

MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

SMART WATER FOUNTAIN

TEAM MEMBERS

S DEEPA SREE

V KEERTHIKA

E K KHOKILAVANI

V DHIVYA

P KOWSALYA

PROPOSAL SYSTEM FOR SMART WATER FOUNTAINS :

Introduction

The existing water fountain system provides a basic functionality of dispensing water for visitors. However, with advancements in technology, integrating smart features can enhance user experience, improve water management, and promote sustainability. This proposal outlines the enhancement of the existing water fountain system to a smart water fountain system.

Objectives

1 .Smart Dispensing:

Implement a sensor-based dispensing system to provide water on-demand and prevent water wastage.

2 .User-Friendly Interface:

Develop an intuitive user interface for users to easily access the smart features and customize their water dispensing preferences.

3 .Water Quality Monitoring:

Integrate sensors to monitor water quality and ensure the dispensed water is safe for consumption.

4 .Energy Efficiency:

Optimize the system for energy efficiency by incorporating power-saving features and utilizing renewable energy sources.

5.Data Analytics and Reporting:

Implement data collection and analytics capabilities to monitor water usage patterns, track water consumption, and generate reports for better water management.

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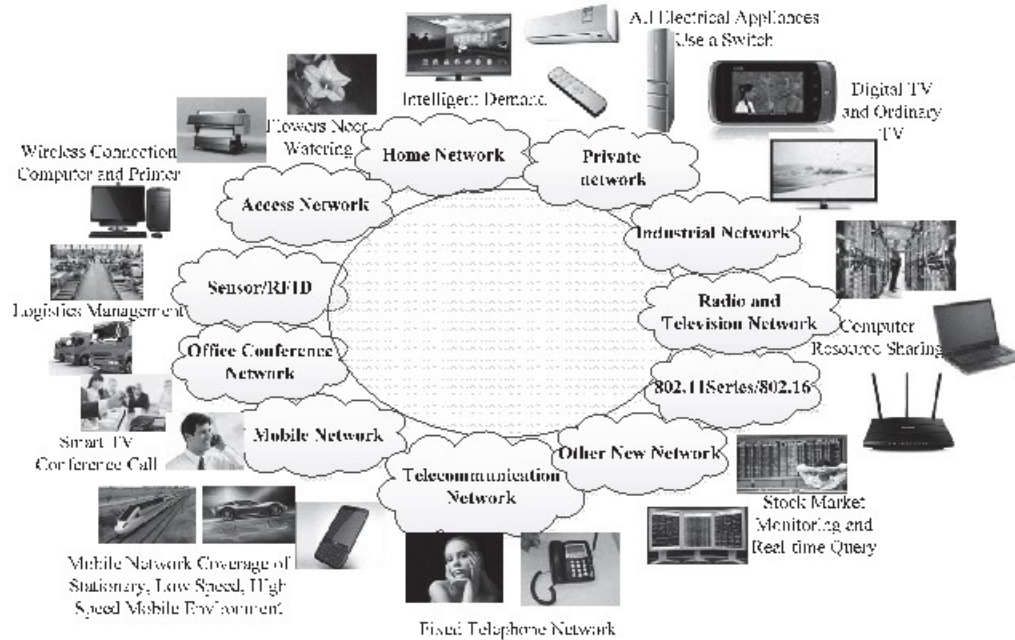


Fig. 1. Internet of things integration platform [2].

Implementation Plan

1 .System Design and Architecture:

Develop a detailed design and architecture plan for the smart water fountain system, including hardware and software specifications.

2.Hardware Procurement and Integration:

Procure the necessary hardware components and integrate them into the existing water fountain system.

3.Software Development:

Design and develop the software components, including

the user interface, mobile app, and analytics dashboard.

Integration and Testing:

Integrate all components and conduct rigorous testing to ensure the system functions seamlessly, meeting performance and reliability standards.

4. Deployment and Training:

Install the smart water fountain system at the designated locations and provide training to users and facility management on how to use and manage the system effectively.

