The Resource Alignment Group

MAFES Equipment Management System

System Requirements Specification

Version 1.0

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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, in partial fulfillment of the requirements for the Bachelor of Science degree in Computer Science. 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 outline the goals and scope of the MAFES Equipment Management System project. It includes an overview of the software's intended functionality and a framework to be used throughout the development process, for design implementation, and testing purposes. The intended audience for this document includes MAFES customer representatives, MAFES research faculty, the capstone development team, and University of Maine faculty reviewing the document's completeness.

1.2. References

- MAFES Equipment Inventory_2025_tcm, MAFES. (2025). *MAFES' current equipment inventory management spreadsheet.*
- *GeeksforGeeks. (2022, April 25). How to Write Test Cases Software Testing. GeeksforGeeks. https://www.geeksforgeeks.org/software-testing/test-case/#*
- *END-To-END Testing Tutorial: What is E2E Testing with Example. (2019, September 18). Guru99.com. https://www.guru99.com/end-to-end-testing.html*
- SPR, The Resource Alignment Group. (2025). *Client Q/A session and requirement gathering.*
- User Stories, The Resource Alignment Group. (2025). *A list of relevant user stories.*
- Williams, L. & NCSU CSC326 Course Pack. (2010). *A (Partial) introduction to software engineering practices and methods* (Seventh).

1.3. Purpose of the Product

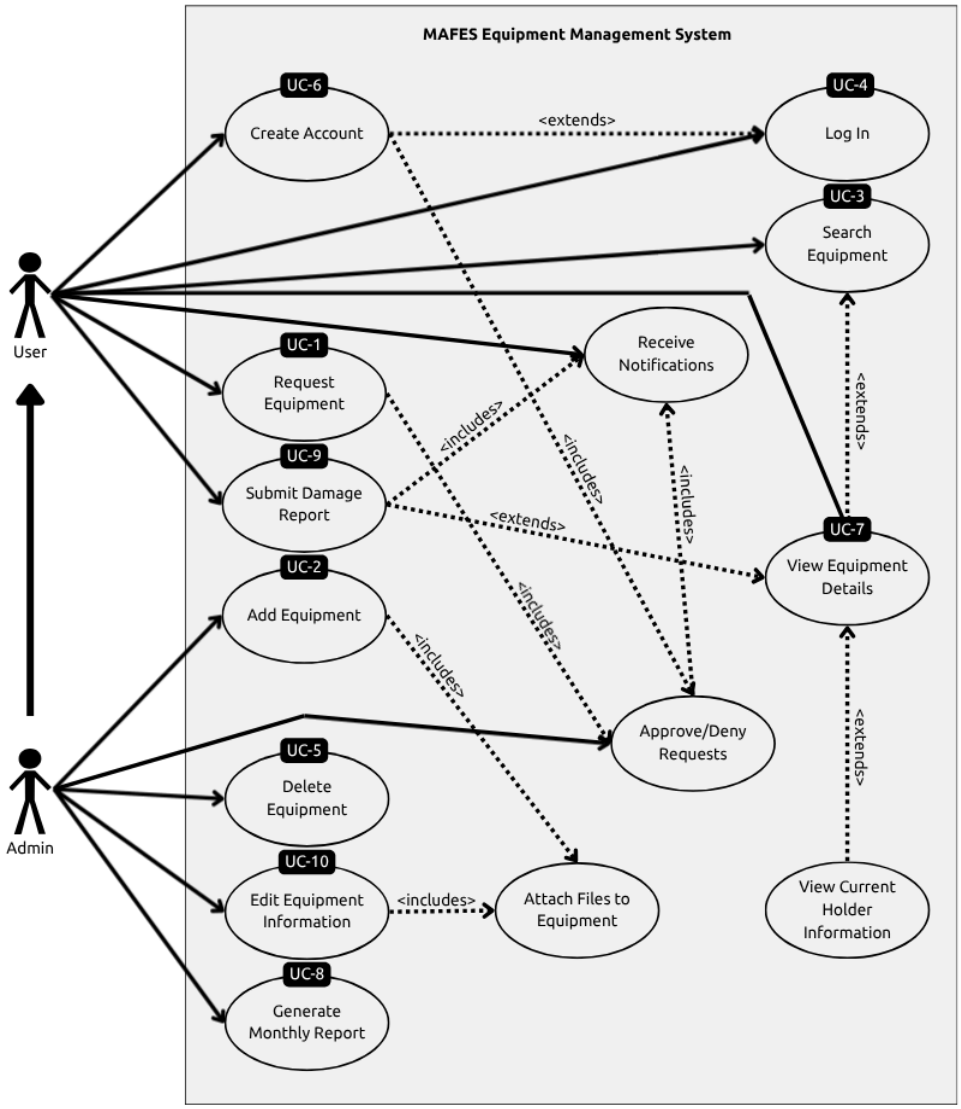
MAFES currently uses an Excel spreadsheet to track equipment details, but this has become hard to manage. It's slow, inconsistent, and difficult to update, making it challenging for staff to locate equipment, verify its availability, and maintain accurate usage records.

