User Interface Design Document V2.1
11-25-2023

Waste Watcher Built for the Senator George J. Mitchell Center for Sustainability Solutions by Sustainable Waste Solutions and Kayak Development Solutions

Sustainable Waste Solutions (Current Team)

- Christian Silva
- Jackson Cyr
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- Chase Pisone
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- Finn Jacobs
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1. Introduction

The Food Waste Tracking & Measuring software application is a University of Maine Capstone project for the Senator George J. Mitchell Center for Sustainability through Susanne Lee, in partial fulfillment of the Computer Science BS degree for the University of Maine. Susanne leads a student/faculty team working towards developing solutions to end food waste in Maine. Due to the substantial amounts of food wasted each year, the need for our project arose. The goal of our Food Waste Tracking & Measuring app is to make the user aware of how much food they waste and what they can do to minimize food waste in their household. This project is being developed to provide a cost-free product that will assist in the tracking of food waste among schools, businesses, and households in Maine.

"In 2015, a Mitchell Center multidisciplinary team identified eliminating food waste as the single most important issue to ensure a more sustainable waste system in Maine." **[1]**

1.1 Purpose of This Document

This document lays out the User Interface Design for our Food Waste Tracking & Measuring software application. This document defines the requirements we must adhere to. The requirements are relevant to user interface standards that allow the application to be accessible and usable by all users and eliminate bias. The product must meet these requirements before being considered complete and deployable. The primary audience for this document is our client and development team, they are directly using this document to design the UI. The secondary audience is our peer team, to better improve the UI plan before development.

1.2 References

[1] "Home." Food Rescue MAINE, 4 Nov. 2023, umaine.edu/foodrescuemaine/.
[2] "Waste Watcher Capstone Project University of Maine 2022-2023." https://github.com/finnjacobs99/Waste-Watcher
[3] "Waste Watcher Capstone Project University of Maine 2022-2023."https://github.com/callenshaeffer/Waste-Watcher

2. User Interface Standards

This section will outline the design standards we will use to maintain consistency throughout our user interface. This section will also describe the accessibility and inclusive design elements that our application will contain.

The layout of our application will include several screens for each of the main components of the user interface, including a food tracking page, account information, statistics, map, etc. The user will navigate between these pages via a bar on the bottom of the screen which contains a small icon for each screen. This navigation bar remains consistent across all screens, highlighting the selected screen for user clarity. Each screen is thoughtfully structured, and divided into blocks that house different functionalities. Clear and evenly spaced buttons, following a grid pattern for even numbers and a list for odd numbers, provide a consistent and intuitive user interface. Each screen shall contain headers describing the content of the page, which are consistent throughout each screen. Error messages will appear as clear and actionable warnings next to the relevant user interface elements, providing users with guidance on how to resolve the issues that prompted the error message.

