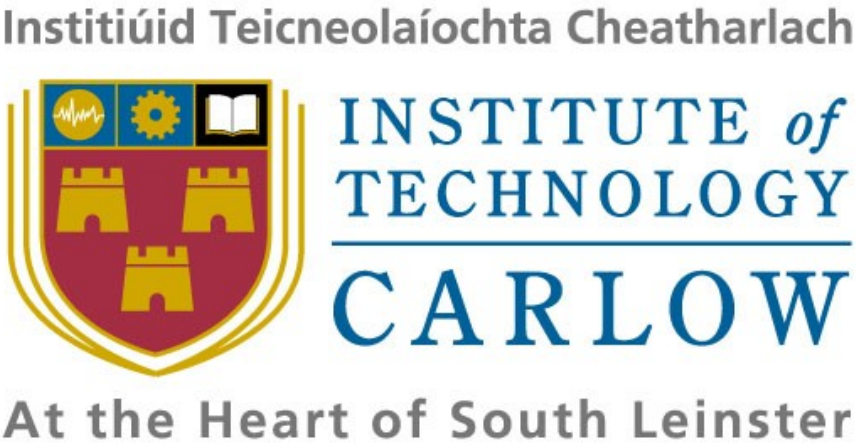
Pavements

Functional Specification

15th November 2019



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Year: 4th Year

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Abstract

The aim of this document is to illustrate the internal workings of the whole application to the reader. The reader of this application should be able to successfully create the application to the described specifications after reading this document. This document will also describe the functionality of the application and also a flow of the workings of the application and how it should look. The primary user of this application is going to be a current employee of McCurdy associates. This mobile application will provide McCurdy associates employees an application that will help with their surveys that they complete quite frequently.

Functional Specification

Introduction

Pavements will provide a mobile application for McCurdy associates that is user friendly and make McCurdy associates employees complete surveys and documentation after surveys are completed much easier. The employee will be able to use GPS on their tablet, along with google maps to determine the road they are currently on to complete their survey. While completing their survey, the employee will be presented with a selection of relevant drop-down menus to help collect all the data that is required. Alongside drop-down menus, the employee will also be presented with the option to capture photographs of imperfections on the road. If an employee takes a photograph, this photograph will have a set of coordinates that the employee will need to know the exact location and road section to find easily when the road imperfection is going to be fixed. This application will also give the employee the option to add notes that will help complete their report of the survey they have just completed.

Proposed Deliverables

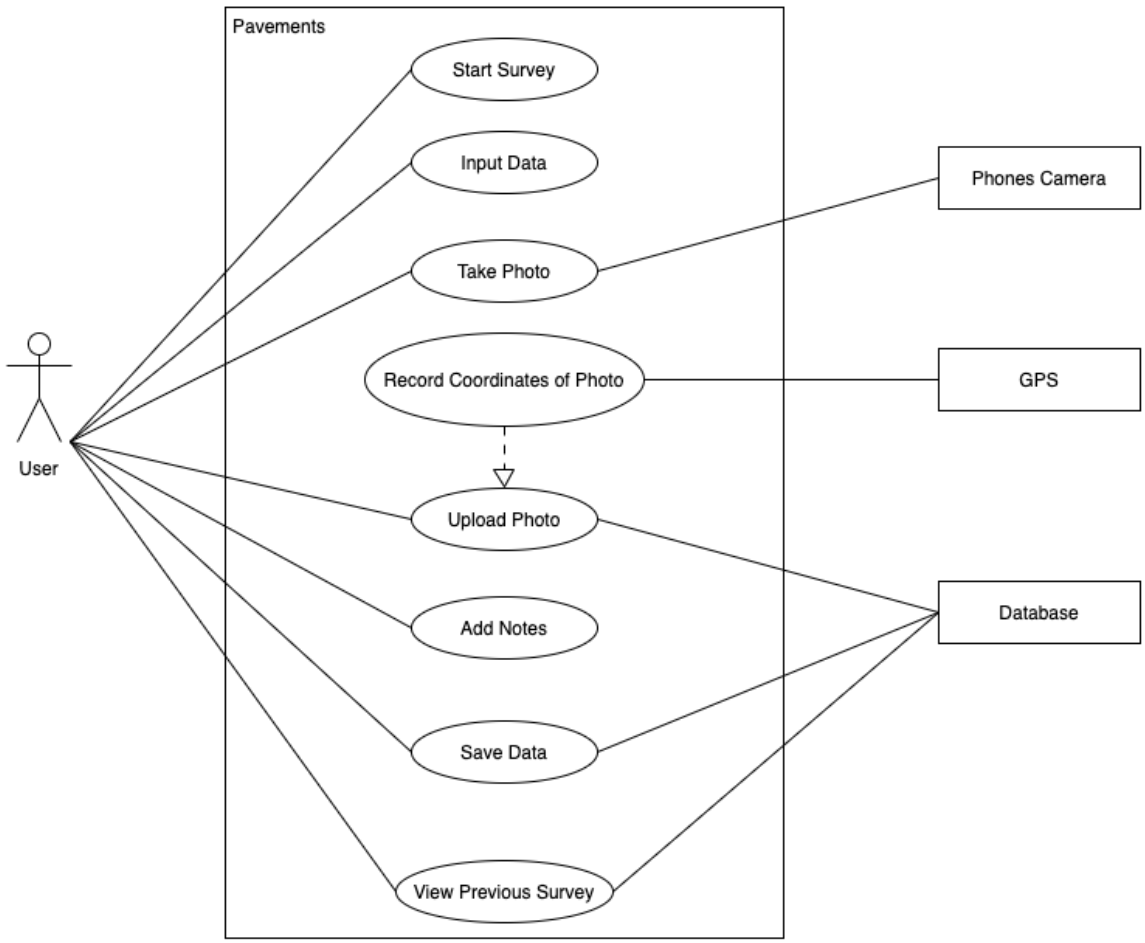
The goals of this project were identified as follows:

