Business Requirements Document (BRD)

1. Introduction

1.1 Purpose

This document outlines the business requirements for a system that tracks and analyzes the daily and weekly carbon footprint of employees within an organization. By integrating with employee timesheets, the system will enable employees to log activities contributing to their carbon footprint. The collected data will help the organization assess overall employee footprints and provide actionable insights to mitigate its environmental impact.

1.2 Project Overview

The project aims to develop a platform where employees can log carbon footprint data from activities such as travel, food consumption, water usage, waste management, and gadget usage. This platform will analyze inputs on a daily and weekly basis, offering insights to enhance sustainability practices within the organization. Additionally, the system will leverage AI for personalized recommendations and incorporate a rewards system to incentivize regular data entry and improvement.

2. Business Objectives

1. **Track Employee Footprint:** Enable employees to log their daily and weekly carbon footprints, integrated with timesheet data.
2. **Data Analytics for the Organization:** Provide an overview of employee carbon footprints to help develop strategies for reducing environmental impact in areas like travel, food consumption, and waste management.
3. **Simplified Data Entry:** Allow employees to utilize average data from prior entries for easier daily logging.
4. **AI-Powered Suggestions:** Offer tailored recommendations based on individual data to help reduce carbon footprints.
5. **Reward System:** Foster continuous participation through a rewards system based on data streaks and improvements.

3. Stakeholders

- **Employees:** End-users responsible for inputting their carbon footprint data.
- **Organization Management:** Utilize aggregated data to assess environmental impact and devise sustainability strategies.
- **Development Team:** Tasked with developing and maintaining the platform using technologies like MongoDB, JSON, MySQL, Spring Boot, and Angular.
- **Data Analysts/Environmental Experts:** Analyze data to identify patterns and improvement areas.

4. Functional Requirements

4.1 User Interface (UI)

- **Employee Dashboard:** Displays individual carbon footprint metrics, weekly trends, and past logs.
- **Management Dashboard:** Shows overall employee carbon footprint data, trends, and potential areas for improvement.
- **Data Entry Forms:** Simplified forms for easy daily footprint data input.
- **Suggestion Engine:** AI-based suggestions tailored to employees' footprint data and patterns.
- **Rewards System:** Visual representation of participation streaks and rewards.

4.2 Features

1. **Daily/Weekly Logging:** Employees can log daily activities impacting their carbon footprint alongside timesheet data.
2. **Average Data Input:** Allows employees to use and slightly modify data from previous days for quicker logging.
3. **Organization Analytics:** Aggregated data for management to analyze total carbon emissions across employees.
4. **AI-Driven Suggestions:** Provides recommendations based on user data to reduce emissions from travel, food consumption, etc.
5. **Rewards System:** Employees earn rewards for consistent data entries, including streaks for daily updates and achievements for reduced footprint metrics.

5. Non-Functional Requirements

- **Performance:** The system must efficiently handle numerous employee entries without performance issues.
- **Security:** Protect sensitive employee data, including carbon footprint logs and personal information.
- **Usability:** The interface should be user-friendly, enabling easy daily or weekly data input.
- **Scalability:** The platform should scale effectively with growth in employee numbers or data points.

6. Assumptions and Constraints

6.1 Assumptions

- Employees will regularly update their carbon footprint data.
- AI and analytics tools will provide actionable suggestions based on timely and accurate inputs.

6.2 Constraints

- Integration with external APIs for tracking emissions may be limited by the availability of reliable data.

7. Dependencies

- **Technologies Used:**JSON, MySQL, Spring Boot, Angular.
- **Third-Party Tools:** Integration with APIs for real-time tracking of travel, electricity, and water usage.
- **AI Frameworks:** Tools necessary for implementing AI-driven suggestions.

8. Risks and Mitigation

- **Risk:** Inconsistent data input by employees.
  - **Mitigation:** Implement a rewards system and utilize AI to simplify data entry processes.
- **Risk:** External APIs may not always deliver accurate or timely data.
  - **Mitigation:** Use multiple data sources to validate inputs.

