McKinley Library and Museum App

Software Requirements Specification (SRS) Document

McKinleySoftwareRequirementsSpecification.doc

Rough Draft

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The Cabinet

Revisions

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1. Introduction

1.1 Purpose

The purpose of this document is to give a detailed overview of the development process for our McKinley Library and Museum App product. It will highlight some of the most important functional and non-functional requirements used in the product's development. It also acts as a design guide and public image for its user interface. This document will guide the product development team and any clients or project supervisors who may have input and feedback during the software design process to read.

1.2 Description

The software will be an application for the McKinley Presidential Museum, called the McKinley Library and Museum App. This app will be usable on iOS and Android systems. The application will be free; however, McKinley will offer a paid subscription service. The paid subscription service will allow patrons of the museum to generate a QR code that will grant them access to the museum. Additionally, administrators will be able to check how often users visit the museum. Furthermore, the application will also contain a gallery, which will allow all users to view images of the museum, drone footage, and historical information.

All user information will be read and written to the database synced to Members Press. Members Press is a third-party service owned by WordPress, which the museum uses for handling user data. The application will not allow users to purchase any items from the museum store. The application's primary purpose is to enable users to learn more about the museum and let paid members easily enter the museum through a QR code.

Our goal is to make a practical application for fans and patrons of the McKinley Presidential Museum. This application will be used by those who visit or want to learn more about the McKinley Presidential Museum. Anyone who visits the McKinley Museum will find the application useful. It will supply easy access to the museum for patrons and allow users to learn more about it.

1.3 Overview

The overview of this document is to inform the readers of the functional and non-functional features of the McKinley Library and Museum App. This document is broken into four sections: 1. Introduction, 2. Overview, 3. Specific Requirements, and 4. Software Life Cycle Model.

The McKinley Museum is a non-profit organization looking to give its customers insight into President William McKinley’s life. The museum's goals are to serve as a place to learn facts and see artifacts to understand our past President better.

1.4 Glossary of Terms

The Application/System: The McKinley Library and Museum App.

The Cabinet: The team name for the people who produced this document and developed the McKinley Presidential App.

The Museum: The William McKinley Presidential Museum and Library.

GUI: Graphical User Interface

MVC Framework: Model View Controller

Members Press: This is a system designed by a third-party organization. The McKinley Museum is using Members Press to store data about their customers.

1.5 Business Context

The application in development serves as the official app of the McKinley Museum and Library. The Cabinet is pleased to be sponsored by the McKinley Museum. Currently, the McKinley Museum does not have an application on the Apple App Store or the Google Play Store. Therefore, the McKinley Museum is interested in creating this application for its customers to notify them of upcoming museum events and make purchasing memberships easier. Also, this application allows the McKinley Museum to learn more about its customers.

2. Overall Description

2.1 Product Perspective

The McKinley app will attempt to incorporate aspects of other applications that may use QR systems or implement membership services within the app. We will customize these features to fit within our system. Our application will rely on Members Press, a WordPress membership management system. Our application will also rely on Clover POS for payment processing for memberships. These two services will be in consideration during the development of the McKinley app.

2.1.1 System Interfaces

Mobile application: This will be the system's main interface. This is the only interface that regular users and paid members will have access to. All functionality that a normal user and paid member can expect from the app can be accessed through this interface.

Members Press: This interface will be used to manage memberships for the museum members. Membership tier information, membership price information, unique user membership info, and all other membership info will be managed in this service. This service will act as a database for user memberships.

Clover POS: The app will utilize this payment processing system. Membership purchases will be processed through Clover. Using this outside service will offload security responsibility in the app and allow for a convenient payment processing experience.

User Profile Database: Account credentials for users will be stored here, and users will be able to link their museum memberships to their user account for the app.

McKinley Info Database: This database will include any information displayed in the app about McKinley, and it may also include updates about McKinley regarding news and promotions.

2.1.2 Memory Constraints

Memory consumption will not be a primary concern with this application. This application will not be extremely resource-heavy, so basic hardware should be able to handle the application and allow it to perform as intended.

2.1.3 Operations

After launching the app, users will be able to view and interact with information regarding the museum. In order to interact with user profile or membership functions, users will be prompted to create a user account with an email and password. If users want to add their driver's license to their account as a source of ID, then they will have to grant access to the camera. Additionally, no personal information will be stored on the user's device, so there

will be no need to back up any information on their device. Users will only need a stable internet connection to change their user profiles or memberships.