2.1 Accessibility and Inclusive Design Elements

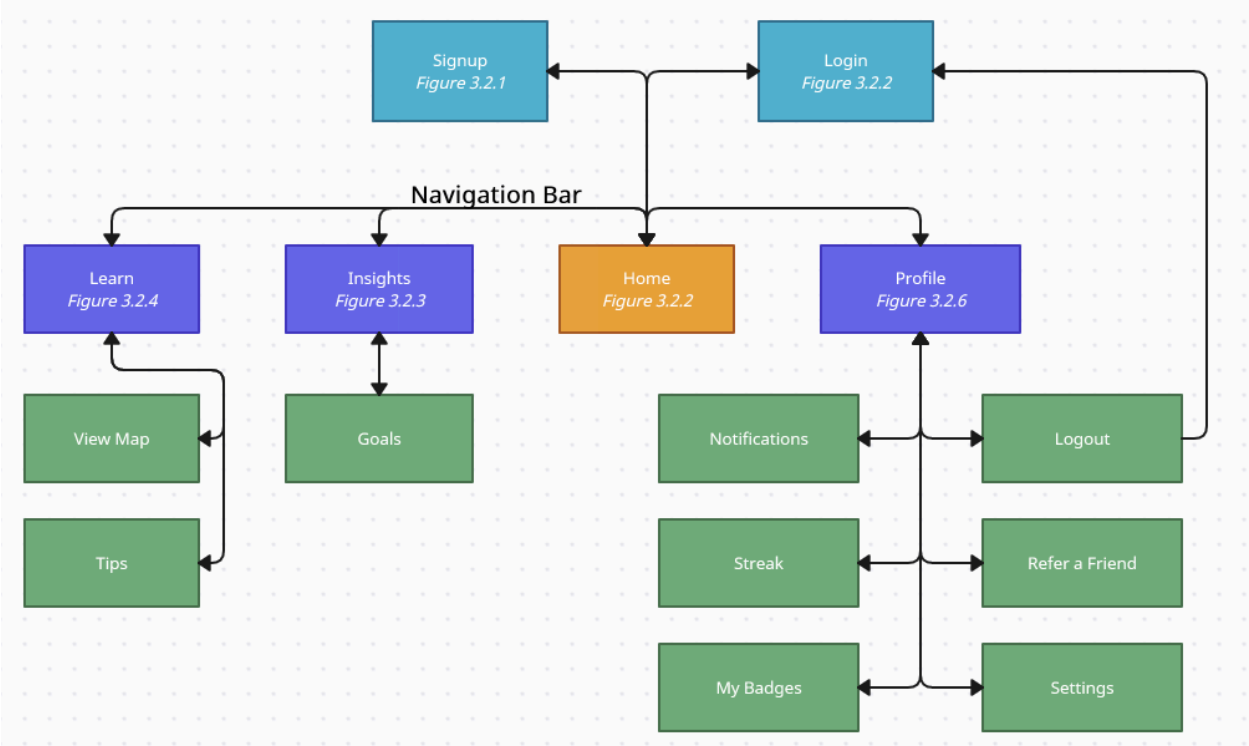
Our application will be designed to be accessible to the largest number of users possible, following accessible design principles to achieve this goal. To cater to visually impaired users, high-contrast colors will be used to enhance the visibility of user actions, as well as large text to be as legible as possible. To ensure users don't have trouble interacting with the user interface, the buttons will be large enough for motor-impaired users to be able to interact with and have enough spacing between them to minimize accidental inputs. Accessibility is a priority for our application, and we are actively looking for ways to make our application usable for the largest number of users possible.

3. User Interface Walkthrough

This section will provide visualizations of the UI and the interactions between the user and the UI elements. 3.1 provides a diagram with all important UI screens. 3.2 provides a walkthrough of all major system screens, shown with screenshots from each major screen area. Each screenshot is given a figure number and is referred to within the walkthrough. Each button and possible ways to navigate throughout the application's user interface will be clearly explained.

3.1 Navigation Diagram

UI Navigation Diagram: Figure 3.1.1

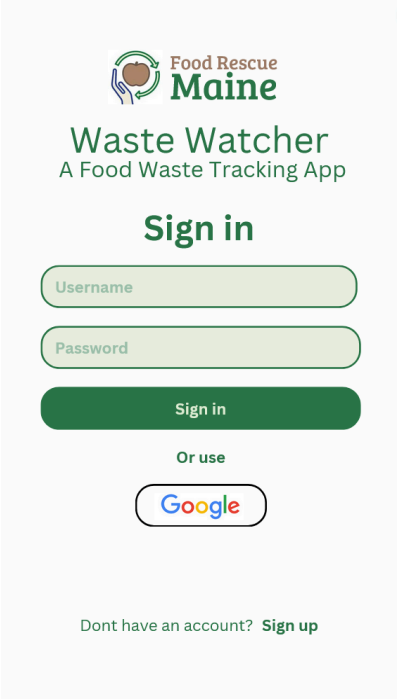


Description: 3.1.1

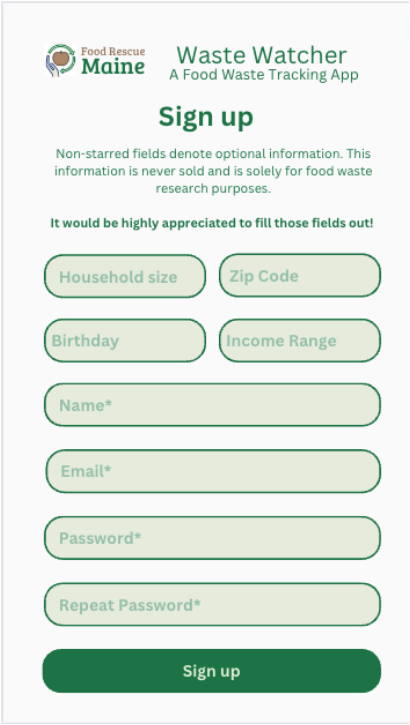
This diagram displays the general navigation for the waste management application. The user will first be prompted to either ” Login” with an existing account or to “Sign Up” with a new email. The user is then presented with the “Home” screen which will be used to display the user's waste history, goal progress, and current tracking streak, as well as the portal to track waste information. The user can navigate to another screen using the four buttons at the bottom of the screen. The “Insights” page is where users can see a line graph of their weekly waste, a leaderboard showing their streak among friends, their waste history, and where they can set their personal goals. The “Learn” screen will show a map of where users can donate food, it displays the food waste hierarchy, encouraging less destructive ways to get rid of food that would be wasted, and tips on each food type that we track. Finally, the “Profile “ page displays information about the user's account. This information includes their name, recent badges they have earned, the notifications portal, the user's current streak, the badges portal, the ability for users to refer a friend, and the settings and logout buttons.

