# KGiSL Institute of Technology

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# Department of Artificial Intelligence and Data Science

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**Project Title** : **Smart Water System**

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# **Project Title:** Smart Water System

## **Phase 3:** Development Part 1

**Configuring the IoT Sensors:**
Install the sensors in public places where we want to monitor water consumption. Ensuring that they are securely mounted and connected to a power source if required.

**Suitable Flow Meters:**

- Select appropriate flow meters based on flow rate, accuracy, and compatibility.
- Consider types like ultrasonic, electromagnetic, or turbine meters.
- Ensure the selected meters meet your project requirements.

**Install Flow Meters:**

- Install meters in desired public places, ensuring proper connections.
- Professional installation may be necessary for accuracy and compliance.
- Securely mount meters to prevent tampering or damage.

**Calibrate Flow Meters:**

- Calibrate meters for precise measurements using reference standards.
- Adjust settings to match actual flow rates accurately.
- Regular calibration ensures consistent and reliable data.

**Configure Sensor Parameters:**

- Access meter settings and adjust parameters, e.g., sampling rate, units.
- Tailor configurations to project-specific requirement
- Confirm parameters align with your desired data output.

**Power Supply:**

- Provide stable power sources for meters, either battery or continuous.
- Ensure power supply reliability to prevent data loss.
- Battery-powered meters may require periodic battery replacement.

**Data Output Format:**

- Determine the format of data output, digital or analog.
- Prepare necessary adapters to interface with IoT sensors.
- Ensure compatibility with your data-sharing platform.

**Data Transmission Protocol:**

- Choose a suitable communication protocol for data transmission.
- Popular options include MQTT, HTTP, or LoRaWAN.
- Match the protocol with your IoT platform's requirements.

**Integration with Data-Sharing Platform:**

- Integrate flow meters with your selected data-sharing platform.
- Configure the platform to receive and process data from sensors.
- Provide the necessary sensor identification and communication details.

**Testing and Validation:**

- Conduct thorough tests to verify meter accuracy.
- Compare sensor data with manual measurements for validation.
- Address any discrepancies to ensure data reliability.

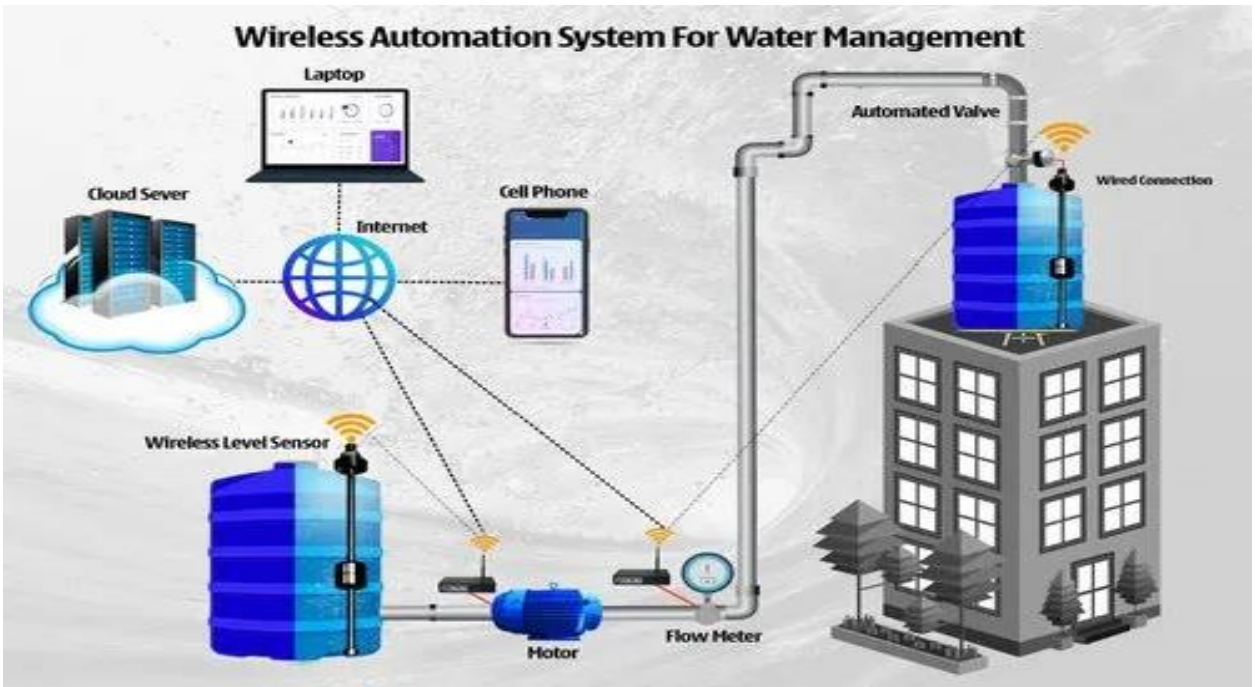
**Remote Monitoring and Maintenance:**

- Set up remote monitoring for real-time performance tracking.
- Enable alerts for sensor malfunctions or irregular data.
- Maintain a robust system for long-term reliability.

**Python Script:**

```
Timport time
import requests
import json

# Replace with your own credentials
API_KEY = "your_api_key"
DEVICE_ID = "your_device_id"

# Replace with the URL of your data-sharing platform
DATA_SHARING_PLATFORM_URL = "https://your-data-sharing-
platform.com/api/v1/data"

# Function to simulate reading from a water consumption sensor
def read_water_consumption():
    # Simulate reading from a sensor
    return 100 # 100 units of water consumption

# Function to send data to the data-sharing platform
def send_data_to_platform(data):
    headers = {
        "Content-Type": "application/json",
        "Authorization": f"Bearer {API_KEY}"
    }

    response = requests.post(DATA_SHARING_PLATFORM_URL,
headers=headers, data=json.dumps(data))

    if response.status_code == 200:
        print("Data sent successfully")
    else:
        print(f"Failed to send data: {response.text}")

# Main loop
```

```
while True:
    # Read water consumption data
    water_consumption = read_water_consumption()

    # Prepare data to be sent
    data = {
        "device_id": DEVICE_ID,
        "water_consumption": water_consumption,
        "timestamp": int(time.time())
    }

    # Send data to the data-sharing platform
    send_data_to_platform(data)

    # Wait for some time before reading the sensor again
    time.sleep(60) # 1 minute
```



**Conclusion :**

It emphasizes critical factors such as security, scalability, and data insights. Ensuring regulatory compliance, user-friendly reporting, and robust maintenance are vital for long-term success. This project holds the potential to enhance water resource management and contribute to sustainability in public places.