2.2 Product Functions

This application will function as a tool to enhance the experience and convenience of museum members, and it will provide education about the museum to members and the general public. Members will view and maintain their museum membership from within the app. Members will each have a unique QR code on the app that they can scan to access the museum. Moreover, all users of the app will be able to view the museum gallery and information about the museum. Users will also be able to purchase museum memberships from within the app. Additionally, all app users will be able to create user accounts within the app that are separate from museum memberships. Finally, the app will have different user priority features based on non-member status, membership tier status, and administrator status.

2.3 Similar Systems

There are many existing systems and products which are similar in design and function to the application our team intends to create. Other museum apps and even amusement park apps all contain features and similarities to what we aim to implement for the app. These features include giving information about the location and updating the user with specific upcoming events. We hope to blend these attributes with those used by gym membership applications and other membership applications. Many commercial gyms incorporate a QR feature in their apps so that members can check into their gym location via the app. We plan to incorporate a similar QR system for museum members in our application. By blending features utilized by different industries, we hope to create a versatile tool for our users.

2.4 User Characteristics

The demographic of our intended users, mainly older individuals, will likely be a bit more mature considering their interest in the history museum. Therefore, we will assume the users' technical skills are basic since many older users did not grow up with smartphone devices. Thus, we plan to create a very intuitive, easy-to-navigate user interface to accommodate this expectation when developing the application. Only a basic education level will be necessary for our users since we plan to make the application easy to use. Hence, education level is mostly irrelevant.

2.5 User Objectives

The major features users can expect from the application include:

- Intuitive user interface
- Ability to view museum information and updates
- User profile functionality
- Ability to purchase membership

- Ability to manage membership
- Responsiveness and seamless functionality

2.6 Constraints

An internet connection will be necessary to use most features in the application. An internet connection will be necessary to load information on the app at startup and interact with the app's membership features.

Our team will be constrained by the clearance provided to us by the McKinley Museum for Members Press and Clover POS during development. The app's capability will directly depend on our ability to work with these tools.

Furthermore, our team needs to develop for both Android and iOS. An emulator may be used for convenience when testing the application on both platforms.

Lastly, time will be a constraint in this project. We will need to consistently communicate with the McKinley team to keep making progress on the application. Depending on how quickly they can provide us with access and information, we may not accomplish everything planned for the development of the app. As a result, some features may need to be cut near the end of development.

3. Specific Requirements

3.1 Functional Requirements

Priority Scale: Low (1) – Medium (2) – High (3)

1. Low: Items that can be removed should the need arise, without adversely affecting the product. These items are not urgent or crucial to the final product.
2. Medium: Items desired by the customer and users of the system but are not of high priority at the start of development. While not urgent, these items would help enhance the final version of the system.
3. High: Items the customer requires and are necessary for the system to function. These items are necessary to the success of the final product.

Sync With Members Press

1. Description: The system shall sync with Members Press for managing users' memberships and museum activity.
2. Priority Rating: High
3. Technical Issues:
    a. Pre-condition: Members Press shall provide a way of allowing communication between its system and our system.
    b. Post-condition: The system will need to communicate successfully with Members Press to retrieve and add new information to the Members Press database.
4. Risks: Members Press will fail to communicate with our system.
5. Dependencies with other requirements: N/A

Sync With Clover POS

1. Description: The system shall sync with Clover POS for handling the purchasing of memberships.
2. Priority Rating: High
3. Technical Issues:
    a. Pre-condition: Clover shall provide a way of allowing communication between its system and our system.
    b. Post-condition: The system will need to communicate successfully with Clover to process payment information to purchase memberships.
4. Risks: Clover will fail to communicate with our system.
5. Dependencies with other requirements: N/A

Account System

1. Description: The system shall allow users to create an account or log in with their current account info to access other features provided by the system.
2. Priority Rating: High
3. Technical Issues:

   a. Pre-condition: The system shall allow users to log in to their museum membership accounts using the Members Press system.
   b. Post-condition: The system will need to process the user's membership information and refresh the user interface to display new options based on their membership status.
4. Risks: The system will fail to retrieve a user's membership information from Members Press.
5. Dependencies with other requirements: Sync with Members Press

