



Project Management Application

Software Requirements Specification (SRS) Document

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1. Introduction

This document is a software requirements specification for the project management application Saga, which will allow teams to manage and track their projects in a collaborative environment. Along with stating the functional and nonfunctional requirements, this SRS will briefly describe the functionality of the project and create a basis for development.

1.1 Purpose

This software requirements specification aims to provide an overview of the requirements and objectives of the Saga project management application. This document will be utilized by designers, developers, and testers who are engineering this project. This SRS will also assure project teams that their project planning needs will be met by the Saga application based on the specifications and requirements in this document.

1.2 Scope

The Saga project management application will be used as a collaborative project management tool. The application will allow the user to:

- Create and manage their account
- Plan and track project components
- Create and assign projects, tasks, and deadlines
- Communicate with other project members
- View team progress and reports

Saga will be a web application that users can access when connected to the internet. The application will use a database to store user, project, and task information.

1.3 Definitions, Acronyms, and Abbreviations

- 2FA: two-factor authentication
- CRUD: create, read, update, delete
- GUID: globally unique identifier
- KPI: key performance indicator
- MAC address: media access control address; identifies a device on a network
- OS: operating system
- SRS: software requirement specification
- TC: test case
- TLS: transport layer security
- UI: user interface

1.4 Overview

The rest of this document is organized into sections. These sections are:

- **Section 2:** The application is described further along with any factors that may impact the project.
- **Section 3:** The business requirements are listed to show what we aspire to accomplish with the project management application.
- **Section 4:** The external interfaces that the application uses and interacts with are discussed.
- **Sections 5 and 6:** Functional and non-functional requirements are discussed. These requirements will describe what the application can do and how the application performs respectively.
- **Sections 7, 8, and 9:** The requirements from the previous sections are represented in various methods like operational scenarios, use cases, user stories, and sequence diagrams.
- **Section 10:** The verification and validation of the requirements are represented through test cases.
- **Section 11:** This is the appendix that can be referenced for details on the processes used to create this document and the requirements. This includes the development methodologies, requirement change procedure, schedule, requirements traceability matrix, and collaboration tools.

1.5 Business Context

The application will be used by many organizations, from large corporations to small locally-owned businesses. We strive to reach anyone with a dream to create something amazing. Saga helps manifest the perfect collaborative workspace for teams to create the ideal product they've imagined in their head. A mixture of business analytics, clear team communication, kanban style tracking, and issue hierarchy sets us apart from our competitors, and together they help us create the perfect combination for successful development.

2. Overall Description

This application is meant to be used for the purpose of handling project progress tracking requirements. Saga provides an easy to use, interactive platform for team members to help structure the communication on the project's progress and maximize efficiency.

2.1 Product Features/Functions

The application will allow teams to create a group to work on a specific project and manage the requirements of that project through means of creating different initiatives and specific tasks for each of them. Users can assign different levels of importance to tasks with different colors, assign tasks to team members, and track progress being made on those tasks through a drag and drop feature.

2.2 User Characteristics

The application is intended for small to medium projects that require collaboration. Saga users will need to be able to track many issues and the progress being made on each one. As for the user base, Saga's users will be individuals who are collaborating on large-scale projects within an organization or a group. College students with large group projects and assignments might also utilize Saga as a collaboration tool. Such users will find it useful to not only track progress made on their project, but to also keep a consistent form of communication between team members.

2.3 General Constraints

We have determined that there are a few general constraints that currently limit Saga. These restrictions are listed below.

2.3.1 Lack of Integrations

Although they will likely be added post-deployment, Saga will not include third-party integrations in the initial version of the application. The lack of connectivity to outside resources will limit users to use only the features provided by Saga.

2.3.2 Lack of Messaging Features

The initial deployment of Saga will not provide any visual messaging features. Members of a project will not be able to communicate with one another through a direct messaging feature. Communication will be done through comments on tasks and issues or other third party applications.

2.3.3 Lack of Bug-Tracking Features

Saga does not currently have features to track bugs. Saga's issue and tasks features can be used to keep track of bugs, however, and each issue pertaining to a bug ticket can change status based on whether it's assigned, in-progress, or completed.

2.3.4 Limited File Size

Saga only supports files sizes up to 500 megabytes. If a user would like to share a file that is larger, they cannot do so through the Saga application. Text, spreadsheet, and image files are also the only file types permitted to be shared.

2.3.5 Limited Amount of Supported Users

Saga may not be able to maintain a high volume of users working on a project. If too many users are on the project at once, the application may not function properly.

2.3.6 Limited Project-Scale

Large-scale projects that require several departments and groups collaborating together might be out of scope of this application due to the inability to link multiple groups to a single project and the lack of messaging services.

2.3.7 Dependency on Administrators

Saga relies on site administrators to manage the application and for organization administrators to manage the organizations they are responsible for. If these administrators are not reliable, the site or the organization may be impacted negatively since the administrator did not use their added permissions responsibly.

2.4 User Documentation

Issue ID	Requirement	Priority
SRS-0086	The application shall include a help page that explains how to use the application.	1
SRS-0088	The application shall include video tutorials to supplement the guides on the help page.	2
SRS-0112	The application shall contain a Frequently Asked Questions page to help users with common issues.	1
SRS-0113	The application shall contain a self-service help page that allows users to search through help topics.	2
SRS-0114	The application shall contain a roadmap page with a publicly-visible list and status of upcoming features and fixes.	2
SRS-0115	The application shall display a link to the roadmap page on all pages.	2
SRS-0170	The application shall contain a log of all patch notes that is accessible to public users.	1
SRS-0171	The application shall contain a link to a public Trello board of currently known issues and status updates on those issues.	1

2.5 Assumptions and Dependencies

Issue ID	Requirement	Priority
SRS-0089	It is assumed that the user has internet access to use the application.	1
SRS-0090	It is assumed that the user knows the email or account ID of their project members.	1
SRS-0091	It is assumed that the development team members have the required skills to complete this project.	1
SRS-0147	It is assumed that a user will use one of the designated supported browsers for this application.	1
SRS-0148	It is assumed that upon release Saga will have all intended requirements implemented.	2
SRS-0149	It is assumed that the budget will stay the same as initially stated at the beginning of development.	2

3. Business Requirements

Issue ID	Requirement	Priority
SRS-0064	We need to support both paid and free-to-use service.	3
SRS-0065	We need users' and organizations' data to be consistent and available.	1
SRS-0066	We need to employ security measures to keep organizations' and users' private data confidential.	1
SRS-0067	We need to provide at least one outlet for user support which is responsive and easy-to-use.	1
SRS-0068	We need to reach out to potential customers through email and advertising campaigns.	2
SRS-0069	We need to provide a publicly-visible roadmap of upcoming features.	1
SRS-0130	We must provide a publicized outline of bug-fixes from previous updates.	1
SRS-0134	We need the application to have minimal unplanned downtime and communicate all downtime to users effectively.	1
SRS-0135	We need to provide consistency of data to users and organizations, ensuring that their data is always accurate and available.	1
SRS-0136	We need to ensure that user login is secure and prevents users from logging into incorrect accounts.	1
SRS-0137	We need to provide users with all possible account security features.	1
SRS-0138	We need to provide all the types of reports that an organization would want about their team and projects.	1
SRS-0140	We need to provide a feature-rich, smooth, and intuitive Kanban-style project board for managing projects.	1
SRS-0141	We need to primarily cater to the needs of organizations utilizing rapid application development models, but also keep teams using other development methodologies in mind.	3
SRS-0142	We should provide as much customization to users and organizations as possible without sacrificing other parts of the user experience.	1
SRS-0146	We need to support users from around the world, including providing service in their language and taking into account cultural considerations.	1

