

Santiam Wagon Trail Mobile App

Capstone Project

Developers: Charles Henninger, Duncan Millard, Jiawei Liu
Sponsor: Nancy Hildebrandt

Instructor: D. Kevin McGrath
CS 461, Fall 2016, Oregon State University

Abstract

The Santiam wagon trail is historic trail located in the Willamette National Forest. The local ranger stations wish to have a mobile app that is capable of taking users on a tour of the wagon trail without needing a connection to the internet. The app we will be self guided, and provide waypoints along the trail that contain information on the area, videos, and other points of interest. To accomplish this without an internet connection, we will be using packages featuring different aspects of the trail, including videos and text documents, that can be downloaded prior to arrival at the trail head. The app itself will be relatively small, as most of the content will be located within the content packages. These content packages will be created by staff of the local ranger stations, and uploaded via a website that will be developed along with the mobile app. The app will be designed to work with both Android and iOS, and distributed via the App Store and Google Play.

Nov 4, 2016

Contents

1	Introduction	2
1.1	Purpose	2
1.2	Scope	2
1.3	Definitions, Acronyms, and Abbreviations	2
1.4	References	3
1.5	Overview	3
2	Overall Description	3
3	Specific Requirements	3
3.1	External Interface Requirements	3
3.1.1	Web Control Panel User Interface	3
3.1.2	Mobile Application User Interface	3
3.1.3	Interface Between Mobile Applications and Web Control Panel	4
3.2	System Features	4
3.2.1	Web Control Panel	4
3.2.2	Mobile Applications	4
3.3	Performance Requirements	4
3.3.1	Content Packages	4
3.4	Design Constraints	4
3.5	Software System Attributes	4
3.5.1	Mobile Applications	4
3.5.2	Web Control Panel	4
4	User Stories	5
4.1	5
4.2	5
4.3	5
5	Gantt Chart	6

1 Introduction

1.1 Purpose

The purpose of this Software Requirements Specifications (SRS) document is to describe to developers and/or users of this product the proposed interactions with relevant hardware, other programs, and human users.

1.2 Scope

This product will include a mobile application, the Trail Companion, that will work with custom content packages downloaded in the app. A website will be included for administrators to upload content packages to a server where the application then request and download the packages. The mobile application will provide the user with an interactive map of an area, the user's location, and waypoints on within the area containing information about the park. This application will require no internet access after downloading the content packages and application itself.

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
Admin / Administrator	User who has access to create, modify, and publish content packages.
Android	Mobile operating system developed by Google for use in smartphones and tablets.
Application Program Interface (API)	Interface specifying how software components can integrate with various parts of a project or external resources.
Content Package	Compressed and signed archive containing a map of a region, as well as waypoints and other multimedia resources.
Web Control Panel	Administration website used to create, update, publish, or otherwise control content packages.
Global Positioning System (GPS)	Tool used to provide high-accuracy location services to devices without requiring internet service. Available as long as there is a sufficient view of the sky.
iOS	Mobile operating system developed by Apple for use in Apple mobile products, such as the iPhone, iPad, or iTouch.
Interpretive Event	Educational events hosting exhibits or other multimedia resources.
Mobile Application (app)	A piece of software designed to be run on a particular type of mobile operating system.
Open Street Maps (OSM)	Open/Freely licensed map software for map images, GPS locations, and directions. [1]
POI	Point of Interest
Santiam Wagon Road	A historical site in the Willamette National Forest. [2]
Signing	A process used to ensure software is coming from a known, good source and has not been tampered with. [3]
User	Visitors utilizing the application
USFS	United States Forest Service
Waypoint	Used to mark Points of Interest on maps, which will refer to sites with some form of multimedia content.

1.4 References

- [1] “OpenStreetMap,” *OpenStreetMap*. [Online]. Available: <https://www.openstreetmap.org/about>. [Accessed: 04-Nov-2016].
- [2] G. Harrison, “Santiam Wagon Road,” *The Oregon Encyclopedia*. [Online]. Available: https://oregonencyclopedia.org/articles/santiam_wagon_road/. [Accessed: 04-Nov-2016].
- [3] “Introduction to Code Signing,” *Microsoft Developer Network*. [Online]. Available: [https://msdn.microsoft.com/en-us/library/ms537361\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/ms537361(v=vs.85).aspx). [Accessed: 04-Nov-2016].