Needs to Support iOS and Android

1. Description: The system shall be compatible with both iOS and Android. Therefore, two separate versions of the system will need to be developed.
2. Priority Rating: High
3. Technical Issues:
   a. Pre-condition: Both an iOS and Android device will be necessary to test the system's functionality on both platforms. Furthermore, licenses will need to be provided for both the Apple App Store and Google Play store to publish both system versions.
   b. Post-condition: The system's functionality shall stay consistent or the same over both versions of the system.
4. Risks: The system will fail to work on both platforms, or its functionality will be inconsistent over both system versions.
5. Dependencies with other requirements: N/A

Purchasing and Renewing Memberships

1. Description: The system shall allow users to purchase and renew memberships through the app.
2. Priority Rating: High
3. Technical Issues:
   a. Pre-condition: Firstly, the user must be logged into their museum membership account to purchase a membership. Secondly, the system shall successfully process users' payment information through Clover.
   b. Post-condition: The system shall update the user's membership status and refresh the interface to display new options based on their membership.
4. Risks: The system will fail to process payment information with Clover.
5. Dependencies with other requirements: Sync with Members Press, Sync with Clover

Membership Profile

1. Description: The system shall allow the user to view their current membership information by checking their profile on the system. If the user has no paid membership, they still should be allowed to view their profile regardless and purchase a membership.
2. Priority Rating: High
3. Technical Issues:

   a. Pre-condition: The user will need to log into their museum membership account to view their profile from the system.
   b. Post-condition: Users should be allowed to view and modify their current membership information directly from their profile.
4. Risks: The system will not retrieve the user's current membership information.
5. Dependencies with other requirements: Sync with Members Press

QR Code for Museum Entry

1. Description: The system shall create a QR code for all users with the minimum membership tier required to use when entering the museum.
2. Priority Rating: High
3. Technical Issues:
   a. Pre-condition: The given user will need to have a minimum membership tier to generate a QR code that they would use to enter the museum.
   b. Post-condition: The QR code should allow the user to enter the museum by scanning it at the museum entrance.
4. Risks: The system will fail to generate the correct QR code required to enter the museum at the front entrance. Furthermore, the system will fail to connect with Members Press to create the QR code necessary.
5. Dependencies with other requirements: Sync with Members Press

Navigation Menu

1. Description: The system shall allow users to navigate through it by supplying a navigation menu. On the navigation menu, users can navigate to various areas of the system.
2. Priority Rating: High
3. Technical Issues:
   a. Pre-condition: Certain options on the navigation menu should only be shown based on the user's current membership tier level.
   b. Post-condition: The user should be allowed to navigate throughout the system by using the navigation menu.
4. Risks: The navigation menu will either malfunction or not work as intended. Therefore, the navigation menu's links will fail to transfer the user to other system areas.
5. Dependencies with other requirements: Sync with Members Press

Museum Gallery

1. Description: The system shall allow users to view the museum's gallery. Within the gallery, users will see drone footage of the museum, pictures, historical information, and so forth. The system will pull gallery media from Members Press.
2. Priority Rating: High
3. Technical Issues:

   a. Pre-condition: The museum will need to provide pictures, drone footage, historical information, and so forth through Members Press for the gallery to function.
   b. Post-condition: The user can browse through the gallery to learn more about the museum's historical context.
4. Risks: The museum gallery will fail to load media, such as images.
5. Dependencies with other requirements: Sync with Members Press

Different Tiers of Memberships With Different Levels of Privileges

1. Description: The system shall support different tiers of memberships that come with various levels of privileges. Some of these memberships should be purchasable, whereas others will be granted by those managing the museum.
2. Priority Rating: Medium
3. Technical Issues:
   a. Pre-condition: Members Press will need to have the membership tiers created for the system to incorporate/use them.
   b. Post-condition: Different system options should be shown/hidden based on the current user's membership tier. For instance, administrators should have access to administrator-only options.
4. Risks: The system will fail to grant users various permissions based on their current membership tier.
5. Dependencies with other requirements: Sync with Members Press

Syncing Existing Memberships

1. Description: The system shall allow new users to sync their current museum membership information if they just made an online account. Therefore, if they purchased a membership at the museum before creating an account with the museum, the system should allow them to sync it with their account.
2. Priority Rating: Medium
3. Technical Issues:
   a. Pre-condition: The system will need to communicate with Members Press correctly to retrieve the current user's information to see if they had a previous membership with the museum.
   b. Post-condition: The system shall update the user's membership status and refresh the interface to display new options based on their membership.
4. Risks: The system will not sync the user's membership information.
5. Dependencies with other requirements: Sync with Members Press