4. External Interface Requirements

4.1 User Interfaces

Issue ID	Requirement	Priority
SRS-0014	The application shall allow a user to open a project that they have access to by clicking on its name.	1
SRS-0015	The application shall allow a user to open a project's Kanban Board by clicking on "Kanban Board".	1
SRS-0016	The application shall display four columns for different statuses of various stories and tasks within a project's Kanban Board: Unassigned, Assigned for Development, In Progress, Completed	1
SRS-0047	The application shall display a top navigation bar for navigating the site, user data, and organization data.	1
SRS-0048	The application shall display a side navigation bar for navigating projects, stories, tasks, project kanban boards, and analytical reporting.	1
SRS-0058	The application shall display dates based on the format defined in the users web browser.	1
SRS-0087	The application shall include a link to the help page on every page.	2
SRS-0092	The application shall display a message icon on top right corner with the number of changes that were made to projects or new messages sent.	1
SRS-0093	The application shall display a badge over the message icon that shows the number of new messages from all the user's organizations.	1
SRS-0094	The application shall display all notifications from all organizations a user is a member of when a user clicks on the message icon.	1
SRS-0119	The application will have an invite to organization button on all user account pages.	2
SRS-0174	The application shall allow an organization admin or project owner to rename the status headings of Kanban columns.	3
SRS-0175	The application shall allow any user to change the color theme of the application based on preset options.	4
SRS-0176	The application shall use terms that are familiar to teams that use Agile development methodologies: sprint, story, task, etc.	2

4.2 Hardware Interfaces

Issue ID	Requirement	Priority
SRS-0099	The application shall be accessible on all electronic devices with an internet connection.	1
SRS-0100	The applications UI shall scale to fit the screen size of whichever device you are using.	1

4.3 Software Interfaces

Issue ID	Requirement	Priority
SRS-0031	The application shall run on the latest version of Chrome, Safari, Firefox, Internet Explorer, and Microsoft Edge.	1
SRS-0077	The application shall be able to be used in multiple operating systems. including MAC OS, Microsoft Windows, and Linux.	2
SRS-0150	The browser will use cookies for remembering specific account information on devices used.	1
SRS-0151	The application will use browser detection to determine if the user is on a mobile device.	1
SRS-0152	The application will use browser detection to determine if the user is on a computer.	1

4.4 Communication Interfaces

Issue ID	Requirement	Priority
SRS-0073	The application shall send an email to users when tasks they're assigned to receive a new comment or status change.	2
SRS-0075	The application shall send an email to users when an organization admin invites them to an organization.	1
SRS-0076	The application shall send a text message to a users verified telephone number when they are locked out of their account, allowing them temporary access.	2

5. Functional Requirements

5.1 User Identification

Issue ID	Requirement	Priority
SRS-0004	The application shall identify users by their unique username/email address.	1
SRS-0005	The application shall authenticate users by a user-defined password.	1
SRS-0006	The application shall allow a user that is not logged in to sign into an existing account.	1
SRS-0007	The application shall allow a user that is not logged in to create a new account.	1
SRS-0008	The application shall not allow a user to create an account with an email address that is already associated with an existing account.	1
SRS-0120	The application will notify the user if incorrect login credentials are entered during the login process.	2

5.2 User Profile

Issue ID	Requirement	Priority
SRS-0041	The application shall allow users to search for other users by username or email address.	2
SRS-0042	The application shall allow users to modify all fields in their own user profile.	2
SRS-0122	The application shall allow a user to edit any field on their own profile by clicking an "edit" (pencil-style) button next to that field.	2
SRS-0123	The application will allow a user to disable visibility of any field within their user profile by clicking on the disable field option next to the text field.	2
SRS-0139	The application shall display all data fields that a user chooses to make public within a user's profile, including: profile image, public name, occupation, organization(s), project(s) and location.	1

5.3 Account Management

Issue ID	Requirement	Priority
SRS-0033	The application shall allow members to have different permission levels.	1
SRS-0083	The application shall allow users to create an account ID that will be in the format of "@" then username.	2
SRS-0116	The application will send a verification email to the email used to register a new account after new account creation.	2
SRS-0131	The application shall allow a user to create/edit/remove the street address from their user account.	2
SRS-0132	The application shall allow a user to create/edit/remove a phone number from their account.	1
SRS-0133	The application shall allow a user to create/edit/remove an email address from their account.	1

5.4 Organization Management

Issue ID	Requirement	Priority
SRS-0009	The application shall allow a user to create a new organization, which it will automatically assign that member to as an admin member.	2
SRS-0010	The application shall allow a user to join an organization to which they've been invited.	2
SRS-0011	The application shall allow a user who is the admin of an organization to invite other user accounts to join their organization.	2
SRS-0012	The application shall allow a user who is the admin of an organization to remove a member from their organization.	2
SRS-0013	The application shall allow a user who is the member of an organization to remove themselves from that organization.	2
SRS-0029	The application shall allow a user to be a member of multiple organizations.	1
SRS-0034	The application shall allow users to save files based on degree of importance.	2
SRS-0038	The application shall allow admins to invite users with a link or email.	2
SRS-0039	The application shall allow users to search for existing groups.	2
SRS-0117	The application will allow an organization admin to name the organization he/she creates.	2
SRS-0118	The application will allow an organization admin to create a short description of said organization during creation.	2

SRS-0124	The application shall allow an organization admin to select a free or paid subscription type for their organization.	2
SRS-0125	The application shall have one or more organization admin(s) for each organization.	1
SRS-0126	The application shall allow an organization admin to promote a user in their organization to organization admin..	1
SRS-0127	The applications shall allow organization admins to remove a user from the roster of organization admins in their organization, demoting that user to a regular team member.	2
SRS-0155	The application shall display the latest project, report, and management information for an organization when viewing the organization hub.	1
SRS-0162	The application shall grant site admin users all the permissions needed to assist organizations and base users with their accounts.	1
SRS-0163	The application will allow the organization admin user to delete any organization of which they are an organization admin.	1
SRS-0164	The application will allow an organization admin to delete any project within an organization of which they are an organization admin.	1
SRS-0165	The application will allow an org admin to delete an issue or task belonging to any project within an organization of which they are an organization admin.	1

5.5 Issue Creation

Issue ID	Requirement	Priority
SRS-0001	The application shall allow users to create a new project that belongs to their organization.	1
SRS-0002	The application shall allow users to create a new story that is assigned to one of their organization's existing projects.	1
SRS-0003	The application shall allow users to create a new task that is assigned to an existing story.	1
SRS-0021	The application shall allow a user to set the due date for an issue (of any type) that they are creating.	1
SRS-0022	The application shall require a user to set a title for an issue (of any type) that they are creating.	1
SRS-0023	The application shall require a user to set a description for an issue (of any type) that they are creating.	1
SRS-0024	The application shall allow a user to set one or more tags for an issue (of any type) that they are creating.	2

