# Sparky

By

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in Partial Fulfillment of the Requirements for

the Degree of Bachelor of Science

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University of Cincinnati

College of

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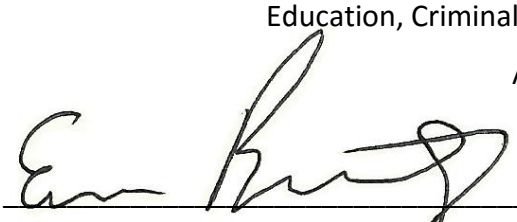
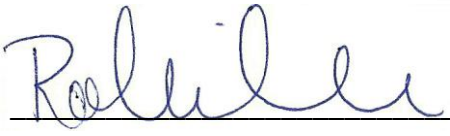


Evan Barnitz — 4-18-2016

Date

Brandon Patram — 4-18-2016

Date



Robin Carew, Faculty Advisor — 4-18-2016

Date

# Table of Contents

# Illustrations

## Abstract

Everyday thousands of Firefighters respond to emergency calls. Action Plans are used by Firefighters as the plan of attack for when they arrive on the scene of a fire emergency. Firefighters must think quickly and critically to formulate an Action Plan for fighting a fire, saving lives, and protecting property.

Currently, Action Plans are based on many assumptions made through Firefighters' past experiences and training. Often times Firefighters come to a scene lacking important information that could mean the difference between life and death.

The methods of which an Action Plan are devised have remained unchanged for years and can be improved by orders of magnitude with Sparky. Sparky is a mobile application designed to enhance the Action Plan creation process by providing Firefighters with detailed and accurate information about a residential housing structure.

# Introduction

## Problem

Can you walk around your house in the dark? What about a house you have never been inside? Firefighters crawl around inside dark and smoke filled houses every day, fumbling around looking for people to save. Imagine if they could have a look inside before they arrived.

For every fire emergency, firefighters prepare an action plan while in route to the scene (Fire Rescue International, 2010). An action plan is the plan of attack on how to get the fire under control, save lives, and save property (Masona, 2006). Today, action plans are created based upon assumptions and experience of the particular Firefighter. We cannot create a solution that provides greater experience for every Firefighter, however it is possible to build an application to take a lot of the guess work out of action planning.

## Solution

Sparky is a mobile application that allows Firefighters to view and learn from floor plans and metadata about specific properties. Data is provided by the homeowner through a mobile web application and consumed by firefighters while in route to the scene of the emergency.

## Credibility

Our team consists of two members. A talented programmer who has spent countless hours developing web and mobile applications. The second member is also a software developer who comes from a family of firefighters and emergency personnel.

## Project Goals

The goal of our project was to create an application that allows firefighters to better prepare for an emergency. Having extra information and resources pertaining to the location of an emergency can be crucial in building and executing a proper plan of attack for gaining control of a fire to save the structure and lives.

### Overview

The remainder of this report outlines how the Sparky application was created. The report is broken down into several discussion sections, including Design, Technical Approach, Budget, Gantt chart, Problems, and Future Recommendations.

## Discussion

### Application Concept

The concept of the Sparky application was the idea that we can provide more tools to firefighters by way of software. Sure, we all know that a firefighter's favorite tool is their ax, however, even the most experienced firefighter could benefit from an application giving them information on the best place to swing their ax. Sparky allows firefighters to make educated decisions instead of working from gut feelings and assumptions. This will allow for more lives and property to be saved.

## Design Objectives

Sparky was built as a web application that is compatible with both Android and iOS. Due to the overwhelming majority of smartphone users using either the Android or iOS operating systems we were not driven to develop the application for Windows Phone devices, however it may still be completely functional.
The application is split into two distinct areas; one for Firefighters and one for Homeowners. These areas are outlined below.

#### Firefighters

On the firefighter side of the application, Firefighters are able to log-in with a User specific account. If they are a member of multiple fire departments, they are presented with a selection screen to determine which department they are currently responding for. After log-in and selection, a Firefighter will type in the address of the emergency as a search term in an auto-complete text box. Once the search is complete, the Firefighter

is presented with a tabbed informational page about the address. The tabs are as follows: Overview, Detailed Information, Map Location, and Homeowner Contact.

**Homeowners**

A homeowner makes a request to join the Sparky network. Upon receiving the request, an activation code is mailed to the homeowners' address. The homeowner then uses this code to create an account for their residence. Once logged in the homeowner can input information about their home and upload floor plans and pictures.

## User Profiles

We have chosen to outline three User profiles. A normal firefighter, a firefighter acting as an Officer in Charge (OIC), and a homeowner.

### Potential User 1:

Roger is 32 years old and a 5 year veteran of the fire department who is responding to an emergency call.

