

The Resource Alignment Group

MAFES Equipment Management System

User Interface Design Document

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The Resource Alignment Group

MAFES Equipment Management System

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1. Introduction

This is a capstone project for the Maine Agricultural and Forest Experimentation Station (MAFES) at the University of Maine. This project will fulfill the capstone requirement for a Computer Science Bachelor's degree for Bradan Craig, Drew Marecek, McKade Wing, and Theodore Morin. This project involves developing a web application for an equipment management and tracking system to replace MAFES's current Excel process. The new system will allow all MAFES staff and students to easily view, reserve, and manage agricultural and forestry equipment across their six research farms.

1.1. Purpose of This Document

The purpose of this document is to define the layout, structure, and interactive design of the MAFES Equipment Management System. It details how users will navigate the system, how screens will be organized, and how the interfaces will achieve the project's goals. This document provides visual models and navigation diagrams to convey the system's core components. The intended audience for this document includes MAFES customer representatives, MAFES research faculty, the capstone development team, and University of Maine faculty who will review the document's completeness.

1.2. References

- Maine Agricultural and Forest Experiment Station - the University of Maine.* (n.d.).
Maine Agricultural and Forest Experiment Station. <https://umaine.edu/mafes/>
SDD, The Resource Alignment Group. (2025). *The System Design Document.*
SRS, The Resource Alignment Group. (2025). *The System Requirements Specification Document.*
Visual Identity - Division of Marketing and Communications - University of Maine. (n.d.).
Division of Marketing and Communications.
<https://umaine.edu/marketingandcommunications/brand/visual-identity/>

2. User Interface Standards

This section defines the standards for the appearance and overall layout of all user interface components for the MAFES Equipment Management System. These standards will ensure consistency and usability across all screens.

All screens in the system will adhere to a consistent three-section layout, featuring a collapsible left sidebar, a fixed top navigation bar, and a main content area. This consistency will enable users to locate standard controls and navigate with ease. The left sidebar will include a search

bar, farm sorting, and filter options. The top navigation bar displays the system title and navigation links: Home, My Requests, My Equipment, Reports, and User Management. The main content area will display the selected content.

