PROJECT DESIGN PHASE-II

TECHNOLOGY STACK

(ARCHITECTURE AND STACK)

DATE	19 MAY 2023
TEAM ID	NM2023TMID10960
PROJECT NAME	SMART BILLING SYSTEM FOR WATER SUPPLIERS

Technical Architecture:
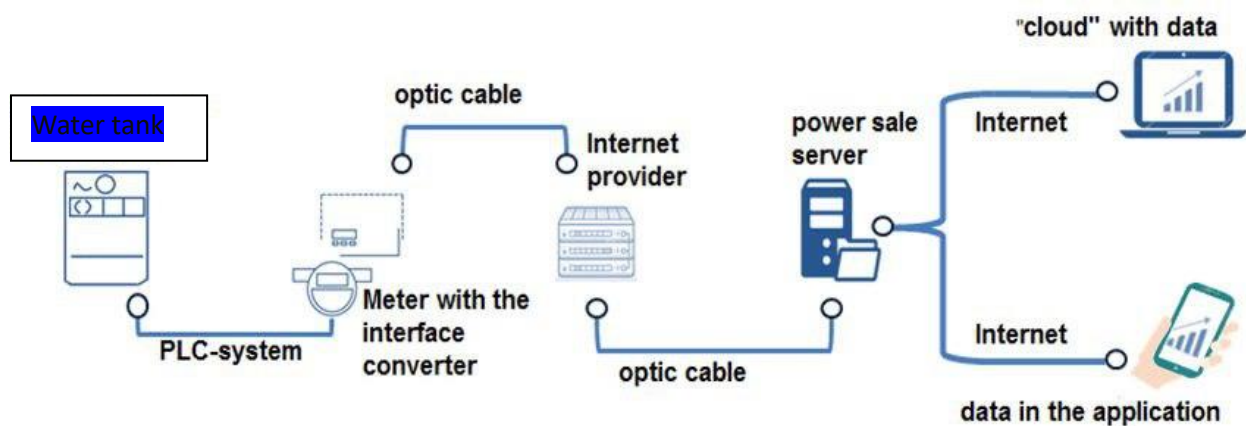
Diagram:

TABLE 1:

Components	Description	Technology
1.Sensors	These are the physical devices responsible collecting data about water passing through a specific area.	Software

2.Data Processing Unit	This component receives the data from the sensors/cameras and processes it to extract relevant information. It may include image processing algorithms or computer vision techniques to identify and track water accurately.	Artificial Intelligence
3.Cloud Platform	Transmit the processed data from the IoT gateway to a cloud platform for further processing, storage, and analysis. Cloud platforms like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) provide services for data ingestion, storage, and analytics.	Cloud Service
4.Data Storage	The counted water data and associated metadata are stored in a database or data storage system. This allows for data	Cloud Computing

	retrieval, historical analysis, and reporting.	
5.User Interface	The User Interface maybe web based ,mobile based ,desktop based depending on the specific requirements of the system and alerts them to any issues they may arise.	IBM Watson
6.Monitoring and Alerting	Employ monitoring tools and logging mechanisms to track the system's performance, detect anomalies, and generate alerts in case of failures or deviations from expected behavior.	Web applications include mail
7.Control And Response System	The control and response system is responsible for taking action in response to detected issues.	Nodered
8.Reporting And Analytics	The reporting and analytics system generate reports on water ,that is amount of water.	IOT Platform

Table 2:

APPLICATION CHARACTERISTICS:

Characteristics	Description	Technology
1.Open Source Frameworks	Open source frameworks provides a rich set of functions and algorithms for image processing, including object detection and tracking. OpenCV can be utilized for Water billing by applying computer vision techniques to analyze sensor data.	Tensorflow ,YOLO , Darknet
2.Security Implementations	The system should have appropriate security measures in place to protect the data it collects and stores. It should ensure the confidentiality, integrity, and availability of the data, preventing unauthorized access or tampering	Encryption,IAM,VPN
3.Scalable Architecture	The system should be scalable to handle varying levels of tank volume. It should be able to handle high traffic loads during peak periods without sacrificing performance	Cloud computing

	or accuracy.	
4.Availability	By considering factors like redundancy,fault tolerance, disaster recover plans , upgrades and updates maximize the availability of water billing system , ensuring that it remains operational and accessible to users as needed.	Cloud computing
5.Performance	The system should be designed to process and analyze data in real-time. It should be capable of handling data from multiple sensors simultaneously and provide immediate feedback on the water count.	Internet of Things (IOT) Devices-These devices can includes sensors, cameras and other monitoring equipments.