Software and Interface Experience:

Roger uses computers on a daily basis and is a smartphone owner. He is familiar with Apple devices.

Experience with Similar Applications:

Roger is an avid user of Google Search, Google Maps, and the internet.

Task Experience:

- Creating traditional Action Plans based on assumptions and training.
- Entering burning buildings and putting out fires.

Frequency of Use:

Every time there is an emergency.

Key Interface Design Requirements that the Profile Suggests:

1. Search must be intuitive and the data must be displayed in a way that allows for rapid digestion.

2. User interface must be designed in a user friendly way for touch devices with a standard user flow through screens so the experience is consistent.

## Potential User 2:

John is a fire Captain and is normally the Officer in Charge (OIC) at the scene of an emergency.

Software and Interface Experience:

John uses computers on a daily basis and is familiar with smartphone applications.

Experience with Similar Applications:

John is familiar with a broad spectrum of everyday mobile applications.

Task Experience:

- Often times being the Officer in Charge has taught John to gather all available information before making a decision.
- Creating traditional Action Plans based on assumptions and training.
- Creating Pre-Plans for large commercial buildings which aids in creating an Action Plan for similar building fires.

Frequency of Use:

In route to the scene and while on the scene as the Office in Charge (OIC).

Key Interface Design Requirements that the Profile Suggests:

1. Detailed layout that displays all known information about an address.
2. The applications user interface will be designed in a user friendly way for touch devices with a standard flow through screens so the experience is consistent

## Potential User 3:

Jenny is a homeowner of a single family house who cares about her husband, children, and their belongings.

Software and Interface Experience:

Jenny uses computers often and has an Apple iPhone that she uses daily for messaging and social media.

Experience with Similar Applications:

Jenny loves posting pictures to Instagram of her kids and understands how to select and upload files from her mobile device. She also enjoys keeping in touch with friends and family through Facebook and is okay with sharing details of her family and friends.

Task Experience:

- Jenny has filled out profiles for other applications such as Facebook.
- Knows how to select and upload files from a mobile application.
- Owning a house and keeping up with structural changes with permits and other forms.

Frequency of Use:

Jenny will use the application on a yearly basis when moving in or making structural changes to her home.

Key Interface Design Requirements that the Profile Suggests:

1. Jenny needs to be able to login as a homeowner and update the information for her address.
2. Jenny needs to be able to develop a floor plan from a 3rd party application and upload to her Sparky profile.

## Use Case Diagram

Sparky is designed to be used on multiple mobile platforms, including Android and iOS. Sparky is used by people from all walks of life (Homeowners), as well as people in a hurry (Firefighters). With those thoughts in mind we have designed the application to fulfill two very important qualifications.

- The application is user friendly. Since homeowners range from elderly couples whose house doesn't change much from year to year to a young single homeowner who has purchased a 'fixer-upper' house and will be making

changes frequently. On the flip side, Firefighters will be using the application while under time constraints and during chaotic behavior, meaning they will not have time to remember how different functions work. All functions within the application are as intuitive as possible to ensure Firefighters can find the information they need as quickly as possible and that information is displayed in a manner that allows them to digest and understand it.

- The application is robust. If a Firefighter is expecting the application to work, they cannot have it crash or receive errors while in route to an emergency.