The new application will address these issues by creating a singular, web-based inventory management system. Users will be able to search for equipment, reserve items, and track their current status, reducing confusion and saving time when trying to find a specific piece of equipment. Role-based authentication will separate admins and user permissions, streamlining equipment requests and data management. Additionally, it will retain the same tracking features as the current spreadsheet, including equipment condition, maintenance history, and location, but present them in a simplified format.

1.4. Product Scope

The diagram illustrates how users and admins interact with the system's primary functions, showing how these activities connect to the core use cases and requirements of the MAFES Equipment Management System.

Users can create accounts, log in, search for equipment, submit requests, and report issues, which often trigger notifications or require admin approval. Admins can approve requests, add, edit, or delete equipment, and generate monthly reports while also having access to all user actions, allowing admins to manage the system effectively.



2. Functional Requirements

This section lists the key functions the system must perform to meet user and admin needs. Each requirement defines specific actions or behaviors necessary for successful system operation.

FR-0 Requesting Equipment Use

FR-0.1 Submit Request

Use Case 1

Users will be able to request any equipment from the database. Requests will be logged in the system and sent to the admin, who can either approve or deny the request.

FR-0.2 Admin Request Response

Use Case 1

Admins will receive notifications when users request equipment. Admins can approve or deny requests and add a short response message.

FR-1 Managing Equipment

FR-1.1 Add Equipment

Use Case 2

A form will be required for each new piece of equipment attempted to be added to the database. Information will include the name, class of equipment, year, make, model, and farm.

FR-1.2 Delete Equipment

Use Case 5

Admins can delete equipment from the database by navigating to the equipment page and clicking the “Delete” button. The system will remove the item from the database.

FR-1.3 Editing Equipment Information

Use Case 10

Admins will be able to edit existing equipment entries to update details such as name, description, image, and location when equipment information changes. The admin can also restrict the usage of a piece of equipment (e.g., it’s being repaired).

FR-1.4 Attaching Files to Equipment

Use Cases 1, 10

Admins will be able to upload and attach files to a specific equipment record, such as maintenance reports, invoices, and images, for reference and documentation.

FR-2 Finding Equipment & Details

FR-2.1 Equipment Filtering

Use Case 3

A filtering option will be available to help users find the equipment they need more easily. The filters will include, at a minimum, farm, class, year, and availability.

FR-2.2 Viewing Equipment Details

Use Case 7

Users will be able to view full details of each piece of equipment, including its description, images, and availability status, through the equipment information page.

FR-2.3 Viewing Current Holder Information

Use Case 7

Users will be able to see who currently has a piece of equipment checked out, along with their contact information, to coordinate usage or plan future reservations.

FR-3 User Management

FR-3.1 User Account Creation

Use Case 6

When a user first creates their account, a request for approval will be sent to the admin ID they specify upon sign-up. The admin will be able to review the account creation and will approve or deny the request.

FR-3.2 Logging In

Use Case 4

Users will be able to log in securely via a login page. Upon authentication, users will be directed to the home page and shown features appropriate to their assigned role (admin vs. user).

