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

Team ID	PNT2022TMID01194
Project Name	Hazardous Area Monitoring for Industrial Plant Powered by IoT
Maximum Marks	4 Marks

Technical Architecture:

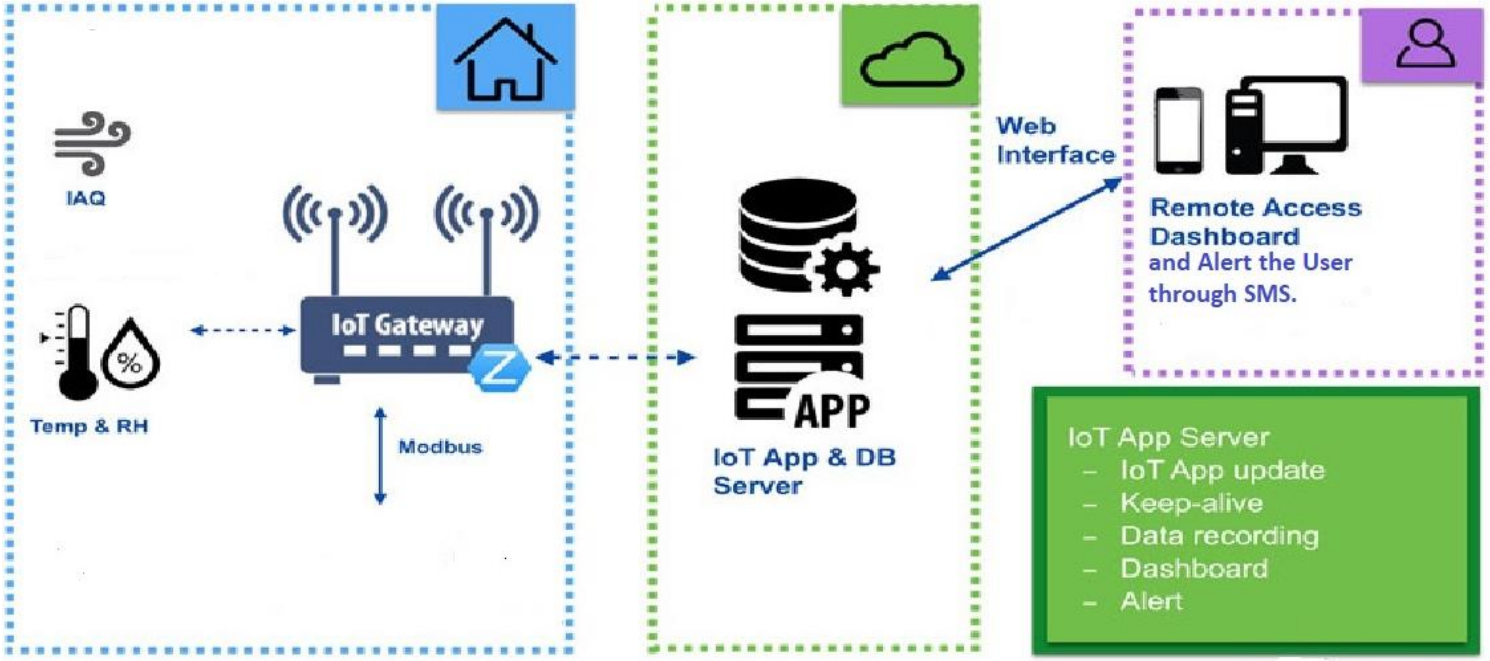

Table- 1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Wearable device, Web UI, Mobile App.	HTML, Java, Python, etc.
2.	Application Logic-1	Mobile Application for monitoring the hazardous area.	Python
3.	Application Logic-2	Sensor is used to detect toxic gases and monitor the temperature.	IBM Watson IOT platform.
4.	Application Logic-3	After detecting the hazards in an area, the user gets an alert message through wearable device, mobile application, etc.	Fast SMS, Mobile application.
5.	Database	Real Time database.	MySQL, NoSQL, etc.
6.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
7.	File Storage	Using IBM block storage , the collected data's are stored permanently.	IBM Block Storage or Other Storage Service or Local Filesystem
8.	External API-1	To monitor the environmental parameters.	IBM Weather API.
9.	External API-2	To send SMS to the User using Fast SMS API.	Fast SMS API.
10.	Machine Learning Model	IOT and machine learning delivers insights otherwise hidden in data for rapid automated response and improved decision making.	Object Recognition Model, etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Cloud system.	IBM Cloud, etc.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	The Node-RED open source frameworks are used to build the web application as well as to communicate with the mobile application and to handle alert sms.	Node-RED framework.
2.	Security Implementations	The IoT platform must ensure proper device management (via authentication), data privacy, integrity and confidentiality via secure communication and encryption of data. Security is especially crucial for an IoT platform as it will rely more on automated security.	SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	If a problem arises, workers can see the problem and monitor the temperature and gas level simultaneously.	IBM Watson Studio.
4.	Availability	The Web application is highly available as it is deployed in cloud.	IBM Cloud.
5.	Performance	The Alert notification is sent to the owner without any delay when leakage is detected. Immediate actions are taken after detection.	High durable device.