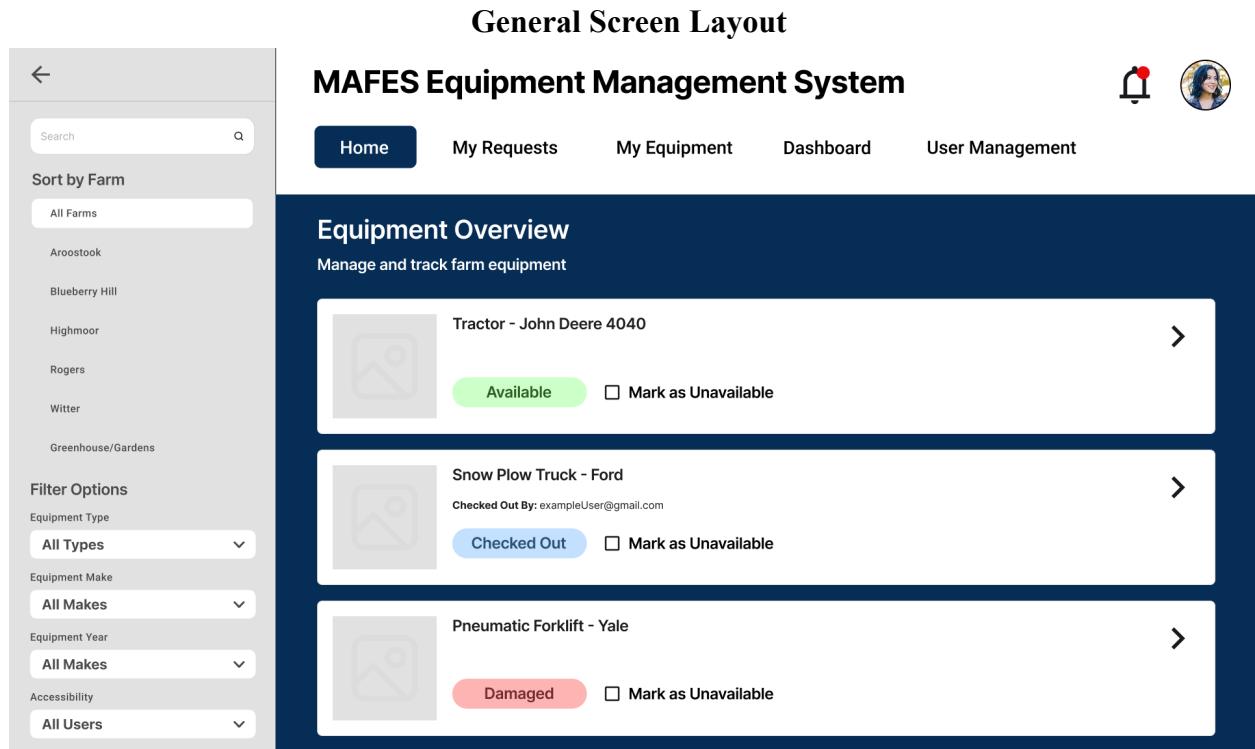


Figure 1: This image illustrates the system's three-section interface consisting of the fixed top navigation bar, collapsible left sidebar, and central content area across all screens for consistent navigation and usability.

The system's use of buttons shall follow consistent styling and feature easy-to-understand symbols or text. Buttons on the top navigation bar will be dark blue with a white background by default. Once the user's cursor hovers over a button, the text will turn white, and the rectangular background around the text will turn dark blue. Buttons on the left sidebar will have black text and a white background, and will be formatted one on top of the other.

Common UI elements, including form fields, equipment cards, notifications, and tables, must adhere to standardized spacing, labeling, and formatting. Error messages shall be displayed as pop-ups near the affected fields, such as when a user attempts to submit an incomplete or invalid form.

3. User Interface Walkthrough

The walkthrough demonstrates how users transition from one screen to another and outlines the actions they can take on each page. Diagrams and screenshots are included as examples to provide a clear idea of the page-to-page flow.