FR-4 Equipment & Usage Reports

FR-4.1 Monthly Reports

Use Case 8

Admins will be able to generate monthly reports summarizing all equipment usage during that month. The report will include the equipment location, significant damages, and any user-added notes.

FR-4.2 Damage Reports

Use Case 9

Users will be able to create a damage report for any item that was damaged or broken. Damage reports will include handwritten notes of what happened, as well as any attached files such as invoices and images.

FR-5 Notification System

FR-5.1 Receiving Notifications

Use Cases 1, 6, 9

The system will generate notifications for actions such as request approvals, denials, damage reports, and new account creation. Notifications will appear in-system and optionally be sent by email.

FR-6 Role-Based Permissions

FR-6.1 Admins vs Users

The system will enforce role-based permissions, allowing admins to approve requests, modify data, and delete records.

2.1. Use Cases

The following use cases provide a detailed view of how users and admins will interact with the system. They illustrate the main activities involved in managing equipment and outline the expected system behavior in each scenario.

<table>
<tr><td>Number</td><td>1</td></tr>
<tr><td>Name</td><td>Requesting Equipment</td></tr>
<tr><td>Summary</td><td>Users will be able to request access to equipment via the program.</td></tr>
<tr><td>Priority</td><td>1</td></tr>
<tr><td>Preconditions</td><td>Equipment must exist and be available.</td></tr>
<tr><td>Postconditions</td><td>Notification within the application will be sent to the admin of the equipment</td></tr>
<tr><td>Primary Actors</td><td>User</td></tr>
<tr><td>Secondary Actors</td><td>Admin</td></tr>
<tr><td>Trigger</td><td>The Request Equipment button is clicked.</td></tr>
<tr><td>Main Scenario</td><td>
<table>
<tr><td>1</td><td>User finds equipment on the website</td></tr>
<tr><td>2</td><td>User clicks the request button</td></tr>
<tr><td>3</td><td>System logs the request and notifies the admin specified in the request form</td></tr>
<tr><td>4</td><td>Admin reviews and approves or denies the request</td></tr>
<tr><td>5</td><td>The user gets a notification with a confirmation message of the admin’s decision.</td></tr>
</table>
</td></tr>
<tr><td>Extensions</td><td>Admin denies request:</td></tr>
</table>

	• User gets a notification claiming that their request was denied
Open Issues	Should there be a waitlist for equipment reservation?

Number	2
Name	Adding Equipment
Summary	Admins will be able to add new equipment to the database. This will include all of its relevant information, like name, description, location, and images.
Priority	1
Preconditions	The user adding the equipment must know the name, class, and farm of said equipment.
Postconditions	The equipment data is saved to the database and is viewable to all users.
Primary Actors	Admin
Secondary Actors	N/A
Trigger	The Add Equipment button is clicked.
Main Scenario	1. Admin clicks on the “Add Equipment” button 2. A form pops up for entering equipment details 3. Admin fills out all required fields 4. Admin submits the form 5. Form is sent to the back end of the program 6. Backend reads form and adds data to the database 7. New equipment appears in the search results
Extensions	Admin inputs faulty equipment data: • Form is submitted to the backend • Backend finds incorrect information • Backend sends the form back to the user to make adjustments

Open Issues	N/A

Number	3
Name	Searching Equipment
Summary	Users will be able to search all equipment stored in the database.
Priority	1
Preconditions	Equipment must exist in the database.
Postconditions	Matching equipment is displayed on the UI.
Primary Actors	User
Secondary Actors	N/A
Trigger	Search Button is clicked or Filter Condition is checked
Main Scenario	<table><tr><td>1</td><td>User navigates to the search page</td></tr><tr><td>2</td><td>User searches the name of the equipment or applies filters</td></tr><tr><td>3</td><td>UI displays all of the equipment matching the criteria</td></tr><tr><td>4</td><td>User views details and checks availability</td></tr><tr><td>5</td><td>User chooses to make a request or not</td></tr></table>
Extensions	User uses filters: ● User checks a specific filter ● UI displays all equipment with that classification
Open Issues	Should there be more filters than type, year, and farm?