Notifications

1. Description: The system shall notify users about upcoming events at the museum. Furthermore, the system should also notify users about rewards or discounts for memberships available for purchase. Notifications will be visible from the user's navigation bar on their mobile device and within the app.
2. Priority Rating: Medium

3. Technical Issues:
    a. Pre-condition: The system shall communicate with Members Press to know what should be notified to certain users, depending on their current membership status.
    b. Post-condition: Notifications should be relevant to the given user. Moreover, some notifications should post clickable links.
4. Risks: The user will not receive any notifications.
5. Dependencies with other requirements: Sync with Members Press

Gifting Memberships

1. Description: The system shall allow users to give paid memberships to other users.
2. Priority Rating: Medium
3. Technical Issues:
    a. Pre-condition: Firstly, the user must be logged into their museum membership account to purchase a membership gift. Secondly, the system shall successfully process users' payment information through Clover.
    b. Post-condition: The system shall update the gifted user's membership status and refresh the interface to display new options based on their membership.
4. Risks: The system will fail to process payment information with Clover.
5. Dependencies with other requirements: Sync with Members Press, Sync with Clover

Logging System - Museum Member GPS Tracking

1. Description: The system shall keep track of how many times each museum member visits the museum by GPS tracking. The system will also track how long a museum member stays in the museum. Therefore, paid members entering the museum will be tracked while in the museum for analytic purposes.
2. Priority Rating: Low
3. Technical Issues:
    a. Pre-condition: Users will have to grant permission to the system to allow GPS tracking.
    b. Post-condition: The tracked information must be made available to account users with administrator privileges.
4. Risks: The system will fail to use GPS to track users.
5. Dependencies with other requirements: Sync with Members Press, Detecting When the Museum Opens and Closes

Logging System - Detecting When the Museum Opens and Closes

1. Description: The system shall start tracking museum members only if the museum is considered open. On the contrary, the system shall stop tracking museum members if the museum closes. For instance, employees working at the museum when closing. This feature will guarantee that users will be tracked when necessary.
2. Priority Rating: Low
3. Technical Issues:

   a. Pre-condition: The system will need to know when the museum opens and closes. The system will also need to know the current day and time.
   b. Post-condition: The system shall either permit tracking if the museum is open or end tracking if the museum closes.
4. Risks: The system will not know when the museum opens/closes on a given day.
5. Dependencies with other requirements: Sync with Members Press

Uploading a Driver's License as ID

1. Description: The system shall allow users to upload their driver's license to purchase membership tiers from the museum as a source of ID.
2. Priority Rating: Low
3. Technical Issues:
   a. Pre-condition: Users will have to grant permission for the system to access their camera to take a picture of their driver's license.
   b. Post-condition: The system will safely record the driver's license in the user's online account with the museum using Members Press.
4. Risks: The user will fail to grant permission to the system to access the camera.
5. Dependencies with other requirements: Sync with Members Press

3.2 User Interface Requirements

3.2.1 User Interface: Graphical (GUI)

Several features will be associated with the graphical user interface (GUI). The following bullet points describe the general layout of the application for all users:

- On startup, there will be a screen that includes a logo of the museum. This screen will be seen for a few seconds until the application fully loads.
- Once the application has fully launched, it will show a home screen. The home screen will show a different museum image every time the application opens.
- There will be a drop-down navigation menu at the top left corner of the application. This navigation menu allows for feature navigation within the app. The menu will likely contain an option to visit the user's membership profile (or to login if not currently logged in) and to view the gallery. The menu will also house administrator-only tools and anything else required for the application to function as intended.
- The application will have a "login" screen to allow the user to log into their museum membership account. The login screen will be accessible from the top of the navigation menu via a link.
- The application will have a screen for creating a new account with the museum. This screen will be accessible by visiting the "login" screen and tapping on the "Signup" option located near the bottom of the username/password fields on the login screen.
- There will also be a gallery screen accessible from the navigation menu. The gallery screen will house images of the museum, drone footage, and historical information

about various monuments within the museum. All users will be able to access the gallery.

- If a user is logged in, they can access their profile at the top left of the navigation menu via a link. Their profile will contain options to manage their subscription, uploading their driver's license as a source of ID and settings for the app.
- There will be a settings screen accessible from the navigation menu. The settings screen will contain settings for the application. Currently, the only setting will be data collection. From within the settings screen, users can either choose to opt-in or out of data collection.