5. Monitoring and Optimization:

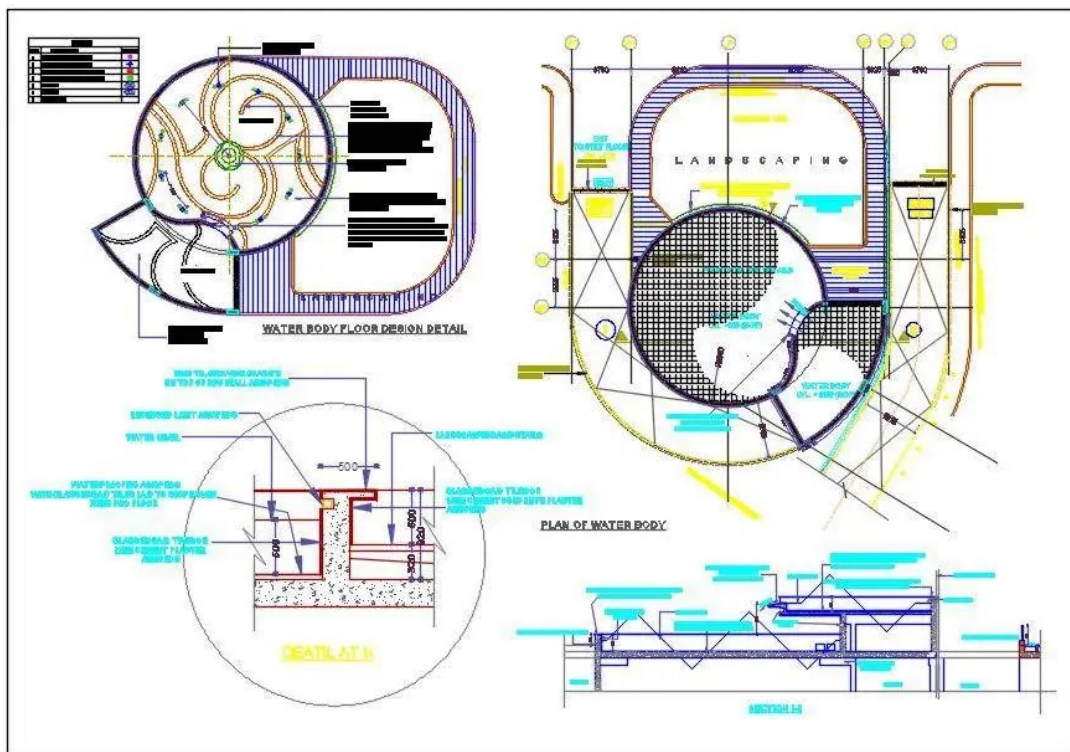
Continuously monitor the system's performance, gather user feedback, and make necessary optimizations to enhance the user experience and system efficiency.

Hardware Components:

1. Dispensing Mechanism.
2. Sensors
3. Interface
4. Power Management
5. Microcontroller/Processor .

Software Architecture:

1. Embedded Software
2. User Interface Software
3. Mobile App
4. Cloud Infrastructure
5. Data Analytics and Reporting.



WATER BODY DETAIL

INNOVATION

Creating an innovative smart water fountain involves integrating advanced technologies to enhance functionality,

efficiency, and user experience. Here is an idea to innovate a smart water fountain:

Water Quality Monitoring and Purification:

Implement sensors to continuously monitor water quality, detecting impurities or contaminants. Integrate a purification system that adjusts based on real-time data to ensure clean and safe drinking water.

Touchless Operation:

Incorporate proximity sensors and motion detectors to enable touchless activation and dispensing of water. This promotes hygiene and reduces the risk of spreading germs.

Personalized Dispensing and User Profiles:

Utilize a system that allows users to create personalized profiles with preferred water temperature, volume, and flavor. The fountain dispenses water according to the user's preferences upon authentication.

Mobile App Integration:

Develop a companion mobile app that allows users to remotely control the fountain, set preferences, view water consumption, receive alerts for filter replacement, and find nearby smart fountains using GPS.

Water Waste Reduction:

Implement flow sensors and intelligent algorithms to regulate water flow, minimizing waste and optimizing water usage based on demand.

Solar-Powered Operation:

Integrate solar panels to power the fountain, promoting sustainability and reducing dependence on external power sources.

Real-time Data Analytics:

Utilize IoT (Internet of Things) technology to collect and analyze data on water usage patterns, providing insights for facility managers to optimize fountain placement and usage.

Interactive Display and Information Hub:

Incorporate a touch-screen display that provides information about water conservation, health benefits of hydration, and local environmental initiatives. Users can interact with the display to learn more.

Multi-Functional Design:

Design the fountain to serve multiple purposes, such as incorporating a bottle-filling station, a pet water dispenser, or a small herb garden to promote sustainability and additional functionality.

Voice Activation and AI Assistance:

Integrate voice recognition technology and an AI assistant that allows users to request water, ask for information, or control fountain settings using voice commands.

Integration with Smart Building Systems:

Connect the fountain to building automation systems to synchronize with occupancy levels and adapt water dispensing rates accordingly, ensuring optimal usage during peak hours.

Feedback Mechanism:

Implement a feedback system that allows users to rate their experience, provide suggestions, or report issues, enabling continuous improvement of the Smart Water Fountain.

PROPOSED ENHANCEMENTS :

1. Smart Dispensing:

Enhance the dispensing mechanism to allow users to set precise amounts of water to be dispensed (e.g., in liters or milliliters).

2. User Authentication:

Implement RFID/NFC card readers or biometric authentication for users to identify themselves before using the fountain.

3. User Preferences:

Develop a system that allows users to set their preferred water temperature and customize the amount of water to be dispensed through the user interface.

4. Water Quality Monitoring:

Upgrade the water quality sensors to monitor a broader range of parameters such as pH, chlorine levels, and presence of contaminants.

5. Remote Monitoring and Control:

Develop a mobile app that allows users to remotely control the fountain, set preferences, and view water quality information in real-time.

Conclusion

Enhancing the existing water fountain system to a smart
Designing a smart water fountain system involves considering the hardware, software, communication protocols, and integration of various components. Here's a high-level design of the system.

THANK YOU ...

