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

Date	06 May 2023
Team ID	NM2023TMID15707
Project Name	Smart City waste Management System with connected trashcans

Technical Architecture

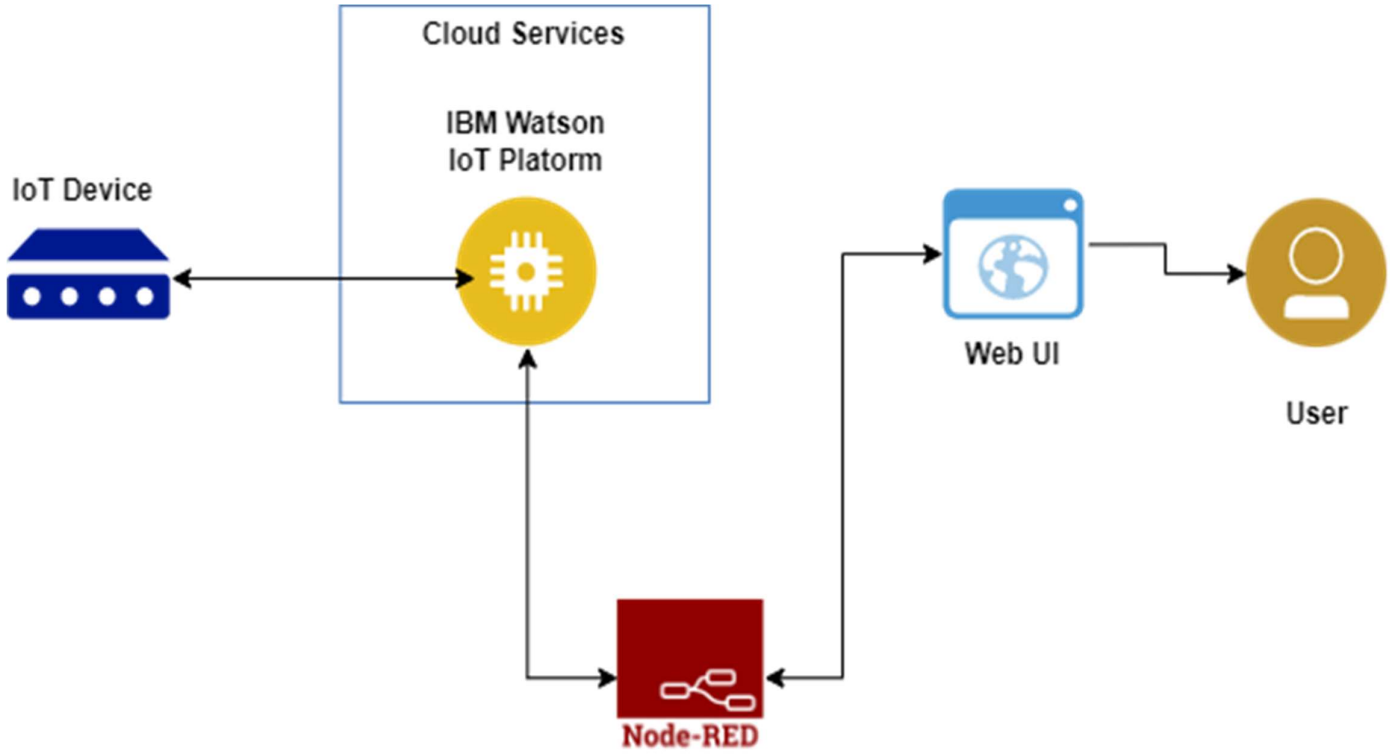

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	Trash Cans	Connected trash cans equipped with sensors	IoT sensors, wokwi
2.	Data Collection	Collects and aggregates data from trash cans	Wireless communication, APIs
3.	Data Processing	Processes and analyzes collected data	Data analytics, machine learning
4.	Waste Management App	Application for waste management personnel	Web development
5.	Waste Management DB	Database to store waste management data	Relational or NoSQL database
6.	Notification System	Sends alerts and notifications to personnel	Messaging services, email, push notifications
7.	Waste Collection Scheduler	Optimizes waste collection schedules	Optimization algorithms, scheduling techniques

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Scalability	The ability of the application to handle a growing number of waste sensors and connected trash cans	Cloud computing, distributed systems
2.	Security	The application must be designed with security in mind to prevent unauthorized access and data breaches	Encryption, authentication, access control
3.	Reliability	The application must be highly reliable to ensure the waste management system functions correctly	Fault tolerance, redundancy, error handling
4.	Real-time processing	The ability of the application to process data in real-time to optimize waste collection schedules	Stream processing, real-time analytics, event-driven architecture

S.No	Characteristics	Description	Technology
5.	User-friendly interface	The application should be easy to use and navigate for waste management personnel	User experience design, intuitive UI, responsive design
6.	Integration	The application should be able to integrate data from different sources, such as GIS and weather data	APIs, data integration frameworks, data transformation and mapping tools
7.	Analytics	The ability of the application to perform advanced analytics to gain insights and make data-driven decisions	Data mining, machine learning, predictive analytics, data visualization tools