SRS-0025	The application shall allow a user to assign themselves or another member of their organization as the primary owner of an issue (of any type) that they are creating.	1
SRS-0026	The application shall allow a user to set the story to which a task belongs when creating a task.	1
SRS-0027	The application shall allow a user to set the project to which a story belongs when creating a story.	1

5.6 Issue Management

Issue ID	Requirement	Priority
SRS-0017	The application shall allow a user to change the status of a story or task by drag-and-dropping its card from one column to another.	1
SRS-0018	The application shall allow a user to assign themselves as the primary owner of an issue that is not currently assigned to them.	1
SRS-0019	The application shall allow a user to examine an issue's details by double clicking on its card.	1
SRS-0020	The application shall allow a user to modify any field or attribute of an issue within its detail view and save the changes.	1
SRS-0028	The application shall allow a user to add a comment to an issue (of any type) within its detail view and save the changes.	1
SRS-0032	The application shall allow a user to change the status of a story or task within the details view of that issue.	2
SRS-0036	The application shall timestamp any major changes made to an issue.	1
SRS-0037	The application shall allow admin users to archive issues.	1
SRS-0056	The application shall allow users to select a color (blue, green, yellow, orange) to label issues.	2

5.7 File Sharing

Issue ID	Requirement	Priority
SRS-0035	The application shall allow users to attach files up to 500 megabytes in size.	2
SRS-0040	The application shall allow users to attach text, spreadsheet, and image files.	2
SRS-0085	The application shall have a file directory of all the files uploaded to a project. The files will be separated by channel uploaded in and ordered based on importance.	2
SRS-0097	The application shall separate files in a project's file directory by the channel to which they were uploaded.	1
SRS-0098	The application shall allow users to sort files in a project's file directory by upload date, file size, and file type.	1

5.8 Reporting

Issue ID	Requirement	Priority
SRS-0043	The application shall allow users to view analytical reports about their projects.	2
SRS-0044	The application shall allow users to view report data about the project's average difference between estimated task completion time and actual task completion time.	2
SRS-0045	The application shall allow users to view report data about individual organization members' average difference between estimated task completion time and actual task completion time.	3
SRS-0046	The application shall allow users to view report data about their project's overall completion percentage compared to due date.	2
SRS-0128	The application shall include six different report types: Burn Down Chart, Burn Up Chart, KPI Readout, Risk Report, Variance Report, and Resource Report.	2
SRS-0129	The application shall allow a project to have multiple reports.	1
SRS-0153	The application shall display reports for a project in the organization hub of the organization that the project belongs to.	1
SRS-0154	The application shall allow organization administrators to update input data for reports for the projects owned by their organization.	1
SRS-0166	The application will be able to display reports for a specific project by clicking on the designated pull reports button.	1
SRS-0167	The application will be able to refresh reports for a certain project after changes have been made by clicking on the update reports button.	1
SRS-0168	The application will display when a report was last updated.	2

5.9 Team Communication

Issue ID	Requirement	Priority
SRS-0055	The application shall allow users to set reminders to notify the team when a task is approaching a due date.	2
SRS-0059	The application shall notify a user when changes have been made to a project they are a member of or when a new comment is made to an issue they are assigned to.	2
SRS-0084	The application shall allow users to mute notifications.	2

5.10 Service Types

Issue ID	Requirement	Priority
SRS-0102	The application shall display advertisements for users who are not paying members of Saga.	3
SRS-0103	The application shall identify whether an organization has paid for premium service.	3
SRS-0104	The application shall accept a valid credit card as a form of payment for its premium service.	3
SRS-0105	The application shall accept a valid debit card as a form of payment for its premium service.	3
SRS-0106	The application shall accept a valid Paypal account as a form of payment for its premium service.	3
SRS-0107	The application shall allow organizations with a free subscription to create and manage a maximum of five projects.	3
SRS-0108	The application shall allow organizations with a paid subscription to create and manage an unlimited number of projects.	3
SRS-0145	The application will accept payments in all major global currencies.	1

5.11 Data Consistency

Issue ID	Requirement	Priority
SRS-0109	The application shall display the correct user profile information when viewing a user's profile.	1
SRS-0110	The application shall display the latest-saved details when opening an issue's detail view.	1
SRS-0169	The application shall display the latest saved details when opening a report.	2

6. Non-Functional Requirements

6.1 Security

Issue ID	Requirement	Priority
SRS-0030	The application shall assign each created account a RFC1422 version 4 compliant GUID (globally unique identifier).	1
SRS-0049	The application shall not allow a user to view any projects, stories, or tasks that are owned by an organization of which they are not a member.	1
SRS-0050	The application shall encrypt all user passwords over TLS.	1
SRS-0051	The application shall allow a user to recover their account via a password reset email sent to their verified email address.	1
SRS-0052	The application shall temporarily disable any groups that have not had any activity on any of their projects for over 1 year.	3
SRS-0053	The application shall keep track of how long an organization has been inactive, which will be restarted when a team member updates a project belonging to the organization.	3
SRS-0054	The application will register devices to a user's account by creating unique identifiers based upon the user's MAC address.	1
SRS-0060	The application will send an email to the users verified email address regarding new devices attempting to log into their account.	1
SRS-0061	The application shall send a temporary login code to a user who has provided a valid telephone number, which allows them to temporarily login.	2
SRS-0078	The application shall log all changes to user account information.	2
SRS-0080	The application shall temporarily lock users accounts if an incorrect password is entered more than five times.	1

6.2 Performance

Issue ID	Requirement	Priority
SRS-0057	The application must display updates within 1 second after a user makes a change to an issue.	1

6.3 Availability

Issue ID	Requirement	Priority
SRS-0062	The application shall not be unavailable for more than 1 hour per 1000 hours of operation.	1
SRS-0063	The application shall be able to be shut down if maintenance is needed.	1
SRS-0143	The application shall measure the amount of time that it is available and the amount of downtime when it is unavailable.	3
SRS-0144	The application shall remain unaffected in the case of a user's device failure.	1

6.4 Maintainability

Issue ID	Requirement	Priority
SRS-0070	We need to provide quarterly or annual updates to firmware which will be noted to clients through administration tools.	1
SRS-0071	The application shall have under-the-hood preventative maintenance put in place for no downtime.	2
SRS-0072	The application shall have announced Scheduled Maintenance which will clean the system and databases.	1

6.5 Logical Database

Issue ID	Requirement	Priority
SRS-0095	The application shall store the following attributes within the Users Table in its database (User ID, First Name, Last Name, Username, encrypted Password, Email, Phone Number, Street Address, Paid Org Member and Org Memberships).	1
SRS-0096	The application shall store the following attributes within the Organizations table in its database (Organization ID, Name, Projects List, Users List, Date Created, Date Modified and Org Admins).	1
SRS-0156	The application shall use REST operations to retrieve, add, change or delete data within the database.	1
SRS-0157	The application shall store the following attributes within the Reports table in its database (Report ID, Project, Report Type and Last Updated).	1
SRS-0158	The application shall store the following attributes within the Issues Table in its database (Issue ID, Project, Title, Description, Creator, Owner, Status, Creation Date, Due Date and Type).	1

SRS-0159	The application shall store the following attributes in the Tasks Table in its database (Issue ID, Standalone and Story).	1
SRS-0160	The application shall store the following attributes in the Stories Table in its database (Issue ID and Tasks).	1
SRS-0161	The application shall store the following attributes within the Projects Table in its database (Project ID, Owning Organization, Project Owner, Status and Project Name).	1
SRS-0172	The application shall encrypt any password that is typed through the user interface and that is stored within the database.	1
SRS-0173	The application shall utilize lists to store data in some attributes of tables within the database.	1

7. Operational Scenarios

7.1 Scenario A: Account Creation

A new user will visit Saga with an electronic device that has internet access. If the user would like to access the application's features they will be prompted to login to an existing account or create a new account.