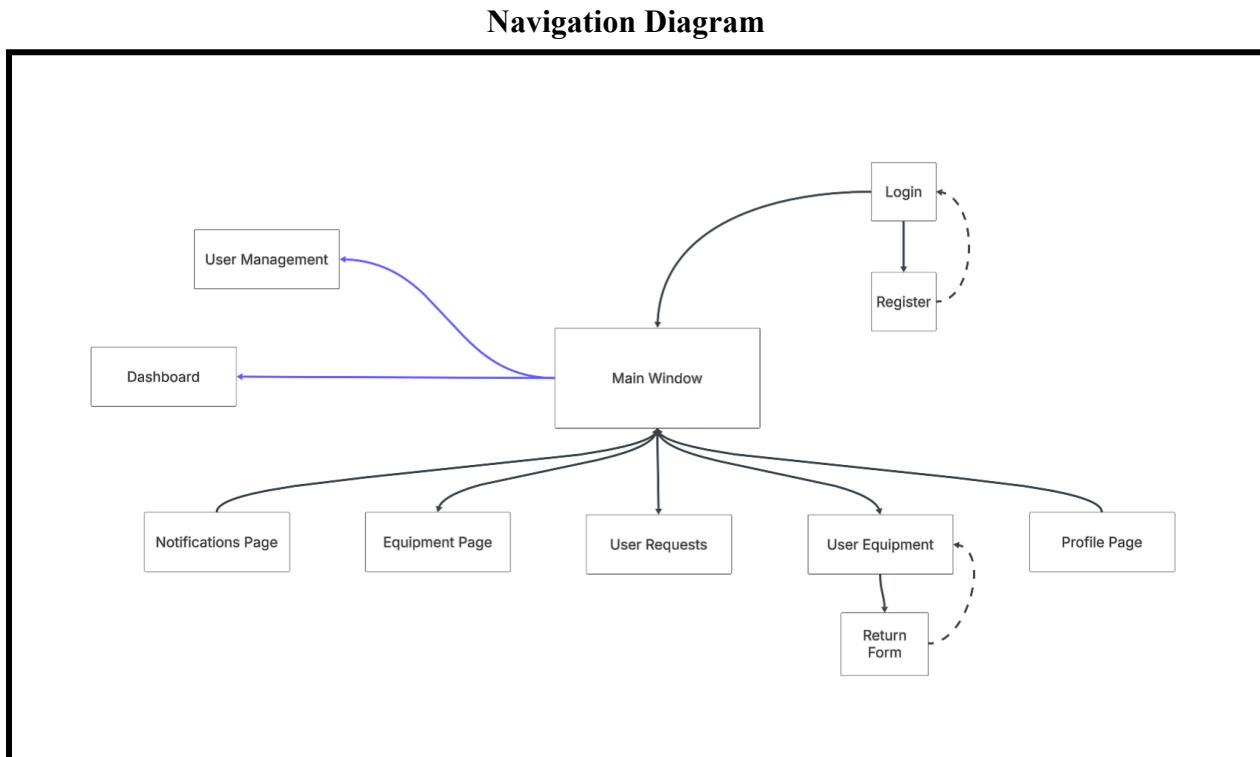


Figure 2: The diagram that shows how the different pages are interacting with each other and how the user gets from one to another.

Within the user diagram, all users will start at the “Login” page, where they must enter their credentials to access the home page (**Figure 3**). If the user does not have an account, they can create one by navigating to the “Register” page, which is accessed by clicking “Register Here” on the “Login” page. Once they are on the “Register” page, the user will need to enter their email address and the password they want to set for their account (**Figure 4**). The “Register” page will also feature an “Admin ID” field, which will be an admin’s email address, allowing them to receive a notification to approve this user’s account creation. Once the user submits their account creation information, a pop-up will appear informing them that their submission was successful and that they will receive an email once an admin has approved their request.

Once the Admin approves the user’s account creation request, the user will be able to log in. When the user logs in, they will be directed to the “Home Page” (**Figure 5**). The home page will feature a navigation bar that serves as the primary means of navigating the website. On the left

will be an expandable sidebar menu that allows the user to search and filter equipment in the database. All matching equipment will be displayed on the center-right side of the screen. If the user clicks a piece of equipment, its card will expand to display all the information specific to that equipment (**Figure 6**). Some of this information will include the equipment's category, year, name, images, and reports. This is also where users can request to check out the equipment, and where admins can edit equipment attributes or delete them entirely. If the user decides to check out a piece of equipment, they can view the pending request on the “My Requests” page. This request will remain pending until an admin approves it via the request notification.

If the user decides to check out a piece of equipment, they can view the pending request on the “My Requests” page. This request will remain pending until an admin has approved it via their notification of the request. The state of this request will change depending on whether it’s pending, approved, or denied (**Figure 7**). The user can also view their checked-out equipment via the “My Equipment” section of the navigation bar (**Figure 8**). Equipment will only appear here after an admin approves its initial request. Each equipment card on this page will feature a “Return Equipment” button that, when pressed, prompts the user to complete a brief form to track the equipment’s functionality and potential damage (**Figure 9**).

The “Dashboard” and “User Management” pages will only appear to farm superintendents and admins, and a few features will be disabled for superintendents. The dashboard will provide a high-level overview of the database, including available, in-use, and damaged equipment (**Figure 10**). Admins will have the added functionality to generate monthly reports and add equipment to the database. The user management page will allow admins and superintendents to view current users and all equipment that they currently have checked out. Additionally, admins can promote, demote, and delete user accounts from this page (**Figure 11**).