1. *Specification of a user-friendly mobile application to replace McCurdy Associates current paper-based method of data collection.*

2. *Selection of a mobile operating platform upon which to build the mobile application (hardware and software).*

3. *Development of an advanced and working proof-of-concept mobile application.*

Use Case Diagram



Brief Use Cases

Start Survey

Name	Start Survey
Preconditions	The user has successfully downloaded the application.
Actors	User, Mobile Application.
Activity	This use case begins when the user successfully downloads the application. When the user first opens the application, the user will be presented with an option to start a new survey.
Consequence	The user has now started a new survey.

Input Data

Name	Input Data
Preconditions	The user has selected to start a new survey.
Actors	User, Mobile Application, Database.
Activity	This use case begins when the user has selected to start a new survey. When the user has begun there survey, the user will be presented with multiple drop boxes that are relevant to the survey. This information is recorded by the application.
Consequence	The user has all the required fields filled while completing there survey.

Take Photo

Name	Take Photo
Preconditions	The user has selected to start a new survey.
Actors	User, Mobile Application, Phone Camera.
Activity	This use case begins when the user is completing the survey and is required to take a photo. The user will be presented with an option to take a photo after they select to start a new survey.
Consequence	The user has taken a photo and is able to view the photo they have just taken.

Record Coordinates of Photo

Name	Record Coordinates of Photo
Preconditions	The user has successfully taken a photo.
Actors	GPS, Mobile Application.
Activity	This use case begins when the user has taken a photo. When the user takes the photo, the coordinates of where the user is when the photo is taken by using the mobile phones GPS.
Consequence	The user has taken the photo and the coordinates of where the photo has been taken is recorded.

Upload Photo

Name	Upload Photo
Preconditions	The user has successfully selected to take a photo and has successfully taken a photo
Actors	User,Mobile Application, Database
Activity	This use case begins when the user has taken a photo and the coordinates of where the photo has been taken has been recorded, giving the user the option to upload the photo.
Consequence	The user has successfully uploaded a photo.

Add Notes

Name	Add Notes
Preconditions	The user has selected to start a new survey.
Actors	User,Mobile Application.
Activity	This use case begins when the user has started a new survey and wishes to add information that isn't recorded in any of the fields that are required.
Consequence	The user has successfully added notes in the notes field.

