Project Design Phase - 2
Technology Stack (Architecture & Stack)

Date	21 - 10 - 2022
Team ID	PNT2022TMID34892
Project Name	SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITIAN CITIES

Technical Architecture:
The Deliverable shall include the architectural diagram as below and the information as per the table 1 & table 2.

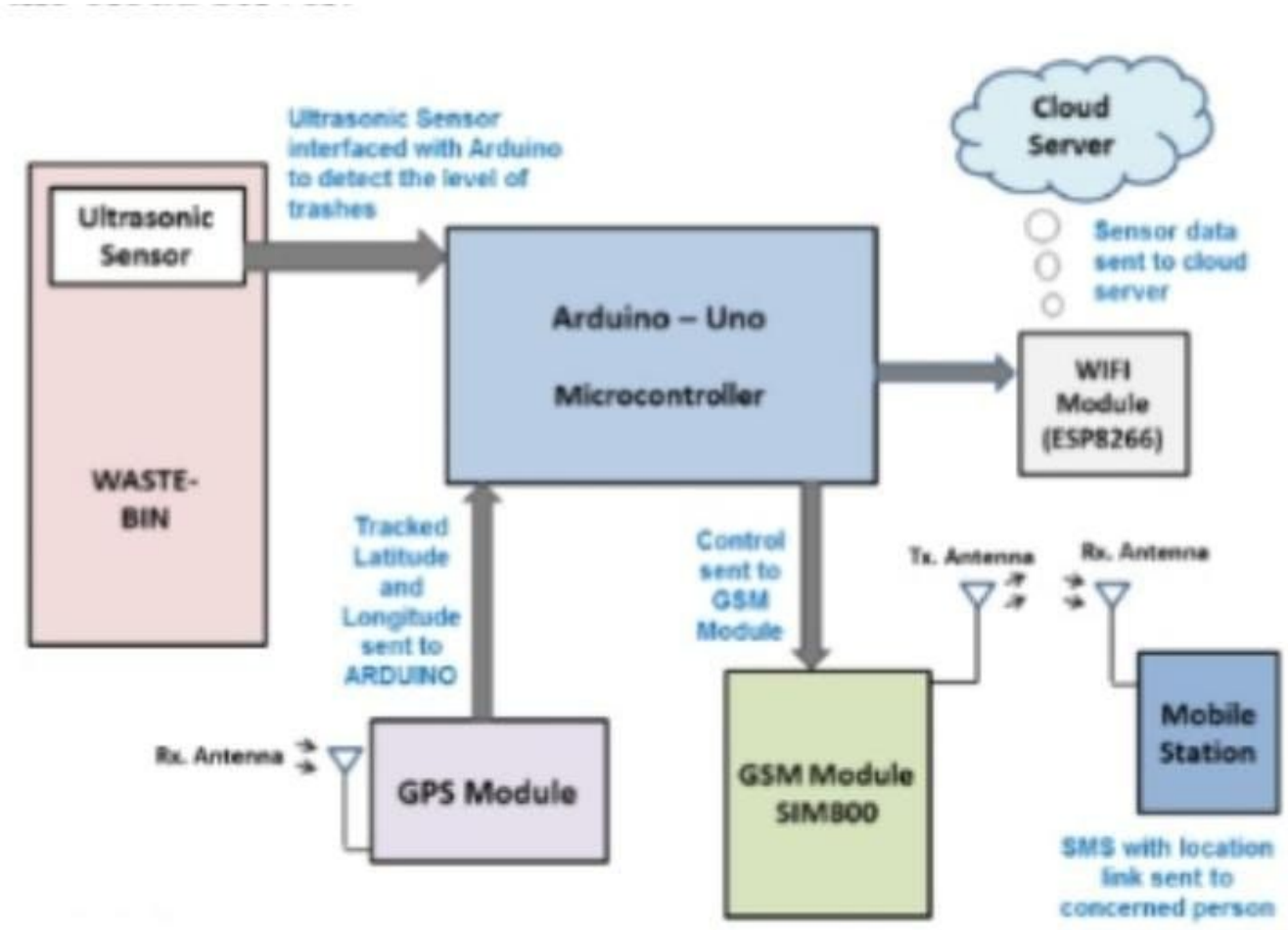

Table 1 :

Component	Description	Technology
Ultrasonic Sensors	Ultrasonic sensors transmit ultrasonic waves from its sensor head and again receives the ultrasonic waves reflected from an object. By measuring the length of time from the transmission to reception of the sonic wave, it detects the position of the object.	Piezoelectric ultrasonic sensor
Wi-fi module	Wi-Fi module which will give your projects access to Wi-Fi or internet. It can communicate with any microcontroller and make the projects wireless. It is in the list of most leading devices in the IOT platform.	ESP8266 Wi-Fi module
Arduino board	Arduino is an open-source prototyping platform based on easy-to-use hardware and software. Arduino boards are able to read inputs . The sensing element is fastened on to the bread board. The affiliation between the Arduino board and sensing element is created with the assistance of connecting wires. The operating program is fed into the Arduino board.	Arduino Uno ATmega328
GSM Module	GSM module consists of a GSM modem assembled together with power supply circuit and communication interfaces like RS-232, USB, etc. for computer	GSM Module SIM300 with sim-card holder, RS232 interface, power supply, buzzer and audio interface

Table 2: Application Characteristics

Characteristics	Description	Technology
OpenSource Frameworks	The Windows, Mac OS X ,Linux are used in waste management the Deep Learning algorithms are the open-source framework.	Mac OS X, Linux
Security Implementations	This project doesn't contain any secured information so there is no role of security factors.	No Technology needed.
Scalable Architecture	Scalability was considered in both modelling and simulation as well as physical component selection. This is due to the fact that the architectural components have discrete roles and functional independence. A cognitive knowledge bae system is used here.	Cognitive knowledge base
Availability	The signal processing which is used in the system is used to compress the sensed data. This is available as a part of the operating systems such as Linux, windows.	Adobe, OpenCV, TensorFlow
Performance	The performance mostly depends on fully monitoring the level of bin and giving alert. It must be processed and executed using the deep learning algorithm. If the bin get filled, it would be detected by the Deep learning a algorithm and then the information would be sent to the authorities.	Convolutional Neural network.