If they choose to create a new account, the application will display an account creation form that asks the user for their email address and name, as well as to provide a username and password. This account creation process will also ask the user if they would like to enter a telephone number for alternate account recovery purposes. It will additionally ask if the user would like to remember the device used to create the account for security purposes.

Once this form is submitted with valid information in all fields, the user will then be given an option to create an organization or search for existing organizations, which they can then request to join.

Once the account creation process is finished, the user will receive a verification email. The user will then acknowledge this email and when this is complete the user will have access to site features.

7.2 Scenario B: Organization Creation

Once a user has gone through the Saga account creation process, the user will be asked if they want to search for an existing organization to join or create a new organization. If the user selects to create a new organization they will be presented with a form to begin the organization creation process.

During the organization creation the user will be able to create an organization name and a brief description of what the organization is looking to accomplish by typing the information into its proper name and description text fields.

Once the user has created a name and a brief description of the organization, they can finalize the organization creation by clicking a button. This will automatically assign this user Organization Admin status for this organization.

This user will then be prompted to select whether they would like to subscribe to Saga's premium ad-free, unlimited projects service for their organization, or operate under a free license which includes advertisements and a limit of 5 projects per organization. Selecting

the paid service will take this user to a payment module that accepts valid credit cards, debit cards, or Paypal information.

After this decision point is resolved, the user will be able to invite other user accounts into the organization by adding the users' account email addresses separated by commas into the "Invite to Organization" text field. This will then send an email invitation to the other users, where they can then accept or decline the invitation.

If the organization admin user would like to add users to their organization after initial organization creation they can directly go to the users page and click the designated "Invite to Organization" button or invite the user through a separate email link located on the organization's page. Alternatively, they can invite users who have not signed up for Saga yet by clicking "Invite New Members" in the Organization page, which will load the same email invitation form they were initially presented.

If the organization admin needs to remove a user from an organization, the admin will be able to do so by visiting the organization's home page, clicking on the Members tab, locating the user and clicking on the designated "Remove Member" button next to their name.

7.3 Scenario C: User-End Project/Issue Interaction

Once a user is a member of an Organization, they will be able to view or edit projects to which they are assigned by clicking on the project's name within their Organization page.

The user can then create an issue (Initiative, Task, or other) for the project by clicking the "New Issue" button on the project's page. This will open a form that allows the user to provide details about the issue they are creating, including its type, title, description, priority, due date, status, tags, and other pertinent information. If the issue is an Initiative type, they can also add existing Tasks that are related to that Initiative. If the issue is a Task type, they can designate which Initiative, if any, that the task is assigned to.

After initial creation, a user can edit the details of any issue by clicking on it to open its detail view.

Once an issue has been created, it will be added to the Kanban style tracking board for that project as an Unassigned new issue. Users can either open the detail view from this page, or drag-and-drop the issue's card between the various status columns (Unassigned, Assigned for Development, In Progress, or Completed). They can also assign or unassign issues from themselves.

A user can also access the project's analytical reports by clicking on the "Reports" tab, which will allow them to see real time analytics about the project's status and progression.

A user can also remove themselves from an organization by navigating to the organization's home page and clicking on the "Leave Organization" button on the page.

7.4 Scenario D: Organization Project Creation & Management

Once a user has been given organization admin status (either by creating an organization or by being promoted by an existing organization admin), the user will be able to create new projects within the organization they are a part of.

The user will do so by visiting the organization's homepage and by clicking on the "Create Project" button. This button will create said project and allow the user to name and briefly identify the project's purpose by filling out the proper text fields.

Once the initial project is created the organization admin user can then assign other members of their organization to this specific project by opening said project and by clicking the "Project Members" option. This button will open a dropdown list of all the organization's members from which the organization admin user can choose which members they'd like to be assigned to this project.

After a project is created only organization admins can edit said project; they will do so by clicking on the project and navigating to the edit option next to the project's name.

8. Use Cases and User Stories

8.1 User Stories

8.1.1 Organization Admin Controls

As an organization admin, I want to add a new team member to my organization by email invite.

As an organization admin, I want to invite a new team member to my organization by searching for their username and accessing their user profile.

As an organization admin, I want to be able to view the entire roster of my organization, including which projects each member is associated with.

As an organization admin, I want to remove a team member from my organization and all of my organization's projects.

As an organization admin, I want to assign one of my organization's team members to a project.

As an organization admin, I want to unassign one of my organization's team members from a project.

As an organization admin, I want to archive an existing project and lock it from further updates.

As an organization admin, I want to unarchive a previously-archived project and unlock it for continued updates.

As an organization admin, I want to archive an existing issue and lock it from further updates.

As an organization admin, I want to be able to delete any organization of which I am an organization admin.

As an organization admin, I want to be able to delete projects that are created within my organization.

8.1.2 Kanban Board User

As a user, I want to create a new story that belongs to an existing project.

As a user, I want to create a new task that belongs to an existing story/initiative.

As a user, I want to move a task card from the backlog to being assigned for development; this will automatically assign the task to me.

As a user, I want to open an issue by double-clicking on it to view its details.

As a user, I want to edit an issue's details and save the changes.

As a user, I want to be able to double click on an existing issue to view/edit its details.

8.1.3 Analytical Reports User

As a user, I want to view burndown charts about all projects that I'm involved with.

As a user, I want to view burnup charts about all projects that I'm involved with.

As a user, I want to view risk reports about all projects that I'm involved with.

As a user, I want to view variance reports about all projects that I'm involved with.

As a user, I want to view resource reports about all projects that I'm involved with.

As a user, I want to view KPI readouts about all projects that I'm involved with.

As a user, I want to view variance reports about a single project I'm involved with.

As a user, I want to view resource reports about a single project I'm involved with.

As a user, I want to view burndown charts about a single project I'm involved with.

As a user, I want to view burnup charts about a single project I'm involved with.

As a user, I want to view risk reports about a single project I'm involved with.

As a user, I want to view KPI readouts about a single project I'm involved with.

As a user, I want to share certain reports with other members of my organization.

As a user, I want to view analytical reports about issues that are assigned to me.