Save Data

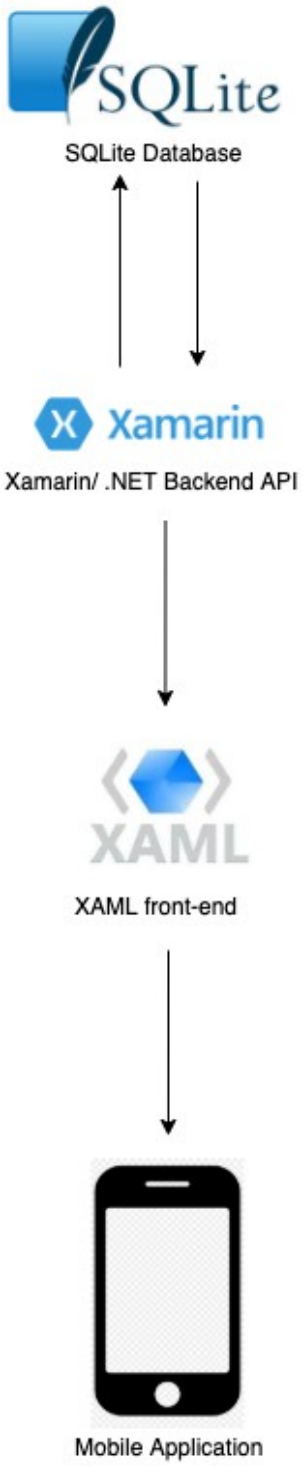
Name	Save Data
Preconditions	The user has filled in all the required fields.
Actors	User, Mobile Application, Database.
Activity	This use case begins when the user has filled in all the information that is required. The user selects the save button and all the information is stored in the database.
Consequence	The user has successfully saved all the information.

View Previous Surveys

Name	View Previous Surveys
Preconditions	The user has successfully saved previous surveys to the database.
Actors	User, Mobile Application, Database.
Activity	This use case begins when the user selects the “View Previous Surveys” tab in the application. From here the user can see all the previous surveys that have been completed.
Consequence	The user is presented with previous surveys.

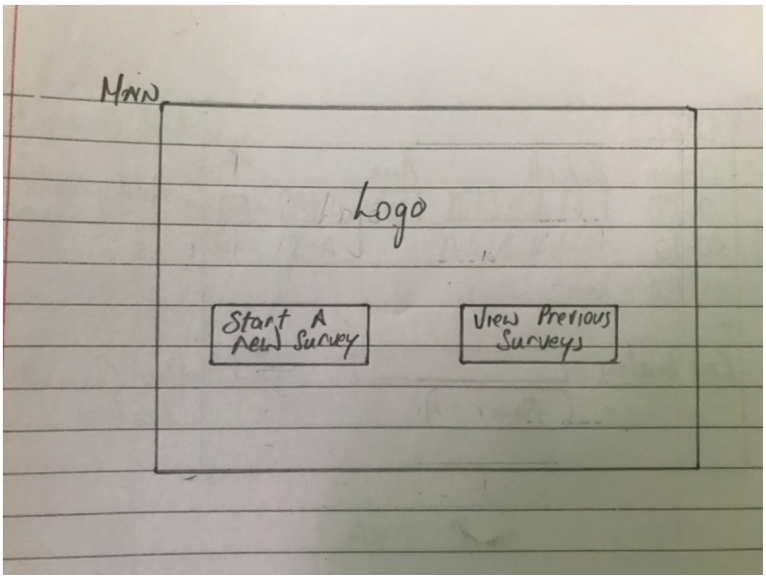
Architecture Diagram

The architecture of this mobile application consists of XAML for the user interface which is connected to SQLite database through Xamarin using RESTful API and .NET libraries.