The other two pages available to all users are “Notifications” and “Account Settings.” The notifications page is accessible by selecting the bell icon in the top-right corner of the window, and the account settings page from the user’s profile icon. The notification page displays all notifications that the user has received (e.g., approved requests). Admins can receive notifications for reported equipment damage and for actions that require approval, such as new accounts or equipment requests (**Figure 12**). The profile page is where users can update their personal details and sign out of their account (**Figure 13**).

Login Page



The image shows a deer standing in a grassy field with autumn foliage in the background.

Login

Email *

Value

Password *

Value

[Forgot password?](#)

Don't have an account? [Register Here](#)

Figure 3: The form input that will let the user log into their existing account.

Registration Page



The image shows a harbor scene with boats and houses in the background.

Register

* Email

Value

* Password

Value

* Admin ID ⓘ This is the email address of the admin you wish to notify of your account registration, for approval.

Value

Figure 4: The form input that will let a new user register a new account, notifying an admin for approval before they are granted access to the system.

Equipment Overview Home Page

The screenshot shows the MAFES Equipment Management System home page. On the left, there is a sidebar with a search bar, a back arrow, and a submit button. Below the search bar is a "Sort by Farm" section with a dropdown menu containing "All Farms", "Aroostook", "Blueberry Hill", "Highmoor", "Rogers", "Witter", and "Greenhouse/Gardens". Under "Filter Options", there are dropdown menus for "Equipment Type" (set to "All Types"), "Equipment Make" (set to "All Makes"), "Equipment Year" (set to "All Makes"), "Accessibility" (set to "All Users"), and "All Users". The main content area has a dark blue header with the title "Equipment Overview" and a subtitle "Manage and track farm equipment". It includes a "Select All" checkbox. Below this, there are three cards representing different pieces of equipment:

- Tractor - John Deere 4040**: Status is "Available". Buttons: "Mark as Unavailable" and a right-pointing arrow.
- Snow Plow Truck - Ford**: Status is "Checked Out". Checked out by "exampleUser@gmail.com". Buttons: "Mark as Unavailable" and a right-pointing arrow.
- Pneumatic Forklift - Yale**: Status is "Damaged". Buttons: "Mark as Unavailable" and a right-pointing arrow.

At the top right of the main content area, there is a notification bell icon with a red dot and a user profile picture. The navigation bar at the top includes links for "Home", "My Requests", "My Equipment", "Dashboard", and "User Management".

Figure 5: Displays all farm equipment matching the search and filter parameters in the sidebar. It features a shared navigation header, notifications, and access to account settings across all pages.

Equipment Overview Alternative Homepage

The screenshot shows the MAFES Equipment Management System homepage. At the top, there is a navigation bar with a menu icon, the system name "MAFES Equipment Management System", and user profile icons for notifications and a photo. Below the navigation is a secondary header titled "Equipment Overview" with a subtitle "Manage and track farm equipment". A "Select All" checkbox is present. The main content area displays an equipment card for a "Tractor - John Deere 4040". The card includes a thumbnail, the equipment name, a status indicator ("Available" with a green button), and a "Mark as Unavailable" checkbox. The card is divided into three sections: "Basic Information", "Operations", and "Description". Under "Basic Information", details include Name (John Deere 4040), Category (Tractor), Make (John Deere), and Model (4040). Under "Operations", details include Assigned Farm (Aroostook) and Use Frequency (Seasonally). Under "Description", there is a text box containing notes about the tractor's use for heavy tillage and its replacement with a more powerful model. At the bottom of the card are buttons for "View Attachments(0)", "Upload", "Request Checkout", "Edit Equipment", and "Delete".

Figure 6: Displays a variant version of the home page, depicting a closed sidebar and an open equipment card. The open equipment card contains the equipment's relevant information and lets the user attach/view its files. Actions such as requesting checkout, editing equipment, and deleting equipment are also available here.