As a user, I want to filter reporting based on periods of time.

8.1.4 User Notifications

As a user, I want to receive an email notification when any user changes the status of an issue that's assigned to me.

As a user, I want to receive an email notification when a different user leaves a comment on an issue that's assigned to me.

As a user, I want to receive an email notification when a different user changes the details of an issue that's assigned to me.

As a user, I want to receive an email notification when a different user assigns an issue to me.

8.1.5 Admin Notifications

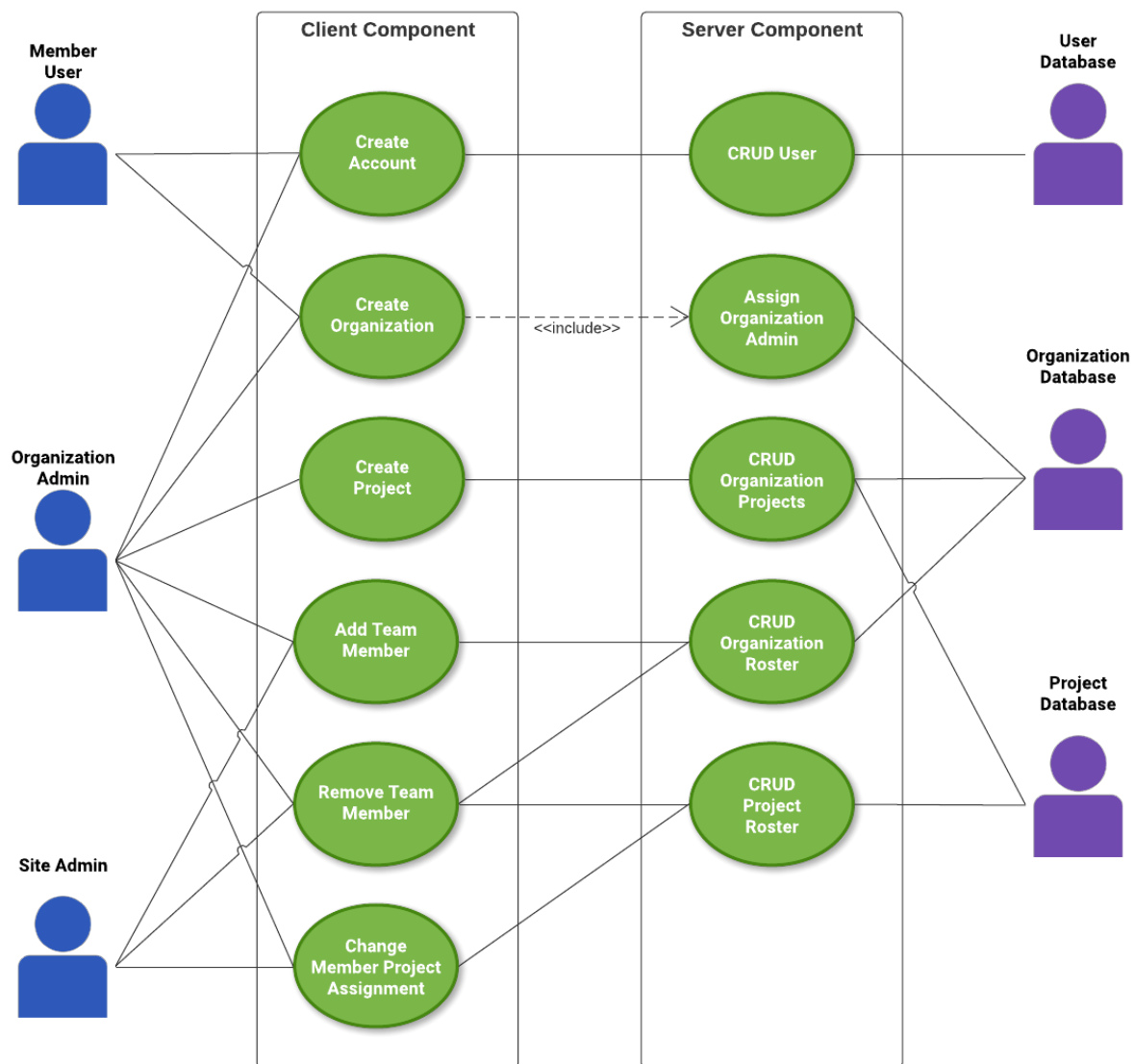
As an organization admin, I want to receive an email notification when a task has elapsed its assigned due date by more than 24 hours.

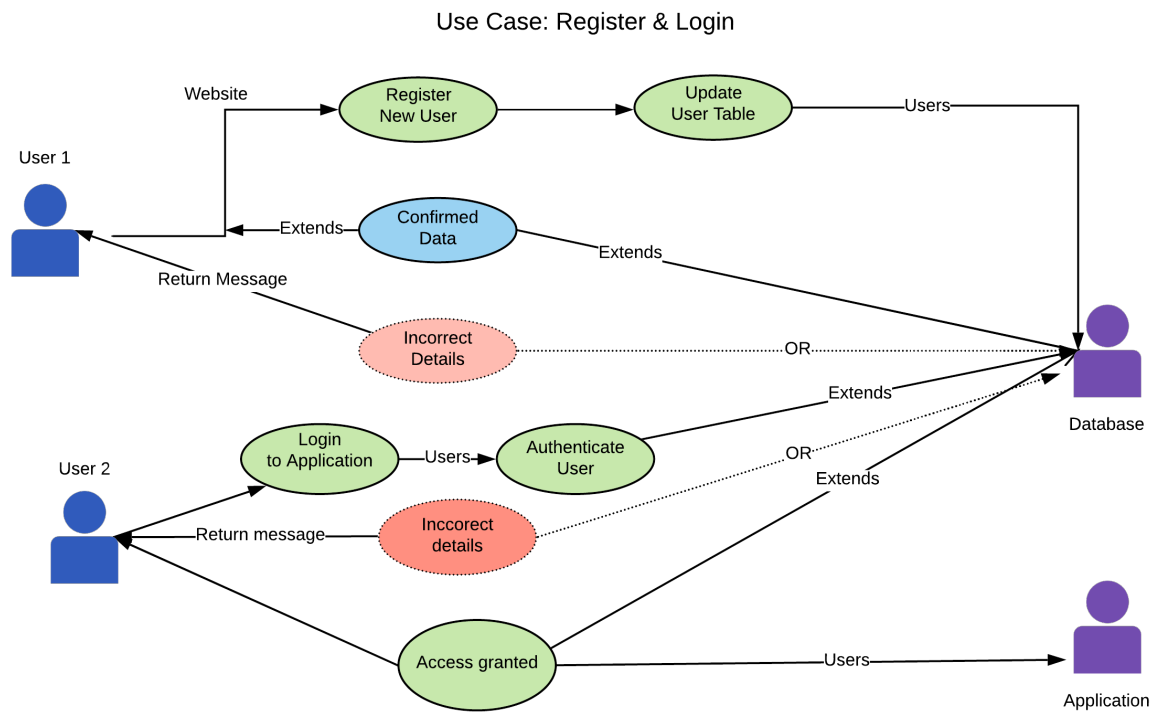
As an organization admin, I want to receive a weekly email notification with reporting data on any of my organization's projects that have been updated since the last weekly report email was sent.