Number	4
Name	Logging In
Summ ary	Users will be able to log into the program securely.

<table>
<tr><td>Priority</td><td>1</td></tr>
<tr><td>Preconditions</td><td>User information must exist in the database.</td></tr>
<tr><td>Postconditions</td><td>The user is directed to the home page after successful authentication.</td></tr>
<tr><td>Primary Actors</td><td>User</td></tr>
<tr><td>Secondary Actors</td><td>N/A</td></tr>
<tr><td>Trigger</td><td>The Log In button is clicked</td></tr>
<tr><td>Main Scenario</td><td><table>
<tr><td>1</td><td>User navigates to the login page</td></tr>
<tr><td>2</td><td>User inputs login credentials and clicks “Log In”</td></tr>
<tr><td>3</td><td>The program authenticates the credentials</td></tr>
<tr><td>4</td><td>System redirects the user to the home page upon success</td></tr>
</table></td></tr>
<tr><td>Extensions</td><td>User inputs incorrect credentials:
User inputs incorrect information
System denies login request
User inputs correct information
The system authenticates the information and redirects the user to the home page.</td></tr>
<tr><td>Open Issues</td><td>N/A</td></tr>
</table>

Number	5
Name	Deleting Equipment
Summary	Admins will be able to delete equipment from the database.
Priority	2
Preconditions	Equipment must exist in the database, and the user must have admin privileges.
Postconditions	The equipment is removed from the system database.
Primary Actors	Admin

<table>
<tr><td>Secondary Actors</td><td>N/A</td></tr>
<tr><td>Trigger</td><td>The Delete button gets clicked</td></tr>
<tr><td>Main Scenario</td><td><table>
<tr><td>1</td><td>Admin finds the specific equipment record</td></tr>
<tr><td>2</td><td>Admin navigates to the equipment page</td></tr>
<tr><td>3</td><td>Admin clicks “Delete”</td></tr>
<tr><td>4</td><td>The system removes the record from the database</td></tr>
</table></td></tr>
<tr><td>Extensions</td><td>N/A</td></tr>
<tr><td>Open Issues</td><td>N/A</td></tr>
</table>

<table>
<tr><td>Number</td><td>6</td></tr>
<tr><td>Name</td><td>User Account Creation and Approval</td></tr>
<tr><td>Summary</td><td>When new users create an account, a request will be sent to the specified administrator for review and approval before the account becomes active.</td></tr>
<tr><td>Priority</td><td>1</td></tr>
<tr><td>Preconditions</td><td>The system must be running, and the user must provide valid credentials on sign-up.</td></tr>
<tr><td>Postconditions</td><td>If approved, a new user account is created and added to the network. If denied, the user’s account isn’t created.</td></tr>
<tr><td>Primary Actors</td><td>User</td></tr>
<tr><td>Secondary Actors</td><td>Admin</td></tr>
<tr><td>Trigger</td><td>The user submits the account creation form.</td></tr>
<tr><td>Main Scenario</td><td><table>
<tr><td>1</td><td>User navigates to the account creation page</td></tr>
<tr><td>2</td><td>The user fills out the form, including contact information and</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td><table>
<tr><td></td><td>the admin ID</td></tr>
<tr><td>3</td><td>User submits the signup form</td></tr>
<tr><td></td><td>The system sends a request notification to the designated administrator.</td></tr>
<tr><td></td><td>Admin approves the request.</td></tr>
<tr><td></td><td>The user gains access to the system.</td></tr>
</table></td></tr>
<tr><td>Extensions</td><td>Admin denies sign-up request:
● The user won’t be able to sign up and will need to notify the admin directly for assistance.
Incomplete sign-up form:
● The system will prompt the user to complete the form before submission.</td></tr>
<tr><td>Open Issues</td><td>N/A</td></tr>
</table>

