INTERNET OF THINGS - GROUP 5

PROJECT: SMART WATER SYSTEM

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PHASE 1: Problem Definition and Design Thinking

Problem Statement:

"Water issues in developing countries include scarcity of drinking water, floods, the siltation of river systems, as well as the contamination of rivers and large dams. Lack of safe drinking water is an issue through the world and this filter could be a reliable, smart solution to this problem. Millions of people in low- and middle-income countries receive water through intermittent water supply for drinking and domestic purposes. In intermittent water, supply water gets contaminated most of the time because of the following reasons. Intrusion, backflow, biofilms, loose deposits, and microbial growth. Biofilms formed in stagnant water were found to have more bacterial cells and detach more rapidly when exposed to change in shear stress than biofilms that had developed in flowing water, when flow restarts in an intermittent water supply, pipe charged up may cause flushing effects because pressure increases rapidly."

Design Thinking:

1. Empathize:

Engage with various stakeholders, including water utilities, communities, environmental experts, and technology providers. Conduct interviews, surveys, and observations to understand their perspectives, pain points, and aspirations related to water management.

2. Define:

Based on the insights gathered, clearly define the problem statement. For example, it could involve challenges related to water conservation, quality monitoring, distribution efficiency, or user accessibility.

3. Ideate:

Encourage a diverse group of stakeholders to brainstorm potential solutions. Consider both technological innovations (e.g., IoT sensors, data analytics, AI algorithms) and non-technological approaches (e.g., community engagement, policy changes).

4. Prototype:

Develop prototypes or mock-ups of the proposed smart water system. This could include designing user interfaces, testing sensor configurations, or creating models for data visualization. The goal is to have a tangible representation of the solution.

5. Test:

Implement the prototypes in controlled environments or pilot projects. Collect data and feedback to evaluate the effectiveness of the solution. Identify strengths, weaknesses, and areas for improvement.

6. Implement:

Once a viable solution is identified, plan for its larger-scale implementation. Consider factors like infrastructure requirements, budgeting, and integration with existing water management systems.

7. Monitor and Iterate:

Establish a system for continuous monitoring and evaluation of the smart water system. This could involve real-time data analysis, regular maintenance, and feedback loops with stakeholders.

8. Reflect and Learn:

After the solution is in place, reflect on the outcomes and lessons learned. Identify areas of success and areas for further improvement. Use this feedback for future iterations or to inform other projects.