My Requests Page

MAFES Equipment Management System

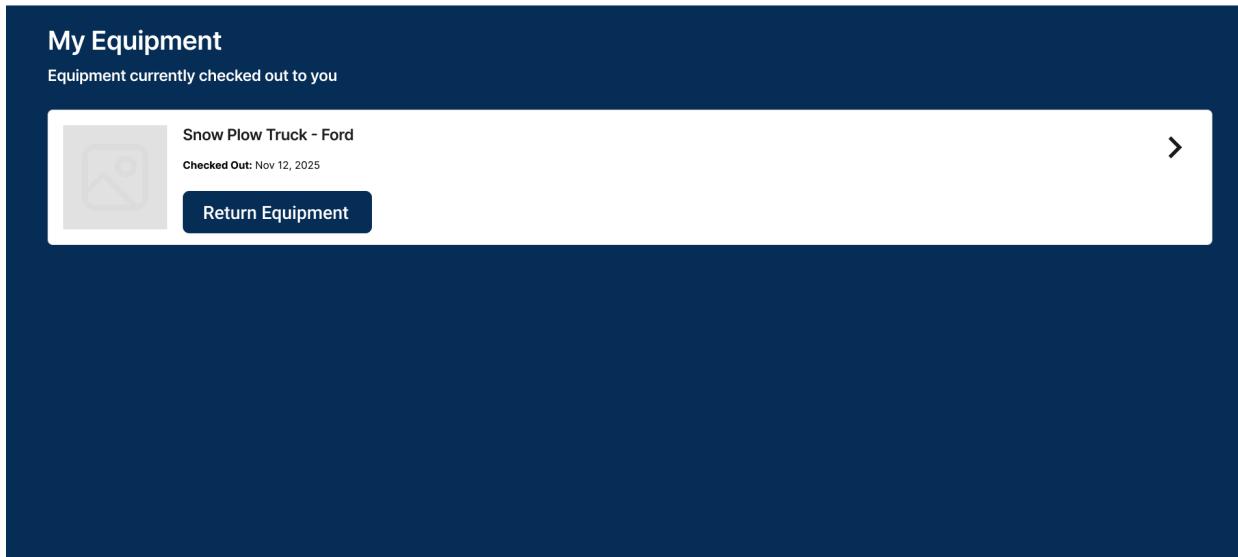


The screenshot shows the 'My Requests' section of the MAFES Equipment Management System. At the top, there's a navigation bar with 'Home', 'My Requests' (which is highlighted), 'My Equipment', 'Dashboard', and 'User Management'. Below the navigation, a title 'My Requests' is followed by the sub-instruction 'View and manage your equipment requests'. Two cards are displayed: one for a 'Snow Plow Truck - Ford' which is 'Approved' and checked out on 'Nov 12, 2025', and another for a 'Tractor - John Deere 4040' which is 'Pending' and requested on 'Nov 12, 2025'. Each card has a small image icon and a right-pointing arrow.

Figure 7: Shows all outbound requests that are generated from selecting the request checkout button on the expanded equipment cards, as well as their current status.

My Equipment Page

MAFES Equipment Management System



The screenshot shows the 'My Equipment' section of the MAFES Equipment Management System. At the top, there's a navigation bar with 'Home', 'My Requests', 'My Equipment' (which is highlighted), 'Dashboard', and 'User Management'. Below the navigation, a title 'My Equipment' is followed by the sub-instruction 'Equipment currently checked out to you'. A single card is displayed for a 'Snow Plow Truck - Ford' which is checked out on 'Nov 12, 2025'. The card includes a small image icon and a right-pointing arrow. At the bottom of the card is a blue button labeled 'Return Equipment'.

Figure 8: Shows all the equipment the user has checked out. It also allows the user to return the equipment when they are done with it.

Equipment Return Form

Equipment Return Checklist

Did the equipment function correctly? * Yes No

Was the equipment cleaned on return? * Yes No

Is there any damage to report? * Yes No

Describe any damages...