Number	7
Name	Viewing Equipment Details
Summary	Users will be able to view complete information about each piece of equipment. If it’s checked out, the page will display the name and contact information of the current holder.
Priority	2
Preconditions	The equipment must exist in the database.
Postconditions	The user can view all relevant information about the selected equipment.
Primary Actors	User
Secondary Actors	N/A
Trigger	User selects an equipment item from the search results
Main Scenario	<table><tr><td>1</td><td>User searches for or filters available equipment</td></tr></table>

	<table><tr><td>2</td><td>User selects a piece of equipment</td></tr><tr><td>3</td><td>The system retrieves its data from the database</td></tr><tr><td>4</td><td>Equipment details are displayed</td></tr></table>
Extensions	The equipment is damaged: ● A flag will be displayed, blocking the user from requesting that piece of equipment
Open Issues	N/A

Number	8
Name	Getting Monthly Report
Summary	Admin can request a summary report of equipment usage for the month.
Priority	3
Preconditions	The user must have admin privileges.
Postconditions	A generated monthly usage report is provided to the admin.
Primary Actors	Admin
Secondary Actors	N/A
Trigger	The Generate Report button is clicked.
Main Scenario	<table><tr><td>1</td><td>Admin navigates to the specific farm’s page</td></tr><tr><td>2</td><td>Admin clicks the “Generate Report” button</td></tr><tr><td>3</td><td>System compiles equipment usage and maintenance data for the past month</td></tr><tr><td>4</td><td>Admin receives the report</td></tr></table>
Extensions	No traffic has happened within the current month: ● The admin receives a pop-up that says that there is nothing to

	report
Open Issues	Should the reports be downloadable and/or exportable? In what formats? Should there also be a report that is for all farms/equipment?

Number	9
Name	Adding Damage Reports
Summary	Users will be able to submit damage reports, which will be stored in the database and are viewable by admins.
Priority	4
Preconditions	Equipment must exist in the database.
Postconditions	A damage report will be attached to the equipment profile.
Primary Actors	User
Secondary Actors	Admin
Trigger	The Add Damage Report button is clicked.
Main Scenario	1 User navigates to the equipment page 2 User clicks the “Add Damage Report” button 3 User fills out the damage report form 4 User submits damage report 5 Damage report is added to the equipment profile 6 Admin is notified of the report
Extensions	N/A
Open Issues	N/A

<table>
<tr><td>Number</td><td>10</td></tr>
<tr><td>Name</td><td>Editing Equipment Information</td></tr>
<tr><td>Summary</td><td>Admins will be able to edit existing equipment entries to update details such as name, description, and location, as well as upload and attach related files like invoices or images. This would also include the option for the admin to restrict users from requesting a piece of equipment if it’s in repair, etc.</td></tr>
<tr><td>Priority</td><td>4</td></tr>
<tr><td>Preconditions</td><td>The equipment record must exist in the database, and the user must have administrative privileges.</td></tr>
<tr><td>Postconditions</td><td>The database will be updated with the new information and any attached files, which will be viewable to authorized users.</td></tr>
<tr><td>Primary Actors</td><td>Admin</td></tr>
<tr><td>Secondary Actors</td><td>N/A</td></tr>
<tr><td>Trigger</td><td>The Edit Equipment button is clicked</td></tr>
<tr><td>Main Scenario</td><td>
<table>
<tr><td>1</td><td>Admin navigates to the equipment page</td></tr>
<tr><td>2</td><td>Admin clicks the “Edit Equipment” button</td></tr>
<tr><td>3</td><td>A form appears showing the current equipment information</td></tr>
<tr><td>4</td><td>Admin updates fields such as name, description, image, location, or attaches files</td></tr>
<tr><td>5</td><td>Admin submits form</td></tr>
<tr><td>6</td><td>System saves changes to the database</td></tr>
<tr><td>7</td><td>Updated information is visible on the equipment page</td></tr>
</table>
</td></tr>
<tr><td>Extensions</td><td>Nothing was edited:
The system closes the edit form without changes</td></tr>
<tr><td>Open Issues</td><td>Should we limit what files are accepted?</td></tr>
</table>

2.2. Functional Requirements Tests

The testing for functional requirements will verify that each feature operates as intended. Each test will confirm that the user and admin interactions are performed correctly and produce the expected results.