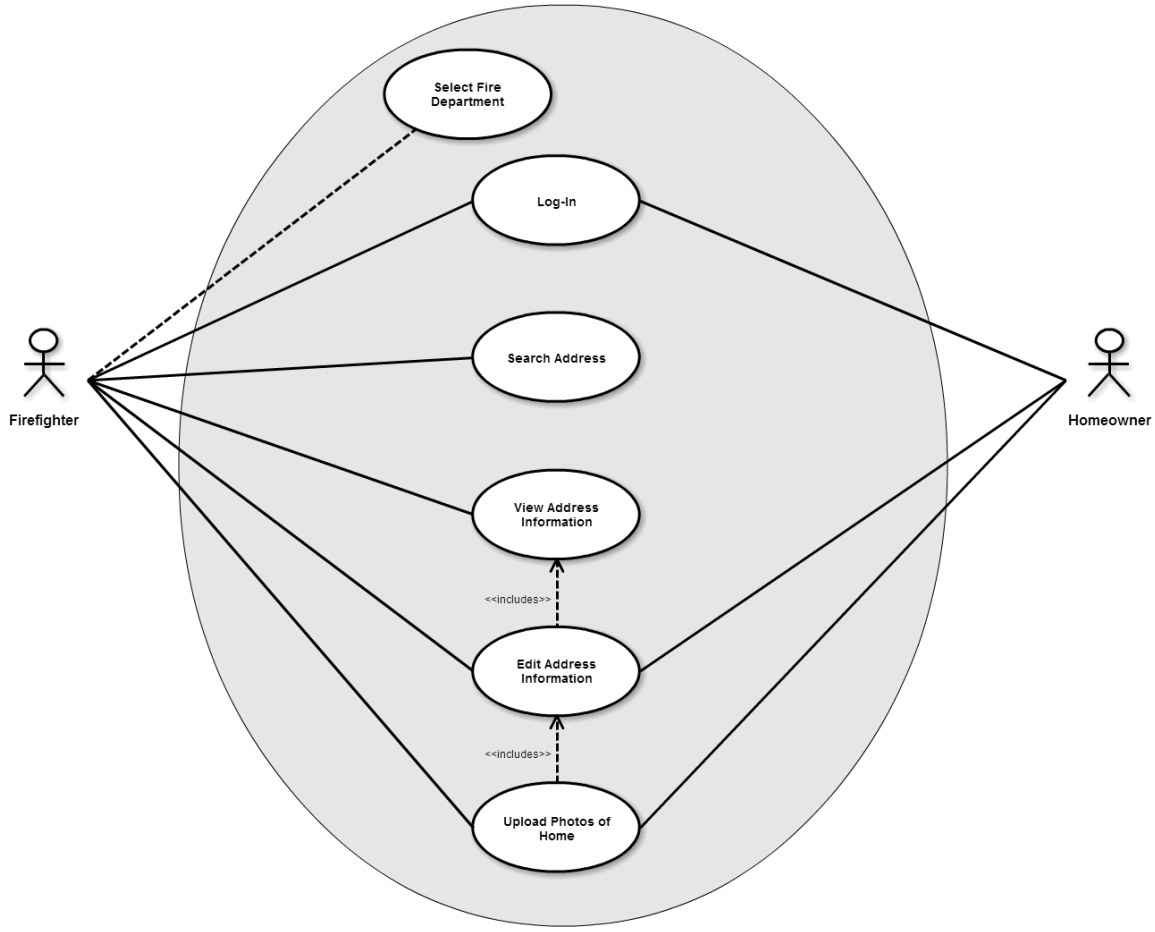



*Figure 1 - Use Case Diagram*

# Technical Breakdown

## Frontend

Our application is built using PhoneGap, which is a platform that allows us to write HTML, CSS, and JavaScript as a web application. PhoneGap acts as a middleman between our application's web view and the native phone controls such as battery, GPS, and notification integration. Since our app is a hybrid application it can be compiled for Android and iOS devices. A visual of the architecture is show below in Figure 2.

## Backend

The database which stores all property information as well as user accounts will be hosted on Parse, a cloud service that offers an online database and API endpoint. Parse integrates into our application's front end to allow for quick queries and caching for a faster user experience.