Figure 9: The form that will be displayed to users when they click the return equipment button on the My Equipment page.

Dashboard Page

≡
MAFES Equipment Management System

Home
My Requests
My Equipment
Dashboard
User Management

Dashboard

View equipment usage, generate monthly reports, and add equipment to the database

Total Equipment
170

Available Equipment
50

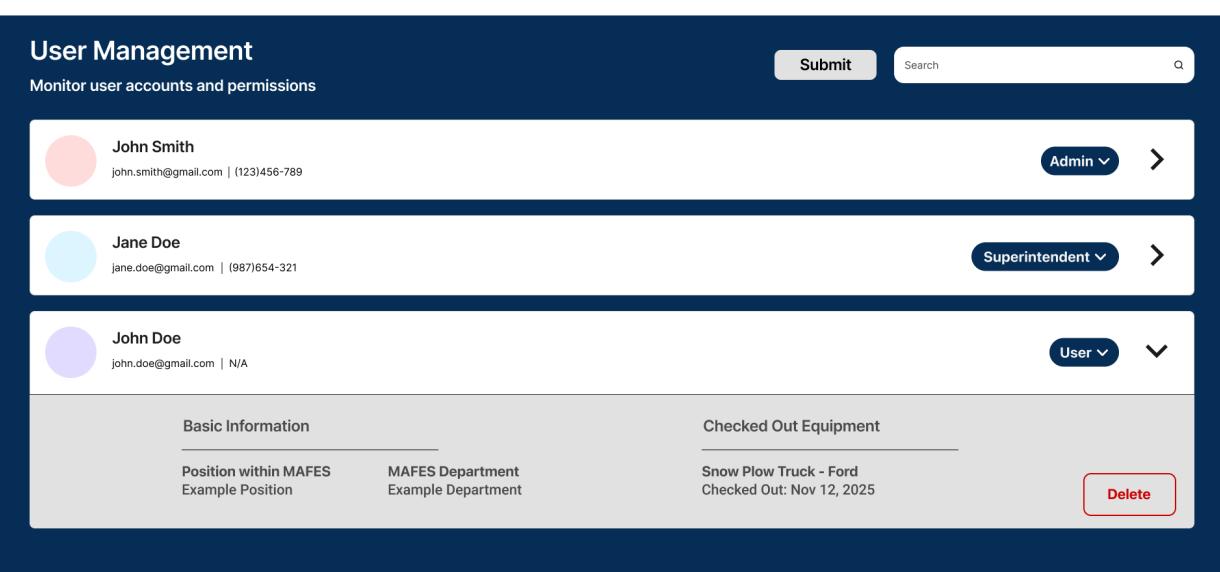
Equipment In Use
120

Generate Monthly Report +
Add Equipment +

Figure 10: A page only viewable by admins of the system. It allows admins to generate monthly reports and add new equipment to the database.

User Management Page

MAFES Equipment Management System



The screenshot shows the User Management page of the MAFES Equipment Management System. At the top, there is a navigation bar with links for Home, My Requests, My Equipment, Dashboard, and User Management (which is currently selected). To the right of the navigation bar are a notification bell icon with a red dot and a user profile picture. The main content area has a dark blue header with the title "User Management" and a subtitle "Monitor user accounts and permissions". Below this, there is a search bar with a "Submit" button and a "Search" input field. The main body of the page displays three user profiles in cards:

- John Smith**: Position: Admin. Contact info: john.smith@gmail.com | (123)456-789.
- Jane Doe**: Position: Superintendent. Contact info: jane.doe@gmail.com | (987)654-321.
- John Doe**: Position: User. Contact info: john.doe@gmail.com | N/A.

Below the cards, there are two sections: "Basic Information" and "Checked Out Equipment". Under "Basic Information", it shows "Position within MAFES: Example Position" and "MAFES Department: Example Department". Under "Checked Out Equipment", it shows "Snow Plow Truck - Ford" and "Checked Out: Nov 12, 2025". A "Delete" button is located next to the checked-out equipment section.