Test Case ID	Use Case(s)	Test Description	Test Steps	Expected Result
Test 1.1	1, 3, 4, 7	End-to-End Scenario: Successful Equipment Request and Denial	1. Navigate to the Login screen and log in as a "User" 2. Search for an existing piece of equipment 3. Click the item to view its details 4. Click the "Request Equipment" button 5. Log out, and log back in as an "Admin" 6. Check notifications and find the new request 7. Click "Deny", and enter a message 8. Log out, and log in as a "User" 9. Check notifications	1. Login is successful (UC 4) 2. The equipment and its details are displayed (UC 3, 7) 3. After the request, the "Admin" has a pending approval notification (UC 1) 4. After denial, the "User" has a notification stating their request was denied (UC 1)

Test 1.2	1, 3, 4, 7	End-to-End Scenario: Successful Equipment Request and Approval	1. Navigate to the Login screen and log in as a "User" 2. Search for an existing piece of equipment 3. Click the item to view its details 4. Click the "Request Equipment" button 5. Log out, and log back in as an "Admin" 6. Check notifications and find the new request 7. Click "Approve", and enter a message 8. Log out, and log in as a "User" 9. Check notifications	1. The "Admin" receives the pending approval notification (UC 1) 2. After approval, the "User" has a notification stating their request was approved (UC 1) 3. The equipment's status is now "Unavailable" (UC 7) 4. The equipment's detail page now shows the "User" as the current holder (UC 7)
Test 2.1	2, 5, 10	End-to-End Scenario: Full Equipment Lifecycle Management by Admin	1. Log in as "Admin" 2. Navigate to "Add Equipment" and create a new item called "Test Item" 3. Confirm that "Test Item" appears in search results 4. Go to the "Test Item" page and click "Edit" 5. Change its location, name ("Test Item2"), description, image, and attach a file 6. Click "Save" 7. Verify the fields were updated 8. Navigate to the "Test Item2" page and click "Delete" 9. Verify "Test Item2" does not appear in search results	1. The equipment is successfully created and searchable (UC 2) 2. The item details are editable, saved, and visible (UC 10) 3. The equipment is successfully removed from the system (UC 5)

Test 2.2	2	Negative Path: Add Equipment with Incomplete Form	1. Log in as “Admin 2. Navigate to “Add Equipment” 3. Fill out the form, but leave at least one required field blank 4. Click “Submit”	1. The form is not submitted 2. An error message is displayed letting the admin know they did not fill out all the required fields (UC 2)
Test 3.1	3	Feature Test: Equipment Filtering	1. Log in as “User” 2. Navigate to the equipment search page 3. Click “Filters” 4. Select “Farm A” 5. Apply the filter	1. The search only shows equipment from “Farm A”
Test 4.2	4	Negative Path: Incorrect login Credentials	1. Navigate to the Login page 2. Enter a valid username, but an incorrect password 3. Click “Log In”	1. The Login attempt fails 2. An error message is displayed: “Invalid username or password.”
Test 6.1	6, 4	End-to-End Scenario: New User and Approval	1. Navigate to the “Sign Up” page 2. Fill out the required fields in the “Sign Up” form 3. Log in as “Admin” 4. Find the new account request and click “Approve” 5. Log out 6. Log in as the newly approved user	1. The “Admin” receives the new account request (UC 6) 2. After approval, the new user can successfully log in (UC 4, 6)
Test 6.2	6	Negative Path: Incomplete Sign Up Form	1. Navigate to the “Sign Up” page 2. Leave at least one required field blank 3. Click “Submit”	1. The form is not submitted 2. An error message appears, letting the user know they have not filled out all the required fields