1.5 Overview

The rest of this document contains (in the order presented) further high level description of the product and the problem being addressed by it, as well as the specification requirements, User Stories, Appendix, and Index.

2 Overall Description

The Sweet Home Ranger District of the Willamette National Forest hosts a number of interpretive events throughout the year, which are led by staff experts. These events incur a substantial time and labor cost for their setup and operation, which occupy a significant portion of Ranger Station staff resources. Due to a desire to expand public outreach, volunteers at the Sweet Home Ranger District have proposed the development of a mobile application to showcase one of their most well known trails, the Santiam Wagon Road Trail, with a self-guided tour. The mobile application must be developed with the capability to provide the required services without the need to connect to the internet. The application will be able to provide an interactive map that provides the user with their current location on a trail, as well as waypoints that provide information about points of interest along the trail in the form of videos, audio recordings, and text articles. Ranger Station staff must also be able to design and publish new events through a website with little technical knowledge. Finally, this project must have minimal recurring costs, and must be available for both iOS and Android devices.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 Web Control Panel User Interface

Must be able to generate and publish new Content Packages that can be downloaded the the mobile applications.
Must be able to edit and modify existing Content Packages.
Must have restricted access to admins. All changes must be made by an authenticated admin.

3.1.2 Mobile Application User Interface

A user must be able to view available Content Packages directly in the mobile applications when internet access is available.
A user must be able to select and download Content Packages.
A user must be able to uninstall or remove downloaded Content Packages.

3.1.3 Interface Between Mobile Applications and Web Control Panel

The mobile applications will request available Content Packages from a JSON based HTTP interface on the Control Panel.

The mobile applications will request downloads through the same interface.

3.2 System Features

3.2.1 Web Control Panel

Administrators must be able to create and upload new Content Packages using the website provided.

3.2.2 Mobile Applications

The application must display the user's location in the relevant area using GPS.

The application must be able to display content packages currently available for download.

3.3 Performance Requirements

3.3.1 Content Packages

There must be an option for a Content Packages below 50MB.

There must be options for Content Packages that are accessible to the hearing impaired through closed captions or a transcription.

3.4 Design Constraints

The mobile applications must be able to operate without internet access after initial setup.

The product must rely on free/libre software, and avoid recurring software license fees.

3.5 Software System Attributes

3.5.1 Mobile Applications

Application must support both iOS and Android

3.5.2 Web Control Panel

Control Panel must be cross browser compatible.

4 User Stories

4.1

Card: As a user, I want to see the waypoints on the map, so that I can know where should I visit.

Conversation: The user should have a chance to check waypoints on the map, especially visitors new to the trail. With the waypoints, visitors can see which places are good for sightseeing. This will a great convenience to visitors.

Confirmation: When user opens the app, the main page will display the map with waypoints. When user clicks a waypoint, there will be some videos and texts to introduce this area.

4.2

Card: As a user, I want an app that can work without internet connection because there is no available internet connection on the trail.

Conversation: Because there is a possibly of having no cell phone signal on the trail, the app should work offline, provided the Content Pack was downloaded ahead of time. User should be able to see waypoints on the map without the internet connection.

Confirmation: Developer will be using packages featuring different aspects of the trail, including videos and text documents, that can be downloaded prior to arrival at the trail head.

4.3

Card: As a user, I want to download the app via an official software store, so that I can make sure the app is safe to use.

Conversation: App safety is important for every user. An App Store is an official and credible method to download app. Otherwise, user won't trust and download this app.

Confirmation: The app will work on both Android and iOS platform. The Developers will publish this app on the official app store for each platform, so users can download via Google Play and App Store.

5 Gantt Chart



Sponsor

Developer

Developer

Developer