8.2 Use Cases

Use Case: Users and Organizations

Group 2 | June 23, 2020

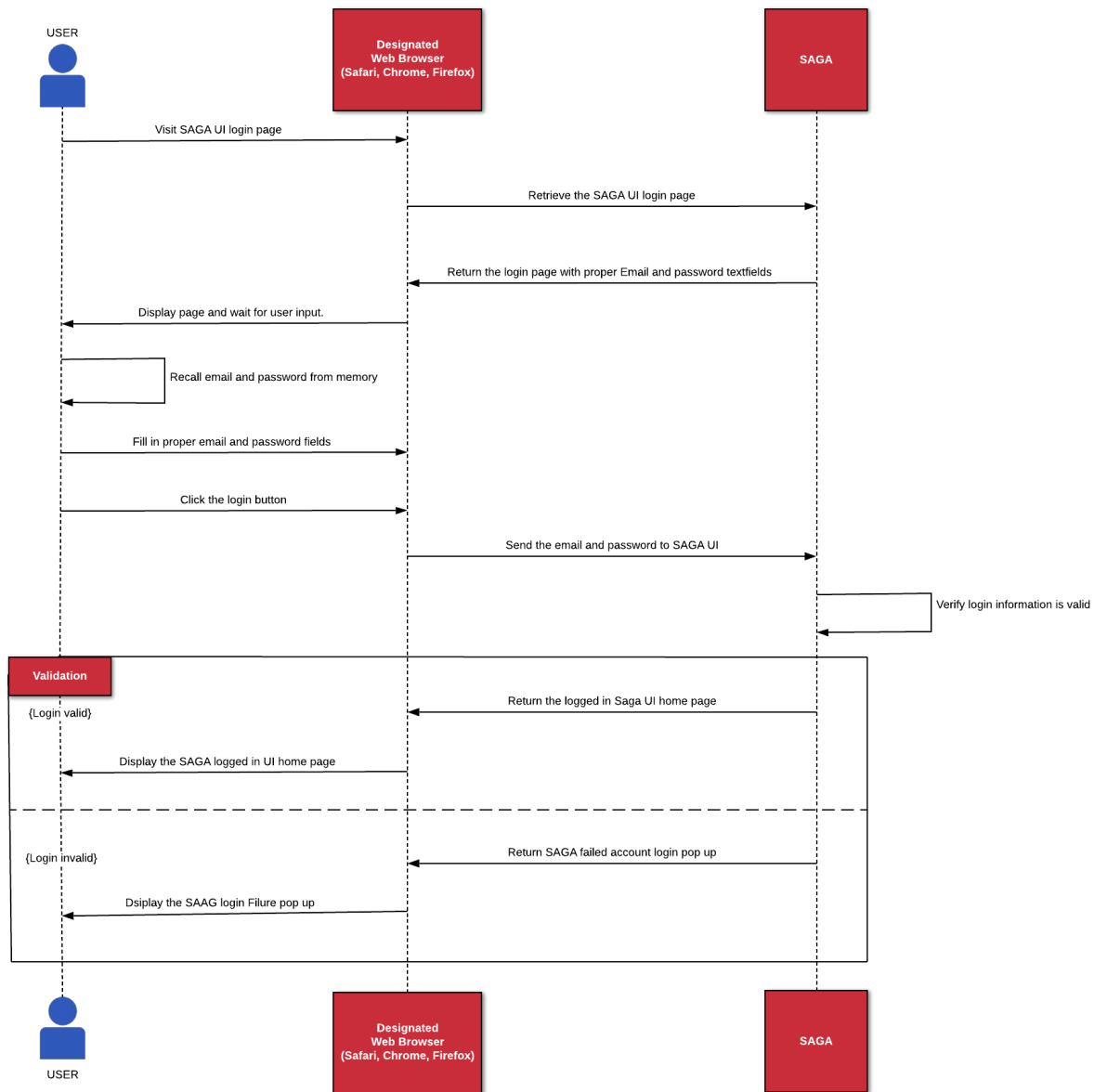




9. Sequence Diagrams

Sequence Diagram: User Login Validation

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10. Verification and Validation Testing

10.1 Test Cases

10.1.1 User Documentation

Test Case ID	Test Case Description
TC-0079	Verify that the User Support contact link is properly displayed in the footer of every page.
TC-0080	Verify that the Frequently Asked Questions page properly displays.
TC-0081	Verify that the Self-Service Help page allows users to search for help issues.
TC-0082	Verify that the Roadmap page properly displays.
TC-0083	Verify that the link to the Roadmap page is displayed on every page in the footer.
TC-0085	Verify that the application contains a page where previous patch notes are continuously logged.
TC-0086	Verify that the users are able to access the publicly available known issues board.

10.1.2 User Interface

Test Case ID	Test Case Description
TC-0001	Verify if user is able to go to the application home page.
TC-0002	Verify if the user is able to see the home page.
TC-0003	Verify if the user is able to click on button Sign in.
TC-0006	Verify if the user can click the submit button .
TC-0009	Verify if the user is able to click to add new button.
TC-0010	Verify if the user is able to view the "new contact" screen.
TC-0011	Verify if the user is able to enter details.
TC-0023	Verify a user with access to a project can click on that project's name to open it.
TC-0024	Verify a user can open a project's Kanban Board by clicking on the Kanban Board option.
TC-0055	Verify the application is displaying dates based upon the format defined in the user's web browser.

10.1.3 Communication Interface

Test Case ID	Test Case Description
TC-0058	Verify users are receiving emails when tasks they are assigned to have their status changed.
TC-0059	Verify users are receiving emails when an organization admin invites them to an organization.

10.1.4 User Identification

Test Case ID	Test Case Description
TC-0004	Verify if a user can enter their username.
TC-0005	Verify if a user can enter their password.
TC-0007	Verify if a user is logged in when valid email and password is entered.
TC-0015	Verify a user is able to log in using their unique username or email address
TC-0017	Verify a user email cannot be used to make multiple accounts.
TC-0065	Verify a new user can enter an email when creating a new account.
TC-0066	Verify a new user can enter a password when creating a new account.
TC-0067	Verify once a user has entered the proper information, a new user can create a new account.

10.1.5 User Profile

Test Case ID	Test Case Description
TC-0008	Verify if user is able to see their user profile page.
TC-0046	Verify users can search for other users by username.
TC-0047	Verify users can modify all fields of their own user profile.
TC-0063	Verify users can search for other users by email address.

10.1.6 Account Management

Test Case ID	Test Case Description
TC-0039	Verify users can have different permission levels.
TC-0090	Verify that each account is assigned an account GUID upon account creation.
TC-0091	Verify that all users devices' are being logged during account creation and at log in.
TC-0092	Verify that users receive temporary login code if password is forgotten or for two-factor authentication (2FA).