Test 6.3	6, 4	Negative Path: Admin Denies New User	1. Navigate to the Sign Up page 2. Fill out the required fields in the “Sign Up” form 3. Log in as “Admin” 4. Find the new account request and click “Deny” 5. Log out 6. Attempt to log in as the newly approved user	1. The login attempt from the new user fails (UC 4, 6) 2. An error message is displayed
Test 8.1	8	Feature Test: Generate Monthly Report	1. Log in as “Admin” 2. Navigate to an “active” farm page 3. Click “Generate Report”	1. A report is generated and displayed showing the usage data for the specified farm
Test 8.2	8	Feature Test: Generate Report with No Data	1. Log in as “Admin” 2. Navigate to the “inactive” farm page 3. Click “Generate Report”	1. A message is displayed stating: “There is nothing to report on for this period” (UC 8)
Test 9.1	9	Feature Test: User Submits Damage Report	1. Log in as “User” 2. Navigate to an equipment page 3. Click “Add Damage Report” 4. Fill out the form 5. Click “Submit” 6. Log out, and log in as “Admin” 7. Navigate to that equipment page	1. The “Admin” receives a notification about the damage report 2. The damage report is visible on the equipment's profile 3. The equipment is now flagged as “Damaged”.
Test 9.2	7, 9, 1	Negative Path: Attempt to Request Damaged Equipment	1. Log in as a “User” 2. Navigate to an equipment page flagged as “Damaged” 3. Click the “Request Equipment” button	1. The “Request Equipment” button is disabled (“unclickable”) and grayed out.

Test 10.1	10, 7, 1	Feature Test: Admin Restricts Equipment Use	1. Log in as “Admin” 2. Navigate to an “Available” item 3. Click “Edit” 4. Check the box for “Restrict Requests” 5. Click “Save” 6. Log out, and log in as “User” 7. Search for the item	1. The item’s page will show “Unavailable” (UC 7) 2. The “Request Equipment” button is disabled (grayed out and unclickable), preventing a user from requesting it (UC 1)

3. Non-Functional Requirements

This section specifies the performance and quality expectations of the system. It addresses how the application should operate in terms of efficiency, reliability, and overall user experience by defining product, organizational, and external requirements.

NFR-0 Performance or Efficiency

NFR-0.1 Real-Time Equipment Availability
Priority: 4
The system will update equipment availability in real time to ensure users and admins always see accurate availability information.

NFR-0.2 Filter Load Time
Priority: 2
Each search filter should return results in less than 2 seconds.

NFR-1 Reliability and Data Integrity

NFR-1.1 Daily Database Backup
Priority: 2
The system will automatically perform daily backups of all data to prevent data loss.

NFR-1.2 Notification Delivery Time
Priority: 1
Notifications will be delivered to users within 10 seconds of being triggered.

NFR-2 Security and Access Control

NFR-2.1 Password Policy
Priority: 1
All users and admins must log in using their University of Maine credentials and have a password of at least 10 characters to get in the system.

NFR-2.2 Session Expiration
Priority: 1
User sessions will automatically expire after 30 minutes of inactivity to prevent unauthorized access.

NFR-3 Usability and Accessibility

NFR-3.1 Click Efficiency
Priority: 1
Users must be able to locate any piece of equipment within three clicks or fewer from the home page.

NFR-3.2 FAQ Page Availability
Priority: 3
There will be an FAQ page for user reference.

NFR-4 Scalability and Maintainability

NFR-4.1 Concurrent User Sessions
Priority: 5
The system should support at least 100 active sessions at once without system failure.

NFR-4.2 Equipment Volume Handling
Priority: 2
The database and search functions should efficiently handle thousands of equipment records without affecting performance.

3.1. Non-Functional Requirements Tests

The tests for non-functional requirements will measure the system's reliability, responsiveness, and usability under typical operating conditions.

