

IOT BASED SMART WATER MANAGEMENT

Phase 1: Problem definition and design thinking

PROBLEM DEFINITION:

Smart water management is the activity of planning, developing, distributing and managing the use of water resources using an array of IOT technology.

Which are designed to increase transparency, and make more reasonable and sustainable usage of these water resource

DESIGN THINKING:

When a water tank overflows, a sensor is used to monitor the water level

If the water level rises above a certain threshold the motor pump can be turned off by the user.

By adding a wifi module through which it can be controlled through mobile.

Methods:

The term "Smart Water Project" typically refers to initiatives and technologies aimed at improving the management, distribution, and conservation of water resources through the use of advanced information and communication technologies. These projects leverage data, sensors, automation, and analytics to make water systems more efficient, resilient, and sustainable. Here are some key components and objectives of a Smart Water Project:

1. **Data Collection and Sensors**: Smart water projects often involve the installation of sensors and data collection devices throughout a water system. These sensors can measure water quality, flow rates, pressure, and other relevant parameters in real-time.
2. **Remote Monitoring**: The data collected by sensors is typically sent to a central control system where it can be monitored in real-time. This allows for early detection of leaks, contamination, or other issues.
3. **Data Analytics**: Advanced analytics and machine learning are used to analyze the data collected from sensors. This can help in predicting maintenance needs, optimizing water distribution, and identifying trends or anomalies.
4. **Leak Detection**: One of the primary goals of many smart water projects is to detect and mitigate leaks in the water distribution system promptly. This not only conserves water but also prevents damage to infrastructure.
5. **Demand Management**: Smart water systems can provide data that helps utilities better understand water usage patterns. This information can be used to encourage conservation and optimize water delivery during peak demand.
6. **Infrastructure Optimization**: Data-driven insights can inform decisions about where and when to invest in infrastructure upgrades or repairs, making the most efficient use of resources.
7. **Customer Engagement**: Smart water projects often include tools and apps that allow consumers to monitor their water usage and receive alerts about potential leaks or abnormal consumption.
8. **Water Quality Monitoring**: Ensuring water quality is essential. Smart systems can continuously monitor water quality parameters, helping to detect contamination events early and ensure safe drinking water.
9. **Resilience and Disaster Response**: Smart water systems can enhance the ability to respond to emergencies or natural disasters by providing real-time information on water system conditions.
10. **Energy Efficiency**: Optimizing the operation of pumps and treatment facilities can reduce energy consumption and greenhouse gas emissions associated with water distribution.
11. **Integration with Other Infrastructure**: Smart water systems can be integrated with other urban infrastructure systems, such as transportation and wastewater, to optimize overall resource use and improve urban planning.

12. ****Water Conservation****: By providing consumers and utilities with real-time information on water usage, smart water projects can encourage conservation efforts.

13. ****Cost Savings****: Through improved efficiency, reduced water loss, and better infrastructure planning, smart water projects can lead to cost savings for utilities and consumers alike. These are just some of the key aspects of Smart Water Projects. They play a crucial role in addressing the challenges of water scarcity, aging infrastructure, and the need for sustainable water management in an increasing urbanized world.