PHASE -1

PROBLEM AND IDEFINITION AND DESIGN THINKING

Date	26-09-2023
Team ID	Proj_223986_Team
Project Name	Environmental Monitoring in Parks
Students with ID	**Vimal K** Nirmalkumar K Parthiban G Shreepal S Sabari Nathan C

TITLE: Environmental Monitoring

Introduction

The project's objective is to implement an Internet of Things (IoT)-based environmental monitoring system for public parks. This system will collect real-time data on environmental conditions, such as temperature and humidity, and make this information available to park visitors through a user-friendly platform. The project aims to enhance visitor experiences, promote environmental awareness, and support responsible park management.

In this document, we will outline the problem statement, the steps involved in solving it, and the design thinking approach that will guide our project.

Problem Statement

Objective: Develop an IoT-based environmental monitoring system that provides real-time data on park conditions and engage park visitors.

Key Challenges:

- ✓ Data Accuracy: Ensuring the accuracy and reliability of data collected from IoT sensors.
- ✓ User Engagement: Encouraging Park visitors to access and utilize the environmental data for informed decision-making.
- ✓ Data Security: Safeguarding collected data and ensuring user privacy on the public platform.
- ✓ Scalability: Preparing the project for the potential expansion to more parks or additional environmental sensors.

Design Thinking Approach

Empathize:

Before addressing the project's challenges, its essential to empathize with primary users, who are park visitors, park management, and environmental enthusiasts. Understanding their needs and concerns is crucial for a successful implementation.

Actions:

- Conduct surveys or interviews with park visitors to understand their outdoor activity planning needs.
- Analyse historical environmental data and trends in park areas to identify critical factors.
- Collaborate with park authorities and environmental organizations to gather insights from experts.

Define:

Based on our understanding of the problem and the users' needs, we will define clear objectives and success criteria for our project.

Objectives:

- Develop a reliable IoT-based environmental monitoring system that provides real-time data with a margin of error of less than X%.
- Create a user-friendly web application for park visitors to access environmental data.

Actions:

- Explore various IoT devices and sensors for data collections.
- -Investigate machine learning algorithms for data analysis and predictions.
- -Consider user interface designs for the web platform to ensure usability.

Prototype

Create a prototype of the environmental monitoring system and the user interface, incorporating temperature and humidity data.

Actions:

- Develop a prototype system for data collection, storage, and transmission, including the integration of temperature and humidity sensors.
- Design a user interface mock up for the web platform that displays real-time temperature and humidity readings.
- Test the prototype with a limited dataset to ensure data accuracy, including temperature and humidity, and user interface functionality.

Test

Evaluate the prototype's performance, including the accuracy of temperature and humidity data, and gather feedback from potential users.

Actions:

- Conduct field tests of IoT sensors, including temperature and humidity sensors, to validate data accuracy and reliability.
- Collect user feedback on the web platform for usability and functionality, with a focus on temperature and humidity information.
- Assess the prototype's performance against predefined objectives, including temperature and humidity data quality.

Implement

Once the prototype meets the defined objectives and receives positive feedback, proceed with full implementation.

Actions:

- Deploy IoT devices in selected public parks and establish data transmission to the cloud.
- Develop the web platform, incorporating user feedback and improvements.
- Conduct comprehensive testing to ensure system robustness and user-friendliness.

Iterate

Continuous improvement is essential. Gather user feedback and iterate on the system to enhance accuracy and usability.

Actions:

- Monitor data accuracy and refine data analysis algorithms.
- Address user feedback and make necessary improvements to the web interface.
- Stay informed about emerging technologies and environmental monitoring advancements for potential system enhancements.

Conclusion:

In this document, we've outlined our approach to solving the problem of facing environment with different circumstances. We've defined the problem, identified key challenges, and laid out a design thinking approach that involves empathizing with users, defining objectives, ideating potential solutions, prototyping, testing, implementing, and iterating.

This project aims to develop a comprehensive environmental monitoring system for public parks that benefits park visitors, authorities, and environmental enthusiasts, by following a structured design thinking approach, we aim to create a reliable tool that enhance park experiences, foster environmental awareness, and support responsible park management.