## Architecture Solution Diagram

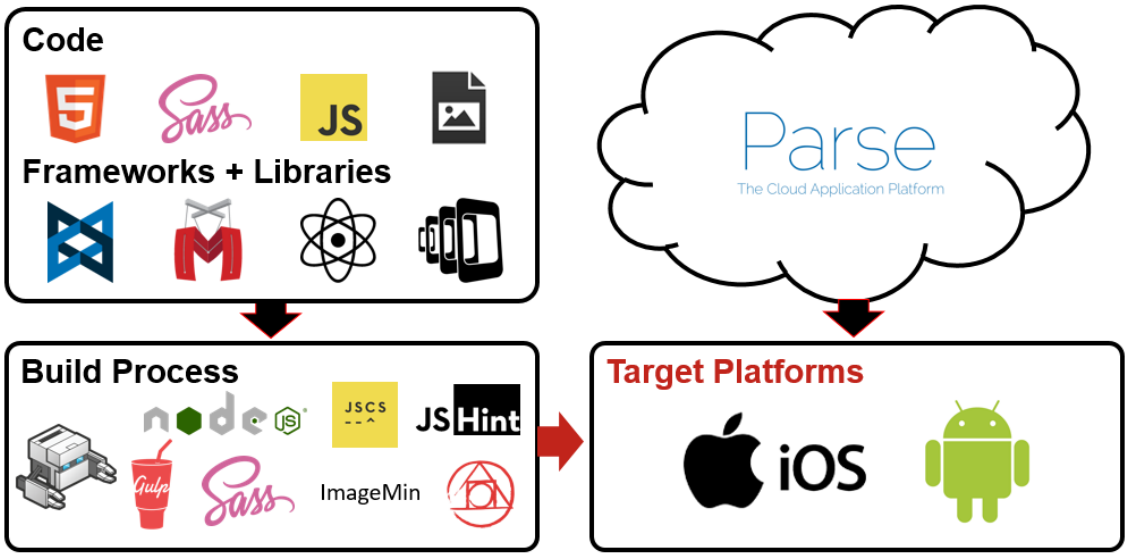



*Figure 2 - Architecture Solution Diagram*

**Interaction Diagram**

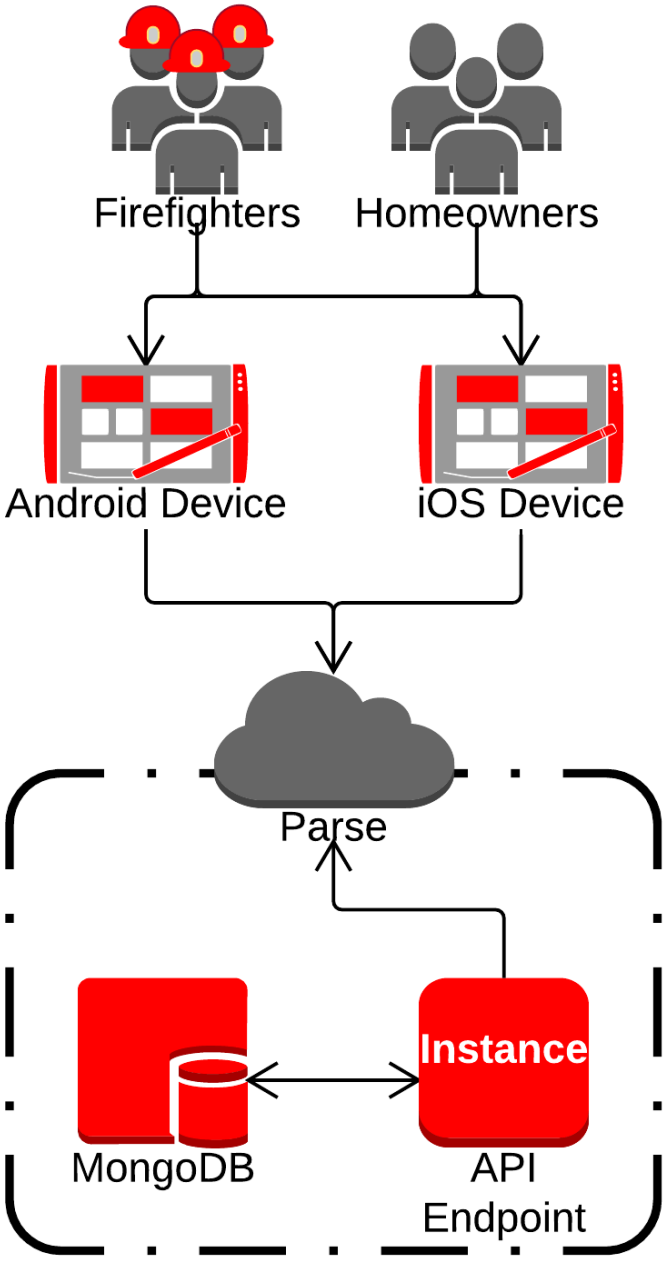



*Figure 3 - Interaction Diagram*

## Testing

### Overview

This section explains the testing methodology for Sparky and will be used as a guide for all testing procedures. Sparky can be run on both Android and iOS devices but because the codebase is shared for both platforms only one set of tests are needed to cover the majority of functionality.

### Scope

This test plan is confined to the scope of Android and iOS devices. The test will be organized based on requirements of the application. Unit tests will be created to cover all aspects of the mobile application. Expected code coverage is around 80%-90%.

### Objective

The objective of testing is to verify that a particular module of the source code is working as expected. These tests are designed to test components in isolation or as a unit.  Developers will run the tests for the components they are working on. All written JavaScript code is passed through two code linters, JSHint and JSCS to maintain maintainable and readable code that is consistent between all developers. Unit tests are written in a unit testing framework, Jasmine, which will allow us to automate all tests and ensure little-to-no regressions or errors occur in future releases or updates.

### Logging Test and Reporting

If a bug is found during testing, the individual will document the bug. The developers will meet after testing to replicate, diagnose, and prioritize any bugs. After reviewing and prioritizing all reported issues they will be given a time estimate of the effort require to fix. Afterwards the issues will be assign a sprint or release version which they should be completed and merged into the codebase by.

### System Testing

Sparky will be tested as a complete application with all the modules tested as one unit. This will help identify any defects that only show when the application is tested as one. It is intended to authenticate the application as one unit.

### Testing Procedures

The testing procedure consists of several test cases that will test both the user interface and the functionality of the application. The following steps are required for testing to begin:

1. Create a list of expected use cases by a hypothetical user.
2. Prepare a document that outlines the steps required by the user to perform the task.
3. For each step that the user performs list out the expected outcome

### Pass/Fail Conditions

It will be expected that Sparky must pass all tests in every category to be successful. If any tests fail, the tester will document the issue.