Figure 11: Displays the account-holding users in the system, their contact information, MAFES position and department, and the equipment they currently have checked out. This page also allows admins to change user roles.

Notifications Page

MAFES Equipment Management System



- [Home](#)
- [My Requests](#)
- [My Equipment](#)
- [Dashboard](#)
- [User Management](#)

Notifications

View all incoming notifications

✓ Request Approved
 X

Your request for Snow Plow Truck - Ford has been approved by Admin

⚠ Equipment Damage Reported
 X

John Doe has submitted a damage report for Pneumatic Forklift - Yale on Nov 12, 2025

[View Details](#)

ℹ New Equipment Request
 X

Jane Doe has requested Tractor - John Deere 4040 on Nov 12, 2025

[Approve](#) [Deny](#) [View Details](#)

👤 New Account Request
 X

John Smith (john.smith@gmail.com) has requested an account

[Approve](#) [Deny](#)

Figure 12: This is where all incoming notifications can be found. The different types of notifications are displayed, some of which are only visible to specific roles.

Account Settings Page

MAFES Equipment Management System



- [Home](#)
- [My Requests](#)
- [My Equipment](#)
- [Dashboard](#)
- [User Management](#)

Account Settings

Manage your personal information



[Change Picture](#)

John Smith
john.smith@gmail.com

[Sign Out](#)

Personal Details

First Name *	<input type="text"/>
Email Address *	<input type="text"/>
Position within MAFES *	<input type="text"/>
Last Name *	<input type="text"/>
Phone Number	<input type="text"/>
MAFES Department *	<input type="text"/>

[Save Changes](#) [Cancel](#)

Figure 13: A page that lets the user modify their personal details, such as name, email address, phone number, MAFES position, and department. Users can also update their profile photo and sign out here.

4. Data Validation

This section explains how user input is verified and managed to ensure data accuracy and consistency throughout the system.

Screen Name	Data Item Label	Data Type	Formats	Limits
Login (Figure 3)	Email	String	Standard Email (theodore.morin @maine.edu)	Must match existing account
Login (Figure 3)	Password	String	Masked text	Must match the existing accounts' email
Registration (Figure 4)	Email	String	Standard Email	Must not already be in the system
Registration (Figure 4)	Password	String	Alphanumeric + Symbols	Min 8 chars, max 64 chars, must contain a special character, a capital letter, and a number
Registration (Figure 4)	Admin ID	String	Standard Email	Must match existing admin email
Sidebar (Figure 5)	Search Bar	String	Alphanumeric	
Sidebar (Figure 5)	Farm Selection Buttons	List of Booleans	Buttons	Must select one of the six research farms
Sidebar (Figure 5)	Filter Options Dropdown	Text	Dropdown toggle	
Equipment Page (Figure 8)	Checkout Date	Date	MM/DD/YYYY	Must be a future date. Cannot overlap with existing reservation
Equipment Page (Figure 8)	Return Date	Date	MM/DD/YYYY	Must be after the Checkout Date.

Screen Name	Data Item Label	Data Type	Formats	Limits
Equipment Page (Figure 8)	Request Notes	String	Text	Optional
Return Form (Figure 9)	New Damage	Boolean	Y/N	Required
Return Form (Figure 9)	Damage Notes	String	Text	Required if damages to report is Yes
Return Form (Figure 9)	Function Properly	Boolean	Y/N	Required
Return Form (Figure 9)	Cleaned	Boolean	Y/N	Required
Account Settings (Figure 13)	First Name	String	Text	Required, alphabetical characters
Account Settings (Figure 13)	Last Name	String	Text	Required, alphabetical characters
Account Settings (Figure 13)	Email Address	String	Standard Email	Required, must contain @
Account Settings (Figure 13)	Phone Number	String	(XXX) XXX-XXXX	Optional - Must be 10 digits, only numerical values
Account Settings (Figure 13)	Position	String	Text	Required
Account Settings (Figure 13)	MAFES Department	String	Text	Required
Account Settings (Figure 13)	Profile Photo	File	.jpg, .png	Optional - Max File Size: 5MB
Dashboard - Add Equip (Figure 6)	Equipment Name	String	Alphanumeric	Required

