**Problem Statement:**

Design and develop a smart water management system that aims to efficiently monitor and control water usage, enhance water quality, and reduce wastage in residential and commercial settings. We should provide real-time data on water consumption, detect leaks, offer automation features, and empower users to make informed decisions regarding their water usage while ensuring data security and privacy compliance.

**Design Thinking:**

**1. Project Objectives:**

Collaborate with Team to refine and prioritize project objectives.

Gathering info online to gather input from potential users and the public regarding their expectations and Real-time monitoring of water consumption in public places.

Raising public awareness about water conservation.

Promoting sustainable resource management.

Specify the expected outcomes and benefits of achieving these objectives.

**2. IoT Sensor Design:**

We use a unique design to model our system.

Using power sources for durability, and weatherproofing for deployment.

Conducting tests to validate sensor performance.

Using flow sensors ,pressure sensor, water quality sensor, level sensor, temperature sensor and their locations.

We define the frequency and granularity of data collection.

**3. Data-Sharing Platform Development:**

Designing a platform in ThinkSpeak where data from IoT sensors will be collected and processed.

Using ThinkSpeak cloud and technology stack (Python, databases, web services) for the platform.

**4. Real-Time Transit Information Platform:**

We define the features and user interface of the mobile app.

We create user personas to understand the needs and preferences of the app's target audience.

We use wireframing and prototyping tools to visualize the app's layout and functionality.

**5. Integration Approach:**

We use Thinkspeak to communicate protocol for transmitting data from sensor to data sharing platforming.

Data encryption and security using TLS and End to End Encryption to protect the data during transit.

Using ThinkSpeak to implement the integration between IoT sensors and the data-sharing platform.

Testing the data transmission process and ensure it is reliable and secure.

Using error-handling mechanisms such as ELK stack or cloud based log management platforms to address communication issues.

**Results:**

We think approaching the project in this way we will be able to address the issues and will be able to create an system which would be very helpful and improve the Quality of living.