## Project Budget

The proposed budget (Figure 3) for this project includes all software, licenses, hardware, and development hours needed to develop the application. It also includes a projected yearly maintenance cost to ensure the application keeps working.
The proposed budget does not include hardware or training for Users, including both Homeowners and Firefighters. It also does not include future projects to develop new features or enhancements.

| CATEGORY | ITEM | COST PER | QUANTITY | TOTAL |
|---|---|---|---|---|
| Labor | Development Hours | $100/hour | 338 hours | $33,800.00 |
| Hardware | Development Computer | $1,000.00 | 2 | $2,000.00 |
| Hardware | Development Tablet | $300.00 | 1 | $300.00 |

*Figure 4 - Project Budget*

## Project Timeline

The project timeline is shown below (Figure 4) by way of a Gantt chart timeline. We followed an agile approach, separating our development work into several sprints. With each sprint we were able to deliver a working application.

| WBS | Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|
| **0** | **Sparky** | **19.75d** | **09/08/2015** | **02/23/2016** | |
| **1** | **Sprint 0** | **2d** | **09/08/2015** | **09/19/2015** | |
| **1.1** | **Research** | **0.63d** | **09/08/2015** | **09/11/2015** | |
| 1.1.1 | Research data availability | 5h | 09/08/2015 | 09/11/2015 | |
| 1.1.2 | Research possible technologies | 5h | 09/08/2015 | 09/11/2015 | |
| 1.1.3 | Research 3rd party floor layout generators | 4h | 09/08/2015 | 09/09/2015 | |
| 1.2 | Brainstorming | 1d | 09/08/2015 | 09/12/2015 | |
| 1.3 | Database Model | 3h | 09/15/2015 | 09/16/2015 | 6 |
| 1.4 | Project Abstract | 4h | 09/15/2015 | 09/16/2015 | 6 |
| 1.5 | Use Case Diagram | 3h | 09/15/2015 | 09/16/2015 | 7SS |
| 1.6 | Wireframes | 8h | 09/15/2015 | 09/19/2015 | 6 |
| 1.7 | Team Contract | 3h | 09/15/2015 | 09/16/2015 | 2,6 |
| 1.8 | Gantt Chart | 1.5h | 09/15/2015 | 09/16/2015 | 11FF |
| **2** | **Sprint 1** | **5.25d** | **09/22/2015** | **10/27/2015** | **1** |
| **2.1** | **Setup initial technology stack** | **2.63d** | **09/22/2015** | **10/09/2015** | |
| 2.1.1 | Setup phonegap project | 16h | 09/22/2015 | 10/03/2015 | |
| 2.1.2 | Setup parse account | 3h | 09/22/2015 | 09/23/2015 | 7 |
| 2.1.3 | Setup base SCSS styles | 4h | 10/06/2015 | 10/07/2015 | 15 |
| 2.1.4 | Setup unit testing framework | 5h | 10/06/2015 | 10/09/2015 | 15 |
| 2.2 | Create database schema in Parse | 3h | 09/23/2015 | 09/25/2015 | 16 |
| 2.3 | Create login page | 5h | 10/09/2015 | 10/13/2015 | 14,19 |
| 2.4 | Style login page | 6h | 10/10/2015 | 10/16/2015 | 20SF 1d |
| 2.5 | Fire Department Selection Page | 7h | 10/16/2015 | 10/21/2015 | 21 |
| 2.6 | Create unit tests | 6h | 10/23/2015 | 10/27/2015 | 21,22 |
| **3** | **Sprint 2** | **1.63d** | **10/28/2015** | **11/07/2015** | **13** |
| **3.1** | **Address Search Page** | **1d** | **10/28/2015** | **11/03/2015** | |
| 3.1.1 | Implement address search | 6h | 10/28/2015 | 10/31/2015 | |
| 3.1.2 | Implement typeahead | 2h | 11/03/2015 | 11/03/2015 | 26 |
| 3.2 | Style search page | 4h | 10/31/2015 | 11/03/2015 | 25FF |
| 3.3 | Create unit tests | 5h | 11/04/2015 | 11/07/2015 | 25 |
| **4** | **Sprint 3** | **1.38d** | **11/07/2015** | **11/17/2015** | **24** |
| 4.1 | Make base tabbed layout | 6h | 11/07/2015 | 11/13/2015 | |
| 4.2 | Create floorplans and metadata overview tab page | 4h | 11/13/2015 | 11/17/2015 | 31 |
| 4.3 | Create Google maps streetview page | 5h | 11/13/2015 | 11/17/2015 | 31 |
| 4.4 | Integrate Google maps api | 2h | 11/13/2015 | 11/14/2015 | 33SS |
| 4.5 | Create owner information page | 5h | 11/13/2015 | 11/17/2015 | 31 |
| 4.6 | Create metadata tab page | 4h | 11/13/2015 | 11/17/2015 | 31 |
| 4.7 | Create unit tests | 8h | 11/11/2015 | 11/17/2015 | 32FF,33FF,35FF |
| **5** | **Sprint 4** | **2d** | **11/18/2015** | **12/08/2015** | **30** |
| 5.1 | Load Test Data | 8h | 11/18/2015 | 12/01/2015 | |
| 5.2 | Bug fixes and tweaks | 2d | 11/18/2015 | 12/08/2015 | |
| **6** | **Sprint 5** | **1d** | **12/09/2015** | **01/08/2016** | **38** |
| **6.1** | **Test Application** | **1d** | **12/09/2015** | **01/08/2016** | |
| 6.1.1 | Ensure all Unit Tests pass | 4h | 12/09/2015 | 01/05/2016 | |
| 6.1.2 | Develop new Unit Tests as needed | 4h | 01/06/2016 | 01/08/2016 | 43 |
| **7** | **Sprint 6** | **0.75d** | **01/09/2016** | **01/13/2016** | **41** |
| 7.1 | Create homeowner login page | 4h | 01/09/2016 | 01/12/2016 | |
| 7.2 | Create homeowner login logic | 4h | 01/09/2016 | 01/12/2016 | |
| 7.3 | Style login page | 2h | 01/09/2016 | 01/09/2016 | |
| 7.4 | Create unit tests | 6h | 01/09/2016 | 01/13/2016 | 46FF,48FF |
| **8** | **Sprint 7** | **0.75d** | **01/15/2016** | **01/19/2016** | **45** |
| 8.1 | Create page to upload homeowner photos | 6h | 01/15/2016 | 01/19/2016 | |
| 8.2 | Create page to vet and upload floor plans | 6h | 01/15/2016 | 01/19/2016 | |
| 8.3 | Create unit tests | 4h | 01/16/2016 | 01/19/2016 | 51FF,52FF |
| **9** | **Sprint 8** | **1d** | **01/20/2016** | **01/26/2016** | **50** |
| 9.1 | Ability to modify existing meta data | 8h | 01/20/2016 | 01/26/2016 | |
| 9.2 | Ability to add new meta data | 5h | 01/20/2016 | 01/23/2016 | |
| 9.3 | Create unit tests | 3h | 01/23/2016 | 01/26/2016 | 55FF,56FF |
| **10** | **Sprint 9** | **2d** | **01/27/2016** | **02/09/2016** | **54** |
| 10.1 | Final bug fixes and user testing | 2d | 01/27/2016 | 02/09/2016 | |
| **11** | **Sprint 10** | **2d** | **02/10/2016** | **02/23/2016** | **58** |
| 11.1 | Create privacy policy | 2d | 02/10/2016 | 02/23/2016 | |