Administrators have other options available to them in an identical-looking interface. The following bullet points describe the general layout of the application for administrators:

- There will be a logging screen accessible from the navigation menu for administrators. The logging screen will allow administrators to view how long individual users have stayed at the museum for a given day and how many times they have visited the museum.

3.2.2 Application Programming Interface (API)

There will not be an API for this application. However, we will utilize the Members Press API for handling user data associated with the museum. We will also be utilizing the Clover API for handling membership subscriptions. Other APIs may be necessary, such as an API for scanning barcodes. However, we will not know for sure until we dive into the development of the application.

3.2.3 Diagnostics (Error Reporting and Usage Logs)

Our application will utilize logging to detect errors as they occur and report them back to the development team. When an error does occur, the user will be alerted (if possible) and given an option to report the error back to the museum administration for further investigation. The application will log errors to Members Press, where administrators could then access the log files and investigate the issue.

Lastly, occasionally the application may collect data to see how users are using the application. Users can opt in and out of data collection in the application's settings. Data collected may include how long users use the application, what parts of the application they use the most, and so forth.

3.3 System Requirements

3.3.1 Hardware Interfaces

1. Wireless Internet Connection (application is mobile-only)
2. Biometrics for Touch ID/Face ID for iOS
3. Supported Devices

a. iOS Devices (version 12 and higher)
b. Android Devices (Version 8 and higher)

3.3.2 Communications Interfaces

- The application will need an internet connection to communicate with Clover, Members Press, and GPS tracking. Using the Clover API, the system will retrieve information about store purchases. The Members Press system will communicate with the application by checking the user's credentials and displaying appropriate information depending on the membership status. GPS tracking will collect data on how long customers stay at the museum.

3.3.3 Software Interfaces

1. Clover - Payment management system for museum memberships
    a. Reference to documentation: https://docs.clover.com/docs
2. Members Press - Membership management system for museum
    a. Reference to documentation: https://docs.memberpress.com/

3.4 Domain Requirements/Constraints

User Information Security

All information collected and given to the Museum will be stored safely. The museum will hold all of the data in Members Press, a trusted third party.

User Consent

Users will be presented with a EULA/Privacy Policy that they must agree to in order to purchase a membership within the application.

3.5 Non-Functional Requirements

3.5.1 Reliability

If an Internet connection is available, the application will perform as intended. Otherwise, the application will not function as intended. All functionality of the application requires an internet connection to connect to the Members Press database. Therefore, if the user does not have an internet connection, the application will serve no purpose. Thus, the application will warn them that an internet connection is required. The application will work effectively as long as the online database servers are running.

3.5.2 Availability

The application will be available to anyone who can access a smartphone, including iOS and Android, and can be connected to the Internet.

3.5.3 Security

Security is a significant concern since the program will interact with and store user input data. The following procedures will be followed, as well as privacy notices:

- Camera authorization (for photographing the user's driver's license)
- Hidden passwords in input fields
- Updated database and API services to protect against viruses and other threats
- Database injection protection
- Activity logging (error reporting and common application use)
- QR code integrity checks
- Data integrity checks (comparing hash values for files sent between the application and Members Press)

3.5.4 Maintainability

Because future developers should be able to comprehend the code architecture, this application will be constructed utilizing a Model View Controller (MVC) framework for flexibility and future development.

3.6 Logical Database Requirements

The types of information being placed into a database in this application include usernames, passwords, other text information, images, and unique QR/Barcodes. Members will need to create user accounts with an email and password, which the application will store in a database.

Members will each have their unique QR code for scanning into the museum, associated with their membership information. Members will need to be signed into their paid membership account to access the QR code.

User accounts and membership information will exist separately but be tied together.

4 Software Life Cycle Model

4.1 Choice of Software Life Cycle Model

Our team plans to utilize Kanban for our SLCM. We do not currently plan to modify the Kanban process, but we will review our current work items encompassed by the Kanban process each week at our team meetings. We plan to regularly review and adjust our Kanban work items as necessary.

4.2 Justification for Choice of Model

Our team feels Kanban is the best model choice for this project because it allows for visual organization and assignment of the features and work items that need to be implemented and completed for the application to be functional and performant. We chose the Kanban model because it organizes and prioritizes items for completion on a virtual board. Kanban will allow team members to add, remove, and complete items on the board at their convenience. This process will expedite our workflow and allow for the completion of top priority items first, leaving lower priority items to be completed last.