Screen Name	Data Item Label	Data Type	Formats	Limits
Dashboard - Add Equip (Figure 6)	Equipment Type	Text	Text Selection	Must be a valid category
Dashboard - Add Equip (Figure 6)	Model Year	Int	YYYY	Date cannot be in the future, must be four digits
Dashboard - Add Equip (Figure 6)	Serial Number/VIN	String	Alphanumeric	Must be Unique
Dashboard - Add Equip (Figure 6)	Farm Location	Text	Text Selection	Must be one of the six farms
Dashboard - Add Equip (Figure 6)	Equipment Photo	File	.jpg, .png, .jpeg	Max File Size: 5MB
Dashboard - Reports (Figure 10)	Start Date	Date	MM/DD/YYYY	Must be before the End Date
Dashboard - Reports (Figure 10)	End Date	Date	MM/DD/YYYY	Must be after the Start Date
User Management (Figure 11)	Role Assignment	Text	Text (Student, Admin, etc.)	

Appendix A - Agreement Between Customer and Contractor

This document outlines the agreed-upon system requirements between the customer and our project team. By signing below, both the customer and all team members confirm that they've read and understood the content of this document, and that it accurately reflects the expectations of the system. The project team agrees to build the system based on the descriptions provided here, and the customer confirms that these requirements meet their needs.

If any changes need to be made to this document in the future, the customer or project team can submit a request for the change. This process involves notifying the other party of the suggested change(s) and then conducting a joint review to understand how the change(s) may impact the project's scope, timeline, or deliverables. No changes will be made until both sides agree and sign off on the updated document.

Tyler Messerschmidt	<i>Tyler Messerschmidt</i>	12/03/2025
Customer Name Printed	Customer Signature	Date
Bradan Craig	<i>Bradan Craig</i>	12/03/2025
Team Member Name Printed	Team Member Signature	Date
Drew Marecek	<i>Drew Marecek</i>	12/03/2025
Team Member Name Printed	Team Member Signature	Date
McKade Wing	<i>McKade Wing</i>	12/03/2025
Team Member Name Printed	Team Member Signature	Date
Theodore Morin	<i>Theodore Morin</i>	12/03/2025
Team Member Name Printed	Team Member Signature	Date

Customer Comments:

Appendix B - Team Review Sign-off

All team members have read through this document and agree with its content and structure. Each team member has had the opportunity to provide feedback and propose revisions during the creation of this document. By signing below, team members confirm their approval of the outlined system requirements. Any minor comments or points of clarification can be noted in the space provided.

Bradan Craig

Bradan Craig

12/03/2025

Team Member Name Printed

Team Member Signature

Date

Comments:

Drew Marecek

Drew Marecek

12/03/2025

Team Member Name Printed

Team Member Signature

Date

Comments:

McKade Wing

McKade Wing

12/03/2025

Team Member Name Printed

Team Member Signature

Date

Comments:

Theodore Morin

Theodore Morin

12/03/2025

Team Member Name Printed

Team Member Signature

Date

Comments:

Appendix C - Document Contributions

Each team member contributed to the development of this document to ensure the final version is accurate, precise, and complete. This included researching SRS structure, writing project overviews, creating UML diagrams, and creating functional and non-functional requirements. The table below shows each team member's contributions, along with an estimated percentage of their work on the document.

Team Member	Contributions	Estimated %
Bradan Craig	Section 3 - Write-Up	25%
Drew Marecek	Section 2	25%
McKade Wing	Section 3 - UI Mockups	25%
Theodore Morin	Section 4	25%