*Figure 5 - Work Breakdown Structure*

## Security

To allow for full coverage of any security concerns, we have generated an Acceptable Use Policy that applies to all Homeowners, Firefighters, and Sparky Employees. The Acceptable Use Policy can be viewed in the Appendix.
We have also generated a Terms and Conditions of Use. The Terms and Conditions of Use can also be viewed in the Appendix.

## Conclusion

In conclusion, the Sparky team feels that the Sparky application can be utilized by Firefighters to help save lives and protect property. Being able to create a better Action Plan while in route to an emergency will give firefighters the ability to get right to work when arriving on the scene of an emergency. Brandon and Evan look forward to continuing development in hopes that this application will become widely used to save lives and property around the nation.

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# Appendix

## Appendix 1.1

### Abbreviations

OIC – Officer in Charge

IDE – Integrated Development Environment

UC – University of Cincinnati

## Appendix 1.2

### Acceptable Use Guidelines

### 1.1 Audience

The material in this section is primarily intended for use by Sparky Homeowners, Sparky Firefighters, and Sparky Administrators. Affiliates and business partners who have been granted access to information or information resources, including but not limited to full and part-time employees, contractors, business associates, volunteer workers, temporary workers, those employed by third parties, and those granted access to Sparky database information are affected by these guidelines.

### 1.2 Purpose

Digital information resources are strategic assets of Sparky and should be treated and managed as valuable resources. They provide various information resources to employees, contractors, business associates, volunteer workers, temporary workers and customers for the sole purpose of assisting them in the performance of their job-related duties. It is imperative that these resources be used solely for appropriate business-related purposes. The Acceptable Use Guidelines describe parameters for appropriate use of the organization's assets, and in conjunction with corresponding procedures, is established to achieve the following:

- Establish the appropriate and acceptable practices regarding the use of information resources.
- Ensure compliance with applicable laws and regulations that affect the management of information resources.
- Educate individuals who may use information resources and associated computer resources in the course of their business dealings.