9. Acceptance Criteria

- **Employee Participation:** Achieve at least 80% participation in data logging within the first quarter post-launch.
- **Accurate Analysis:** Enable real-time tracking and analysis of total employee carbon footprints.
- **AI Suggestions:** Provide relevant and actionable suggestions based on user data.
- **Reward System:** Successfully implement a reward system to enhance data consistency and employee engagement.

10. Timeline and Milestones

- **Phase 1:** Requirement Gathering and Initial UI Development
- **Phase 2:** Backend Development (Spring Boot, MongoDB, MySQL)
- **Phase 3:** AI Integration and Data Analytics
- **Phase 4:** Testing and User Feedback

Functional Requirements Document (FRD)

1. Introduction

1.1 Purpose

This Functional Requirements Document (FRD) specifies the features and functionalities of the carbon footprint tracking system designed to enable employees to log their daily activities that contribute to their carbon footprint. The system aims to provide the organization with insights to reduce its environmental impact.

1.2 Project Overview

The system will facilitate the tracking of daily and weekly carbon footprint data based on activities such as travel, food consumption, and gadget usage. It will analyze this data and provide actionable insights while incorporating AI for personalized suggestions and a rewards system.

2. Functional Requirements

2.1 User Interface (UI)

- **Dashboard for Employees:**
  - Displays individual carbon footprint metrics.
  - Shows weekly trends and past logs.
- **Dashboard for Management:**
  - Displays overall carbon footprint data of employees.
  - Provides insights into trends and areas for improvement.
- **Data Entry Forms:**
  - Simplified forms for employees to log daily activities.
- **Suggestion Engine:**
  - AI-generated recommendations based on user data.
- **Rewards System:**
  - Visual representation of participation streaks and rewards.

2.2 Features

1. **Daily/Weekly Carbon Footprint Logging:**
   - Employees can log daily activities contributing to their carbon footprint alongside timesheet data.
2. **Average Data Input:**
   - Option for employees to use previous data with minor modifications to streamline data entry.
3. **Organization Analytics:**
   - Aggregated data view for management to analyze total emissions across the organization.
4. **AI-Driven Suggestions:**
   - Recommendations for reducing emissions based on logged activities, travel, food choices, etc.
5. **Rewards System:**
   - Incentives for consistent data entries, including streaks for daily updates and achievements for reduced carbon footprint metrics.

3. Non-Functional Requirements

- **Performance:**
  - Must handle a high volume of employee data entries efficiently without lag.
- **Security:**
  - Sensitive employee information must be securely stored and protected.
- **Usability:**
  - Interface should be intuitive, enabling easy data input.
- **Scalability:**

    - Should accommodate growth in user base and data points seamlessly.

4. Assumptions and Constraints

4.1 Assumptions

- Employees will consistently log their carbon footprint data.
- AI tools will provide timely and actionable insights based on user input.

4.2 Constraints

- Integration with external APIs may be limited by data availability and accuracy.

5. Dependencies

- **Technologies Used:**
    - MongoDB, JSON, MySQL, Spring Boot, Angular.
- **Third-Party Tools:**
    - APIs for real-time tracking of emissions related to travel, electricity, or water usage.
- **AI Frameworks:**
    - Tools necessary for implementing AI-driven suggestions.

6. Risks and Mitigation

6.1 Risks

- **Employee Participation:**
    - Employees may not consistently log data.

  Mitigation: Implement a rewards system and use AI to simplify data entry.

- **API Reliability:**
    - External APIs may not provide accurate or timely data.

  Mitigation: Utilize multiple data sources to validate information.

7. Acceptance Criteria

- **Employee Participation:**
    - Achieve at least 80% participation within the first quarter post-launch.
- **Accurate Analysis:**
    - Enable real-time tracking and analysis of employee carbon footprints.
- **AI Suggestions:**
    - Provide relevant suggestions based on user inputs.
- **Reward System:**
    - Successfully implement a rewards system to enhance engagement.

8. Timeline and Milestones

- **Phase 1:** Requirement Gathering and Initial UI Development
- **Phase 2:** Backend Development (Spring Boot, MongoDB, MySQL)
- **Phase 3:** AI Integration and Data Analytics
- **Phase 4:** Testing and User Feedback
- **Phase 5:** Final Deployment and Review