10.1.7 Organization Management

Test Case ID	Test Case Description
TC-0018	Verify a user is assigned as Admin when creating a new organization.
TC-0019	Verify a user is able to join an organization which they have been invited to.
TC-0020	Verify a user who is assigned admin can invite other users to join their organization
TC-0021	Verify a user who is admin can remove members from their organization.
TC-0022	Verify a user can remove themselves from an organization.
TC-0037	Verify the user can be a member of multiple organizations.
TC-0040	Verify users can save files based on degree of importance.
TC-0043	Verify admin users can invite new users with a copied link.
TC-0044	Verify users can search for existing groups.
TC-0064	Verify admins can invite new users with an email invitation.

10.1.8 Issue Creation

Test Case ID	Test Case Description
TC-0012	Verify if user is able to click and create a new project.
TC-0013	Verify if user is able to create a new story on existing projects.
TC-0014	Verify a user is able to create a task on existing projects.
TC-0029	Verify the user can set the due date for an issue of any type that they are creating.
TC-0030	Verify the user can set the title for an issue of any type they are creating.
TC-0031	Verify the user can set a description for an issue of any type that they are creating.
TC-0032	Verify a user can set one or more tags for an issue of any type that they are creating.

TC-0033	Verify the user can assign themselves or another member of their organization as the primary owner of an issue of any kind they are creating
TC-0034	Verify the user can set the story to which a task belongs when creating a task.
TC-0035	Verify the user can set the project to which a story belongs when creating a story.

10.1.9 Issue Management

Test Case ID	Test Case Description
TC-0025	Verify a user can change the status of a story by drag-and-dropping its card from one column to another.
TC-0026	Verify a user can assign themselves as primary owner of an issue that is not currently assigned to them.
TC-0027	Verify a user can double click on an issue's card to view the details of the issue.
TC-0028	Verify a user can modify any field or attribute of an issue within its detail view and save the changes.
TC-0036	Verify the user can add a comment to an issue of any type within its detail view and save the changes.
TC-0038	Verify the user can change the status of a story or task within the details view of that issue.
TC-0041	Verify admin users can archive issues.
TC-0042	Verify the application timestamps any major changes to an issue.
TC-0054	Verify users can select a color to label issues.
TC-0096	Verify that the Kanban Board has four columns for the appropriate status categories.

10.1.10 File Sharing

Test Case ID	Test Case Description
TC-0045	Verify users can attach text, spreadsheet, and image files to an issue.

10.1.11 Reports

Test Case ID	Test Case Description
TC-0048	Verify users can view analytical reports about their projects.
TC-0049	Verify users can view report data about the project's average difference between estimated task completion time and actual task completion time.
TC-0050	Verify users can view report data about their projects overall completion percentage compared to due date.
TC-0093	Verify users can view report data about a member's average difference between estimated task completion time and actual task completion time.
TC-0095	Verify that projects have all expected report types.

10.1.12 Team Communication

Test Case ID	Test Case Description
TC-0053	Verify users can set reminders to notify the team when a task is approaching a due date.
TC-0056	Verify users are receiving notifications when changes have been made to a project they are a part of.
TC-0061	Verify users are able to mute notifications for specific channels in a project.
TC-0062	Verify users are receiving notifications when new messages have been received.

10.1.13 Service Types

Test Case ID	Test Case Description
TC-0068	Verify that advertisements are displayed when logged into an account that is not a member of a paid-service organization.
TC-0069	Verify that advertisements are not displayed when logged into an account that is a member of a paid-service organization.
TC-0070	Verify that an organization admin can purchase premium subscription with a valid credit card.
TC-0071	Verify that an organization admin can purchase premium subscription with a valid debit card.
TC-0072	Verify that an organization admin can purchase premium subscription with a valid Paypal account.

TC-0073	Verify that an organization that is not paying for premium service can have a maximum of five projects managed.
TC-0074	Verify that an organization that is paying for premium service can have unlimited number of projects managed.

10.1.14 Data Consistency

Test Case ID	Test Case Description
TC-0075	Verify that a user's profile displays the correct information.
TC-0076	Verify that an issue displays the correct details within its detail view.
TC-0097	Verify that a report displays the correct details within its detail view.

10.1.15 Security

Test Case ID	Test Case Description
TC-0051	Verify users can not view any projects, stories, or tasks that are owned by an organization of which they are not a member.
TC-0052	Verify a user can recover their account via a password reset email sent to their verified email address.
TC-0057	Verify users are receiving emails regarding new devices attempting to log into their account.
TC-0060	Verify user accounts are locked if the wrong password is entered more than five times.
TC-0077	Verify that a newly-created user's password is encrypted in the site admin tools.
TC-0078	Verify that logging into a new device causes the application to notify the user by email.
TC-0084	Verify that changes to a user account are logged with the correct timestamp in the site admin tool.

10.1.16 Downtime Management

Test Case ID	Test Case Description
TC-0087	Verify that preventative maintenance is announced to users whenever it is scheduled.
TC-0088	Verify that scheduled maintenance that affects service is documented and announced to users.
TC-0089	Verify that the application's uptime and downtime are measured.

11. Appendices

11.1 Development Methodologies

11.1.1 Prioritization: MoSCoW

Requirements will be prioritized into categories 1-4, corresponding to the levels of MoSCoW prioritization (Must Have, Should Have, Could Have, Won't Have). All requirements are important, but prioritizing them in this way will ensure that the application's core functionality and features are in place and working before ancillary features are added.

11.1.2 Development: Agile

Agile development utilizes a variety of approaches to software development under which requirements and solutions evolve through collaborative effort by self-organizing, cross-functional teams and their end users. This development methodology advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and encourages flexible responses to change.

Agile development and its focus on progressive iteration and incremental releases will support our team's development goals of releasing Saga's core functionality first and then adding key features as is feasible.

This development model will require our team to be built and structured differently than other methodologies might support.

The project manager will need to be familiar with Agile development's emphasis on flexibility and its tendency toward lacking managerial control, as well as the model's processes (e.g. sprint cycles) and the tools available to support those processes.

Our team will need a scrum leader who is responsible for clearing obstacles, establishing and maintaining an effective team environment, fostering a positive relationship between the team and product owner, and limiting outside distractions/interruptions.

The development team itself will need to be skilled, specialized to the work areas and languages needed, and familiar with Agile development. The team will be small and lightweight. Flexibility and the ability to learn quickly will be highly valued skills for prospective new team members.

11.2 Procedures for Project Requirement Changes

When a change needs to be made to the requirements, the [Requirements Change Request Form](#) will be filled out that states who the change is being requested by, the date submitted, information about the change (description, category, priority, impacts), and any additional comments. Once the form is submitted, its information will automatically be added to a persistent [Requirement Change Requests Tracking Sheet](#) that will be reviewed weekly by the Change Review Board. The Change Review Board will assess the priority, feasibility, and suitability of the change to our project. The board will identify if the impact of the change will require adding more requirements and if the change can be validated. The change will then be approved or rejected by the Change Review Board based on these considerations, and if the change is approved, the change will be implemented.

