IBM Weather API, etc.
9.	External API-2	External API allow you to access third party resources that are available through RESTful web services	Aadhar API, etc.
10.	Machine Learning Model	The proper algorithm makes planning good. It will guide the goodness character and which path should be taken and which garbage bin should be collected first	Python IDLE or Anaconda navigator or Jupitar
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Cloud Server Configuration: Cloud deployment is the process of deploying an application through one or more hosting models—software as a service (SaaS), platform as a service (PaaS) and or infrastructure as a service (IaaS) that leverage the cloud Local Server Configuration: A local server gives you exclusive access to data and objects in a set of Windows	Cloud server- MySQL Local server-HTTP

		folders called data directories	

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
12.	Open-Source Frameworks	Transport, treatment, and disposal of waste together with monitoring and regulation.	Technology of Opensource framework is python.
13.	Security Implementations	Fundamental component of data security that dictates who's allowed to access and use company information and resources. Firewalls use a rule-based access control model with rules expressed in an access control list.	Firewall
14.	Scalable Architecture	Using smart waste bins, reduce the number of bins inside town and cities because that we can able to monitor the garbage 24/7. It will be more cost efficient	IOT

		and scalable when we move to smarter.	
15.	Availability	By developing & deploying resilient hardware and beautiful software we empower cities, businesses, and countries to manage waste smarter	IOT, RFID
16.	Performance	The Smart Sensors use ultrasound technology to measure the fill levels (along with other data) in bins several times a day. Using a variety of IoT networks ((NB-IoT, GPRS), the sensors send the data to Sensor's Smart Waste Management Software System, a powerful cloud-based platform, for data-driven daily operations, available also as a waste management app	IOT, GPRS

TECHNOLOGY ARCHITECTURE:

5.0 Diagram of system