### 1.3 Ownership

The ownership of all information created, collected, integrated, assembled, compiled or published by Sparky should be established by Sparky. Sparky should determine access rights and authority for others who use the information assets that they own (create, collect, integrate, assemble or compile).

## 1.4 Guidelines

### 1.4.1 General Use

- Users should be encouraged to report any observed weaknesses in an organization's computer security to the appropriate manager or information security staff. Weaknesses in computer security include unexpected software or system behavior, which may result in unintentional disclosure of information or exposure to security threats.
- Users should report any incidents of possible misuse or violation of this Acceptable Use Guideline by others to the appropriate manager or information security staff.
- Users should not attempt to access any data, documents, email correspondence, and programs contained on any systems for which they do not have authorization.
- Users should not share their account(s), passwords, Personal Identification Numbers (PIN), Security Tokens (i.e. Smartcard), or similar information or devices used for identification and authorization purposes.
- Users should not make unauthorized copies of copyrighted software or copyrighted documents.
- Users should not purposely engage in activity that may: harass, threaten or abuse others or intentionally access, create, store or transmit material that may be deemed to be offensive, indecent or obscene.
- Users should not engage in activity that may degrade the performance of information resources; deprive an authorized user access to the organization's resources; obtain extra resources beyond those allocated; or circumvent computer security measures.
- Users should not download, install or run security programs or utilities that reveal or exploit weaknesses in the security of the computer resource.
- Information Resources should not be used for personal benefit, political activity, unsolicited advertising, unauthorized fund raising, or for the solicitation of performance of any activity that is prohibited by any local, state or federal law.
- Management should include language that supports this Acceptable Use Guideline in all applicable business associate, contractor, trading partner or other third party entity contracts and business agreements in order to protect the organization's critical assets.

### 1.4.2 Incidental Use

As a convenience to the organization's users, incidental use of the organization's computer resources may be permitted. The following restrictions should apply:

- Incidental personal use of electronic mail, Internet access, fax machines, printers, and copiers should be restricted to the organization's approved users only and does not include family members or others not affiliated with the organization.
- Incidental use should not result in direct costs to the organization, cause legal action against, or cause embarrassment to the organization.
- Incidental use should not interfere with the normal performance of an employee or contractor's work duties.
- Storage of personal e-mail messages, voice messages, files and documents within the organization's computer resources should be nominal.

## Appendix 1.3

### Sparky Terms and Conditions of Use

### 1. Terms

By using Sparky, you are agreeing to be bound by these application Terms and Conditions of Use, all applicable laws and regulations, and agree that you are responsible for compliance with any applicable local laws. If you do not agree with any of these terms, you are prohibited from using or accessing this application. The materials contained in this application are protected by applicable copyright and trade mark law.

### 2. Use License

a. This is the grant of a license, not a transfer of title, and under this license you may not:
    i. modify or copy the materials;
    ii. use the materials for any commercial purpose, or for any public display (commercial or non-commercial);
    iii. attempt to decompile or reverse engineer any software contained within Sparky's application
    iv. remove any copyright or other proprietary notations from the materials; or
    v. Transfer the materials to another person or "mirror" the materials on any other server.
b. This license shall automatically terminate if you violate any of these restrictions and may be terminated by Sparky at any time. Upon terminating your viewing of these materials or upon the termination of this license, you must destroy any downloaded materials in your possession whether in electronic or printed format.

### 3. Disclaimer

a. The materials within Sparky's application are provided "as is". Sparky makes no warranties, expressed or implied, and hereby disclaims and negates all other warranties, including without limitation, implied warranties or conditions of merchantability, fitness

for a particular purpose, or non-infringement of intellectual property or other violation of rights. Further, Sparky does not warrant or make any representations concerning the accuracy, likely results, or reliability of the use of the materials on its application or otherwise relating to such materials or on any sites linked to this application.

## 4. Limitations

In no event shall Sparky or its suppliers be liable for any damages (including, without limitation, damages for loss of data or profit, or due to business interruption,) arising out of the use or inability to use the materials on Sparky's application, even if Sparky or a Sparky authorized representative has been notified orally or in writing of the possibility of such damage. Because some jurisdictions do not allow limitations on implied warranties, or limitations of liability for consequential or incidental damages, these limitations may not apply to you.

## 5. Revisions and Errata

The materials appearing on Sparky's application could include technical, typographical, or photographic errors. Sparky does not warrant that any of the materials on its web site are accurate, complete, or current. Sparky may make changes to the materials contained within its application at any time without notice. Sparky does not, however, make any commitment to update the materials.