Test Case ID	Test Description	Test Steps	Expected Result
Test 0.1	Real-Time Equipment Availability	1. Two users access the system simultaneously 2. User A requests a piece of equipment 3. An admin approves User A's equipment request.	The equipment availability updates in real time for User B without delay or manual refresh.
Test 0.2	Filter Load Time	1. Navigate to the equipment search page. 2. Apply multiple filters	All filters load and display results within 2 seconds.
Test 1.1	Daily Database Backup	1. Check the system logs or backup directory after 24 hours of operation.	A backup file is automatically generated every 24 hours without errors.
Test 1.2	Notification Delivery Time	1. Trigger a notification event 2. Observe the timestamp of the event 3. Check when the notification is received by the user or admin	The notification is successfully delivered within 10 seconds of the event.
Test 2.1	Password Policy	1. Log in to the University of Maine system 2. Navigate to the system and attempt to create or log in with a password no shorter than 10 characters	Access is denied unless the user is logged in through the University of Maine system, and their password for the system meets the requirements.
Test 2.2	Session Expiration	1. Log in and remain inactive for 30 minutes. 2. Attempt to perform any action after inactivity.	The session expires automatically, and the user is redirected to the login page.
Test 3.1	Click Efficiency	1. Log in as a user. 2. Attempt to locate a specific piece of equipment using navigation menus or search	The user locates the desired equipment within three clicks or fewer

Test 3.2	FAQ Page Availability	1. Navigate to the Help or FAQ section of the system.	The FAQ page loads successfully and contains user guidance content.
Test 4.1	Concurrent User Sessions	1. Have 100 different users log in simultaneously. 2. Attempt standard operations	All 100 sessions remain active and responsive without system slowdowns or errors
Test 4.2	Equipment Volume Handling	1. Populate the system with several thousand equipment entries. 2. Perform searches and filtering operations.	The system maintains performance and responsiveness with a large dataset.

4. User Interface

See “User Interface Design Document for MAFES Equipment Management System.”

5. Deliverables

This section outlines the materials that will be provided to the client throughout the course of the project, including the working software and supporting documentation. These deliverables ensure that the client receives a complete and well-documented system.

Deliverable	**Delivery Format**	**Delivery Date**
System Requirements Specification	Hard copy & PDF	Oct. 31
System Design Document	Hard copy & PDF	TBD
User Interface Design Document	Hard copy & PDF	TBD
User Manual	Hard copy & PDF	TBD
Administrator Manual	Hard copy & PDF	TBD
Source Code	GitHub Repository	Project End
Executable Program	GitHub Repository/Web Hosted	Project End
Other Required Software	Hard copy & PDF	Project End

6. Open Issues

Any unresolved questions and pending decisions are outlined here. These issues will be addressed later in the development process, as the project progresses.

Issue ID	Description	Status
01	Determine hosting environment (local server vs. cloud deployment with Docker).	Pending
02	Choose what type of backend frameworks will be used during development.	Pending
03	Confirm whether React will be used for the frontend and that all team members are comfortable using it.	Pending
04	Select a database platform for storing system data.	Pending
05	Will a waitlist be necessary for equipment reservation?	Pending
06	Will more filters be needed other than type, year, and farm?	Pending
07	Should the generated monthly usage reports be downloadable? If so, in what formats?	Pending
08	Should the generated monthly usage reports be separated by farm, for all equipment, or both?	Pending
09	Should we limit what files are accepted? If so, what file types are most beneficial to the client?	Pending

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 what's described here, and the customer agrees 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 will involve notifying the other party of the suggested change(s), followed by a joint review to understand how the change(s) may affect the project's scope, timeline, or deliverables. No changes will be made until both sides agree and sign off on the updated document.

Customer Name Printed	Customer Signature	Date
Customer Name Printed	Customer Signature	Date
Team Member Name Printed	Team Member Signature	Date
Team Member Name Printed	Team Member Signature	Date
Team Member Name Printed	Team Member Signature	Date
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.

Team Member Name Printed	Team Member Signature	Date

Comments:

Team Member Name Printed	Team Member Signature	Date

Comments:

Team Member Name Printed	Team Member Signature	Date

Comments:

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	Functional Requirements + Non-Functional Test Cases	25%
Drew Marecek	Non-functional requirements	25%
McKade Wing	Document Write-Up + UML Diagram + Review	25%
Theodore Morin	Test cases for Functional/Non-Functional Requirements	25%