3.2 System Screens Walkthrough

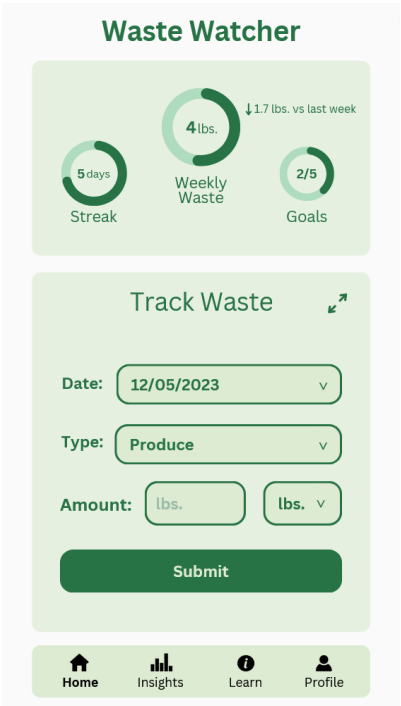
Login Screen: Figure 3.2.1



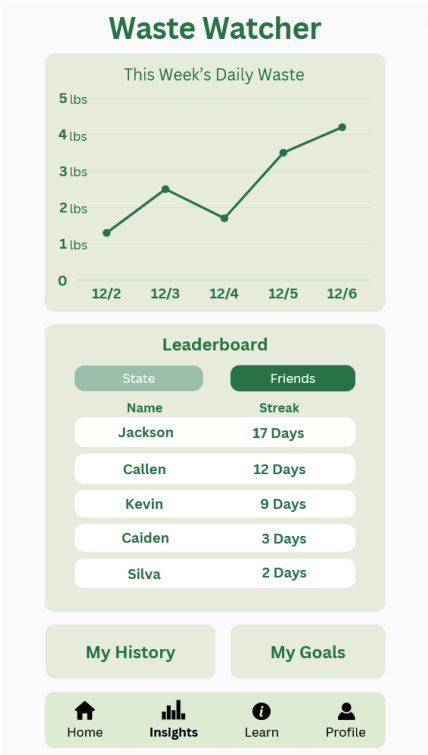
Sign-up Screen: Figure 3.2.2



Home Screen: Figure 3.2.3

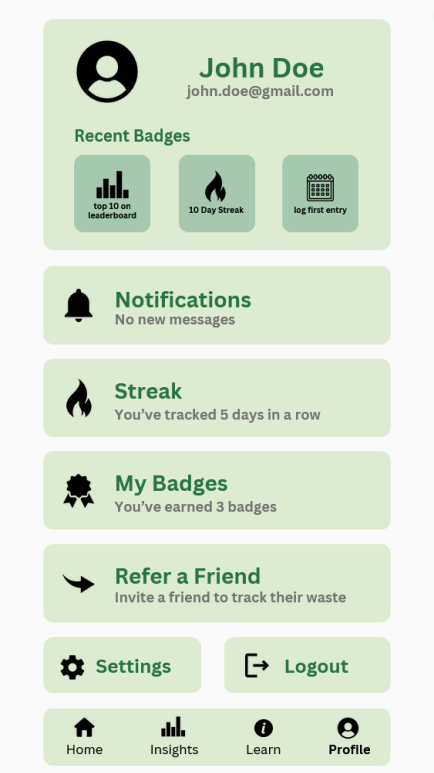


Insights Screen: Figure 3.2.4



Learn Screen: Figure 3.2.5

Profile Screen: Figure 3.2.6



Upon the user opening the application they are taken to the Login screen (*Figure 3.2.1*). From here the user may select the sign-up button, which will navigate them straight to the "Sign Up" screen (*Figure 3.2.2)*. After the user signs in or signs up via Google single sign-on or their email; they are presented with the "Home" Screen (*Figure 3.2.3*). There is a navigation bar located at the bottom of the screen, which contains buttons that allow the user to navigate through each of the main application screens.

