ACROPOLIS INSTITUTE OF TECHNOLOGY AND RESEARCH

Department of IT

Synopsis
On

UrbanVision

1. Introduction

1.1 Overview

UrbanVision is a smart city project aimed at streamlining and enhancing urban management through advanced technologies. The focus of the project is on Waste Management, Water Management, and Citizen Engagement. The project leverages Java-based technologies to offer a comprehensive solution for efficient urban resource management while promoting sustainability and enhancing community involvement.

In modern urban spaces, managing resources such as waste collection, water distribution, and citizen grievances efficiently has become a significant challenge. UrbanVision addresses these issues by optimizing operations and promoting engagement among citizens to improve overall city management.

1.2 Purpose

The purpose of the UrbanVision project is to provide an integrated platform where urban resource management can be efficiently handled through advanced digital solutions. This platform helps the city administration by automating and optimizing waste collection, water management, and increasing the interaction between residents and the administration.

2. Literature Survey

2.1 Existing Problem

❖ Waste Management

Traditional waste management systems follow regular collection schedules and rely on manual reporting for issues like overflowing bins, leading to delays in addressing urgent

waste. These systems lack a priority mechanism, treating all waste types equally, which can leave hazardous or electronic waste unattended until scheduled collections. This results in resource inefficiency and potential harm. A proposed solution is a priority-based waste management system, where waste is categorized by urgency and environmental risk. High-risk waste, like hazardous materials, receives priority for quicker disposal, ensuring more efficient and safer waste management.

❖ Water Management

Most cities lack real-time monitoring of water usage, resulting in undetected leaks that waste water. Without proper monitoring, it is challenging to ensure quality and conservation of water.

❖ Citizen Engagement

In many urban areas, citizens find it difficult to communicate with city authorities to report issues such as damaged infrastructure, unsafe conditions, or service outages. Existing systems often involve manual reporting, which leads to delays in resolving issues.

2.2 Proposed Solution

UrbanVision proposes the development of a smart city platform using Java, which integrates waste, water management, and citizen engagement into a cohesive system.

❖ Waste Management: For the waste management system, we can design it in a way where different types of waste are assigned varying priorities. Based on the priority, actions can be triggered to manage the waste, solve issues, and optimize operations without associating it with bins. Here's how it could work:

Waste Management Workflow with Priorities:

1. Waste Types: Define different categories of waste such as:

- Organic Waste
- Hazardous Waste
- Recyclable Waste
- Electronic Waste

2. Assign Priorities:

Each type of waste can be assigned a priority level (e.g., High, Medium, Low). The system can be designed to handle the waste type based on these priority levels.

- High Priority: Requires immediate action.
- Medium Priority: Handled within standard time.
- Low Priority: Less urgent, can be handled later.

3. Problem Resolution:

- Based on the priority, a queue system can be implemented where higher-priority waste issues are resolved first.
- The system can track which waste type needs faster attention and direct resources accordingly.

4. Waste Management System Components:

- Waste Reporting: Users report waste-related issues, indicating the type of waste.
- Waste Priority Assignment: Automatically assigns a priority to the reported waste type.
- Task Management: The system processes tasks based on the waste's priority.
- Real-Time Dashboard: Shows the current state of waste management activities, focusing on high-priority tasks.

- ❖ Water Management: The solution will monitor water usage in real-time, detect leaks, and provide alerts to ensure timely maintenance. Smart irrigation systems will optimize water usage in public spaces.

- ❖ Citizen Engagement: A user-friendly platform will allow residents to report issues online, provide feedback, and access information about city services. City officials can respond quickly and track the resolution of issues.

3. Theoretical Analysis

3.1 Block Diagram
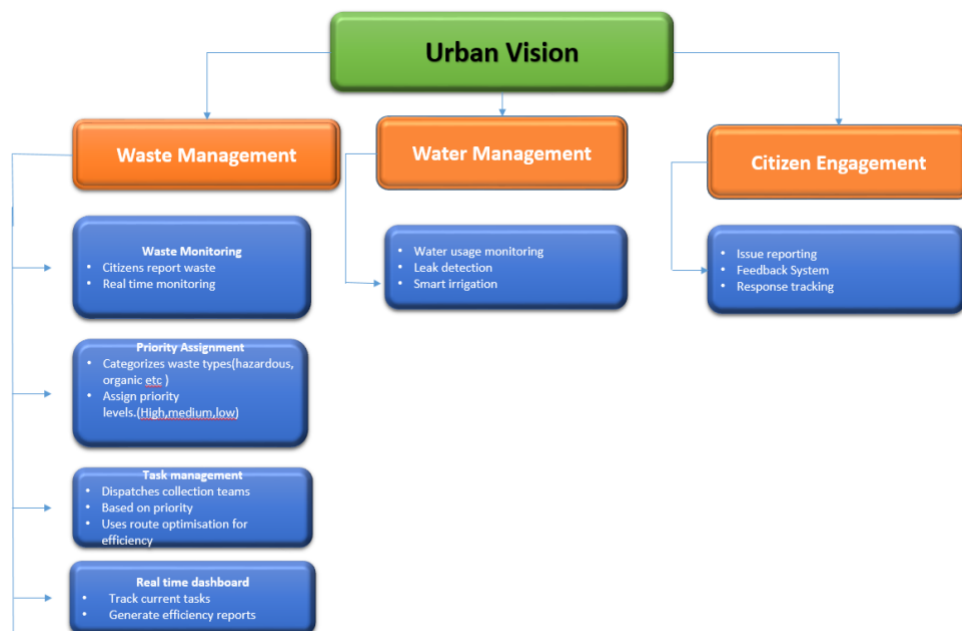
3.2 Hardware/Software Designing

Software Requirements:

- Programming Language: Java for the backend system.
- Frontend Technologies: HTML, CSS for designing the user interfaces.
- Database: MySQL for storing user and city management data.
- Integrated Development Environment (IDE): NetBeans .
- Operating System: Windows

Hardware Requirements:

- Server: A server to host the platform.
- Network: Reliable internet connection for communication between users and the backend system.

4. Applications

- Waste Management: Cities can reduce their operational costs and environmental impact by optimizing waste collection.
- Water Management: Water conservation is improved through real-time monitoring, leak detection, and smart irrigation.
- Citizen Engagement: Citizens are empowered to interact with city services, report issues, and provide feedback, enhancing governance.
- Public Safety: The system can be expanded to include monitoring unsafe areas and improving public safety.

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