11.3 Schedule

- | | |
|---|---------------|
| • Software Requirements Specification (draft) | June 24, 2020 |
| • High-Level Design (draft) | July 1, 2020 |
| • Low Level Design (draft and final) | July 10, 2020 |
| • Design Documentation Package (final SRS and HLD) | July 22, 2020 |

11.4 Requirements Traceability Matrix

Requirements Traceability Matrix					
Project Name: Saga Project Management Application					
Business Requirements		Functional Requirements			Test Cases
Requirement ID#	Business Requirement / Use Case	Requirement ID#	Functional Requirement / Use Case	Priority	Test Case ID#
SRS-0064	Support Paid and Free Service	SRS-0102	Advertisements for Free Users	3	TC-0068
		SRS-0103	Identify Paying Organizations	3	TC-0069
		SRS-0104	Credit Card Payment	3	TC-0070
		SRS-0105	Debit Card Payment	3	TC-0071
		SRS-0106	Paypal Payment	3	TC-0072
		SRS-0107	Free Organization Project Limit	3	TC-0073
		SRS-0108	Paying Organization Unlimited Projects	3	TC-0074
		SRS-0109	Credit Card Payment	1	TC-0075
SRS-0065	Data Consistency	SRS-0110	Issue Detail Consistency	1	TC-0076
		SRS-0169	Report Detail Consistency	2	TC-0097
SRS-0066	Data Security	SRS-0049	User Access	1	TC-0051
		SRS-0050	Password Encryption SSL	1	TC-0077
SRS-0067	User Support	SRS-0111	User Support Contact Link	1	TC-0079
		SRS-0112	FAQ Page	1	TC-0080
		SRS-0113	Self-Service Help Page	2	TC-0081
SRS-0069	Public Roadmap	SRS-0114	Features and Fixes Roadmap Page	2	TC-0082
		SRS-0115	Roadmap Page Link	2	TC-0083
SRS-0130	Patch Notes	SRS-0170	Patch Notes Log	1	TC-0085
		SRS-0171	Public Known Issues Board	1	TC-0086

SRS-0134	Application Downtime Minimization	SRS-0071	Preventative Maintenance	1	TC-0087
		SRS-0134	Scheduled Maintenance	1	TC-0088
		SRS-0143	Uptime & Downtime Measurement	3	TC-0089
SRS-0136	Login Security	SRS-0030	Account GUID	1	TC-0090
		SRS-0050	TSL Password Encryption	1	TC-0077
		SRS-0060	New Device Login Warning	1	TC-0057
		SRS-0078	User Account Information Logging	2	TC-0084
		SRS-0080	Authentication Failure Account Lockout	2	TC-0060
SRS-0137	Account Security Features	SRS-0051	Password Recovery	1	TC-0052
		SRS-0054	Device Login Registration	1	TC-0091
		SRS-0061	Temporary Login Code Text Message	2	TC-0092
SRS-0138	Organization and Project Reports	SRS-0043	Report Viewing	1	TC-0048
		SRS-0044	Project Expectation Reporting	2	TC-0049
		SRS-0045	Member Expectation Reporting	3	TC-0093
		SRS-0046	Due Date Reporting	2	TC-0050
		SRS-0128	Standard Project Report Types	2	TC-0095
		SRS-0129	Project Report Composition	1	TC-0095
SRS-0140	Kanban Board	SRS-0001	Project Creation	1	TC-0012
		SRS-0002	Story Creation	1	TC-0013
		SRS-0003	Task Creation	1	TC-0014
		SRS-0015	Kanban Board Access	1	TC-0024
		SRS-0016	Kanban Board Structure	1	TC-0096
		SRS-0017	Kanban Drag-and-Drop Functionality	1	TC-0025
		SRS-0018	Issue Owner Assignment	1	TC-0026
		SRS-0019	Issue Detail View Opening	1	TC-0027
		SRS-0020	Issue Detail Modification	1	TC-0028
		SRS-0021	Issue Creation - Due Date	1	TC-0029

		SRS-0022	Issue Creation - Title	1	TC-0030
		SRS-0023	Issue Creation - Description	1	TC-0031
		SRS-0024	Issue Creation - Tags	2	TC-0032
		SRS-0025	Issue Creation - Owner	1	TC-0033
		SRS-0026	Issue Creation - Story Assignment	1	TC-0034
		SRS-0027	Story Creation - Project Assignment	1	TC-0035
		SRS-0028	Issue Comments	1	TC-0036
		SRS-0032	Issue Status Change	2	TC-0038
		SRS-0036	Issue Change Timestamp	1	TC-0042
		SRS-0037	Issue Archival	1	TC-0041
		SRS-0056	Issue Color Coordination	2	TC-0054
SRS-0141	Development Methodology Provisions	SRS-0176	Agile Terminology	1	
SRS-0142	Organization Customization	SRS-0174	Kanban Heading Customization	3	TC-0098
		SRS-0175	Application Color Themes	4	TC-0099

11.5 Collaboration Tools

11.5.1 Communication Collaboration

Our development team will primarily use two collaboration tools to foster communication among team members.

Slack will be used for regular team communications. Its channels allow for quick teamwide communication. It supports lightweight file-sharing for small-scale file collaboration, such as displaying mockup designs. Its direct messages feature allows for one-on-one discussions as well as small group discussions. Slack is not strong for long-term file sharing, longform communication, or facilitating team conferencing, so we will utilize other tools to address those areas.

Google Meet/Hangouts will be used for teleconferencing to facilitate team meetings. The ability to quickly create a meeting room, schedule meetings that are integrated with Google Calendar, and share team members' screens in meetings make this an ideal tool for bringing the team together.

11.5.2 Documentation Collaboration

The development team will create all documents pertaining to the design and development of Saga using Google's G Suite. These files will be organized in Google Drive. Google Docs will be used to create text-based documents. Google Sheets will be heavily relied on for spreadsheets that assist with tracking and maintaining project data. Google Slides will be used for creating presentations as well as some quick diagrams (more extensive diagrams will use Lucidchart, as described below in [11.5.5](#)).

While G Suite's tooling does include some version control, it is not consistent or thorough enough for hosting actual project files outside of documentation. We will use another application for managing project files.

11.5.3 Project Management

During development, we will be using two project management tools to help organize and track development issues.

Trello will be used as a high-level calendar and scheduling tool to track phases of the project. The Trello board will be maintained by the scrum leader and project manager. Trello will also eventually be used to house our public-facing board for known community issues and a feature release roadmap.

Jira will be the primary project management tool in which most of the development team operates regularly. The scrum leader will be the manager of the team's Jira projects. We will utilize Jira's Kanban-style issue board for tracking development sprints, tasks, and issues. We will use Jira's test cycle and test suite functionality for verification and validation testing.

Once Saga has been fully developed and deployed, it will mirror most of these functions from both applications. We will migrate our project management collaboration to our own tooling at a later date.

11.5.4 Version Control

While Google's G Suite has decent lightweight tools for version control, they will not provide enough functionality to support actual development of project files. Project files (e.g. code, art assets) will be maintained using Github for version control. Github allows team members to create and work on development branches, make pull requests, and merge work with other members' without working over the top of one another.

11.5.5 Model/Diagram Creation

Most diagrams and models needed for the design and development of Saga will be created in Lucidchart. Lucidchart is feature-rich and has a large library of existing components for developing UML diagrams. It also has many templates that make starting a new diagram incredibly easy and quick.