Main Menu Button 1: shown as a silhouette of a house, the home screen (*Figure 3.2.3)* is the main landing page after the user enters the application and is logged in. This page displays information and allows for the tracking of waste.

Main Menu Button 2: shown as a silhouette of a histogram, the Insights screen (*Figure 3.2.4)* shows information about the user's current weekly tracking, the leaderboard, and their goals.

Main Menu Button 3: shown as a black circle with a lowercase i in the center as negative space, the Learn page (*Figure 3.2.5*) shows a GPS map with information about donation centers on it. There are also options to receive information about reducing food waste.

Main Menu Button 4: shown as a person's silhouette (*Figure 3.2.6*) and shows information about the user's account. This is also where the user can find the settings menu and log out of their account.

All Main Menu Buttons can be clicked on to navigate to all of the four major system screens. All buttons that take the user to a screen that is not a major system screen will have a return button in the top left corner of the screen allowing the user to go back to their previous application state.

4. Data Validation

4.1 Overview

This section on Data Validation delves into the strategies and methodologies implemented within our system to maintain data quality within our system. These mechanisms not only enhance the reliability of the data but also improve user experience by reducing errors and simplifying the correction process. This section aims to articulate how our interface will remain user-friendly and efficient.

4.2 Data Items

Name	**Description**	**Type**	**Limits/ Constraints**	**Allowable Formats**
Username	Unique identifier for user login	string	Approved by Google SSO standards	Alphanumeric, no spaces
Password	Secure key for user authentication	string	Approved by Google SSO standards	Alphanumeric with at least one uppercase, one lowercase, and one special character
email	User's email address for communication	string	Standard email length	Must be a valid email format (e.g., user@example.com)
age	User's age	integer	0-150	Whole numbers only
location	User's current living place	string	2-100 characters	Alphanumeric, can include spaces and common punctuation
Waste Type	Type of waste user wants to manage	string	1-50 characters	Alphanumeric, can include spaces

Waste amount	Quantitative measurement of waste	string	1-10 characters	Numeric and/or text describing volume/weight (e.g., "5 kg", "10 L")
Waste Goal Description	Description of user's waste management goal	string	10-500 characters	Alphanumeric, can include spaces and common punctuation
Waste Goal requirements	Specific requirements to achieve the waste goal	string	10-200 characters	Alphanumeric, can include spaces and common punctuation

2 Appendix A – Agreement Between Customer and Contractor

By signing this document, Susanne Lee and Waste Management Solutions agree upon the basic user interface design for this project. This design is susceptible to change based on if new more important requirements come up or if things become obsolete. In the future, if these changes need to be made, they will be discussed with our customer first for clarification and then updated here once an agreement has been made. Changes to this document should be known by whoever it is relevant to.

Client Signature:

Name: Susanne Lee	Date: 11/29/23
Signature: 	
Comments:	

Team Signatures:

Name: Kevin Bretthauer	Date: 12/5/2023
Signature: 	
Comments:	

Name: Callen Shaeffer	Date: 12/5/23
Signature: 	
Comments:	

Name: Christian Silva	Date: 12/5/23
Signature: 	
Comments:	

Name: Caiden Emerson	Date: 12/5/23
Signature: 	
Comments:	

Name: Jackson Cyr	Date: 12/5/2023
Signature: Jackson Cyr	

Comments:

3 Appendix B – Team Review Sign-off

By signing below members have indicated that they agree to the information mentioned above in this document. You agree that this document may see changes in the future.

Team Signatures:

Name: Kevin Bretthauer	Date: 12/5/23
Signature: 	
Comments:	

Name: Callen Shaeffer	Date: 12/5/23
Signature: 	
Comments:	

Name: Christian Silva	Date: 12/5/23
Signature: 	
Comments:	

Name: Caiden Emerson	Date: 12/5/23
Signature: 	
Comments:	

Name: Jackson Cyr	Date: 12/5/2023
Signature: Jackson Cyr	
Comments:	

4 Appendix C – Document Contributions

Identify how each member contributed to the creation of this document. Include what sections each member worked on and an estimate of the percentage of work they contributed. Remember that each team member must contribute to the writing (including diagrams) for each document produced.

Jackson (20%) - Section 2

Callen (20%) - Section 1 & 3.2 UI Mockups and descriptions

Caiden (20%) - Section 3.1 Navigation Diagram

Kevin (20%) - Section 4.1 & Welcome Page Mockup

Silva (20%) - Section 3.1 description and 3.2