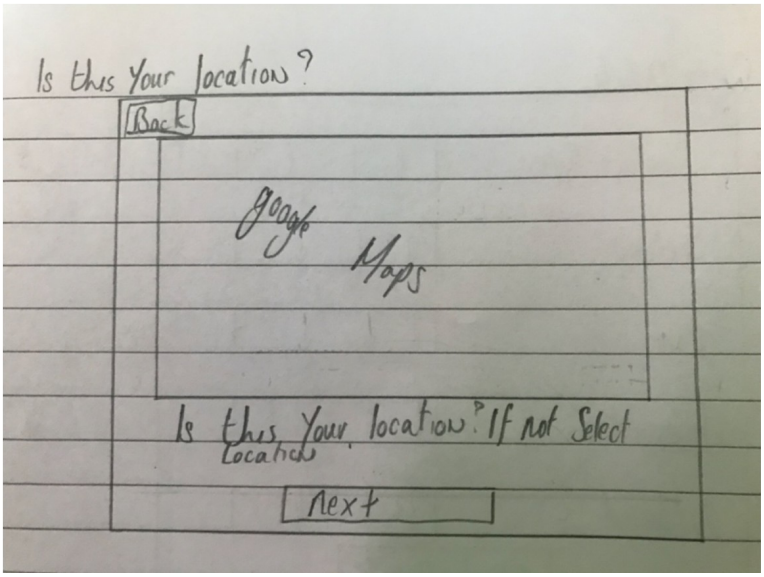


Wireframes

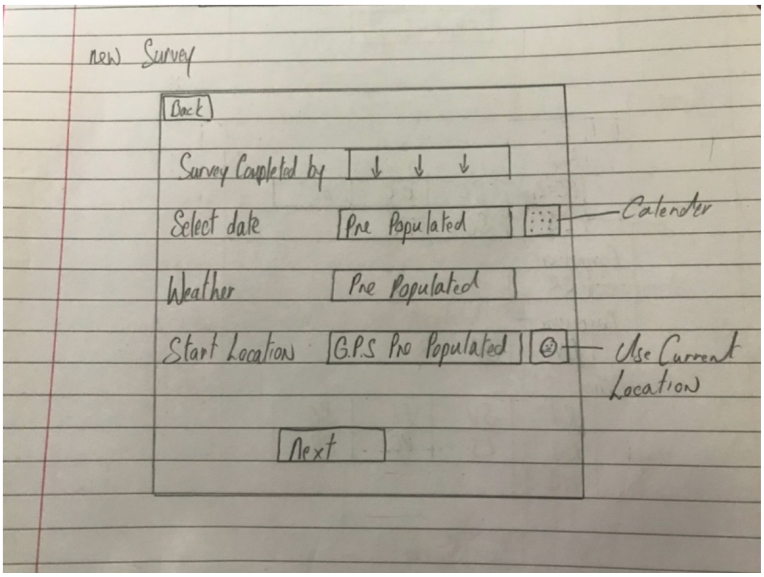
Main Screen



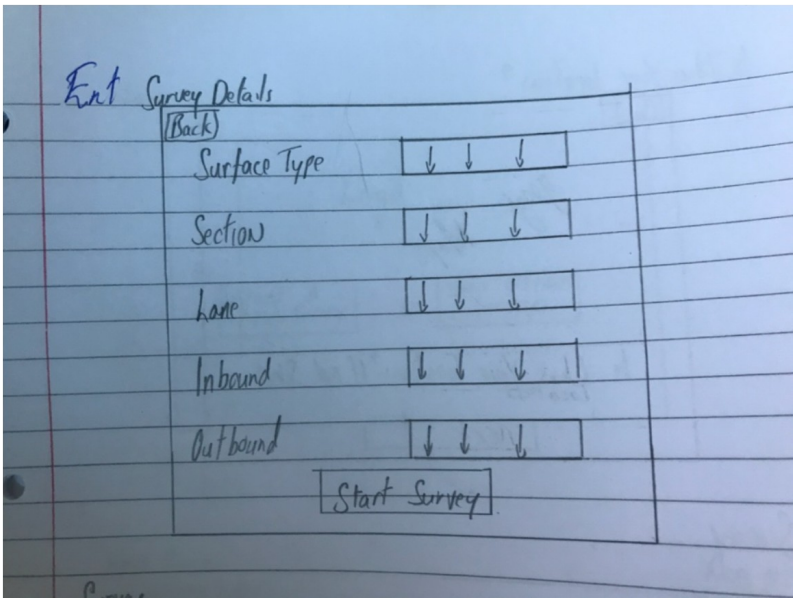
Your Location



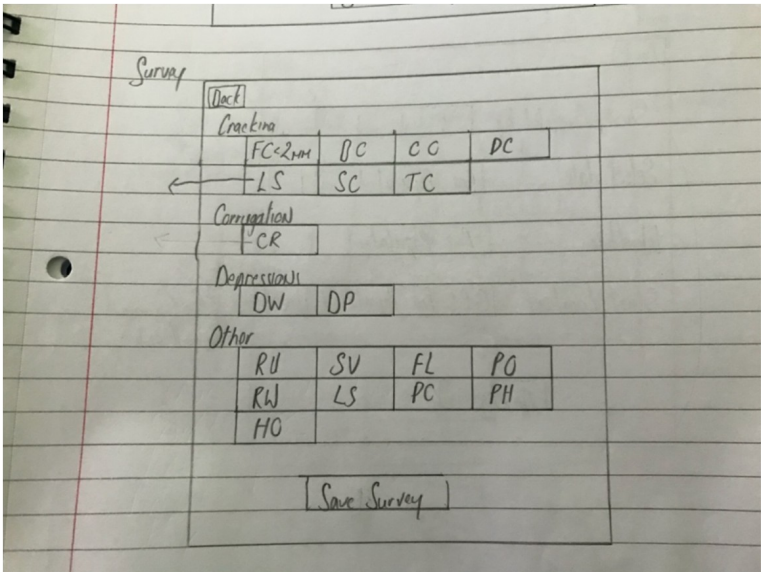
Survey Details



Extra Survey Details



Defect Selection



Defect Information