## 6. Links

Sparky has not reviewed all of the sites linked to its application and is not responsible for the contents of any such linked site. The inclusion of any link does not imply endorsement by Sparky of the site. Use of any such linked web site is at the user's own risk.

## 7. Site Terms of Use Modifications

Sparky may revise these terms of use for its web site at any time without notice. By using this web site you are agreeing to be bound by the then current version of these Terms and Conditions of Use.

## 8. Governing Law

Any claim relating to Sparky's application shall be governed by the laws of the State of Ohio without regard to its conflict of law provisions.

General Terms and Conditions applicable to Use of a Web Site.

## Privacy Policy

Your privacy is very important to us. Accordingly, we have developed this Policy in order for you to understand how we collect, use, communicate and disclose and make use of personal information. The following outlines our privacy policy.

- Before or at the time of collecting personal information, we will identify the purposes for which information is being collected.
- We will collect and use of personal information solely with the objective of fulfilling those purposes specified by us and for other compatible purposes, unless we obtain the consent of the individual concerned or as required by law.
- We will only retain personal information as long as necessary for the fulfillment of those purposes.
- We will collect personal information by lawful and fair means and, where appropriate, with the knowledge or consent of the individual concerned.
- Personal data should be relevant to the purposes for which it is to be used, and, to the extent necessary for those purposes, should be accurate, complete, and up-to-date.
- We will protect personal information by reasonable security safeguards against loss or theft, as well as unauthorized access, disclosure, copying, use or modification.
- We will make readily available to customers information about our policies and practices relating to the management of personal information.

We are committed to conducting our business in accordance with these principles in order to ensure that the confidentiality of personal information is protected and maintained.

## Appendix 1.4

### Experts

| Name | Company |
|---|---|
| Aaron Sapp | Kinetic Vision |
| Timmy Barnitz | Green Twp. Volunteer Fire Department |

# Appendix 1.5

## User Interface and Functionality Testing Reports

| ID | Brief Test Description | Route | Precondition | Flow of Activities/Steps | Expectation Condition/Outcome | Result | Tester Initials | Tested On |
|---|---|---|---|---|---|---|---|---|
| **1.1** | Login validation errors appear | Firefighter Login | | 1. Enter username "fireuser" and leave password field empty<br>2. Press login button | 2. Validation message should appear above form | Pass | EB | 4/10/2016 |
| **1.2** | Firefighter login succeeds on valid account | Firefighter Login | | 1. Enter username "fireuser" and password "password"<br>2. Press login button | 2. Login succeeds and routes to address search page | Pass | EB | 4/10/2016 |
| **1.3** | Firefighter department select page appears when firefighter assigned multiple departments | | Login as firefighter assigned to multiple departments | 1. Enter username "multideptuser" and password "password"<br>2. Press login button | 2. Login succeeds and routes to department select page | Pass | EB | 4/10/2016 |
| **1.4** | Homeowner login succeeds on valid account | Homeowner Login | | 1. Enter username "testuser" and password "password"<br>2. Press login button | 2. Login succeeds and routes to page to edit home information | Pass | BP | 4/10/2016 |
| **1.5** | Firefighter department is set correctly when selected | Department Select | | 1. Select department "dep2"<br>2. Press select department button | 2. Department is selected and routes to address search page | Pass | EB | 4/10/2016 |
| **1.6** | Firefighter must select a department | Department Select | | 1. Press select department button | 1. Validation error appears stating to select a department | Pass | EB | 4/10/2016 |
| **1.7** | Firefighters can only search homes within their area | Address Search | Firefighter selected dep1 as their department | 1. Search for "2600 Clifton Ave"<br>2. Press search button | 1. No typeahead results will appear<br>2. A message will appear re-stating no results are found | Pass | EB | 4/10/2016 |
| **1.8** | Home search typeahead appears whilst typing | Address Search | Firefighter selected dep1 as their department | 1. Search for "2600 cli"<br>2. Continue search for "2600 Clifton Ave"<br>3. Press search button | 1. Typeahead appears showing addresses containing "2600 cli"<br>2. Typeahead results narrow down to a single suggestion<br>3. Page routes to home information page about the selected address | Pass | BP | 4/10/2016 |
| **1.9** | After searching home information page will start on the overview tab | Home Overview | Selected address "2600 Clifton Ave," from search page | | Page lands on overview tab | Pass | BP | 4/10/2016 |
| **1.10** | Home information tabs show the correct tab panes | Home Overview | | 1. Select "Map"<br>2. Select "Overview"<br>3. Select "Contacts"<br>4. Select "Map"<br>5. Select "Contacts"<br>6. Select "Overview" | 1. Map tab pane appears with map loaded<br>2. Home information and floorplan is loaded<br>3. A list of home contacts are show | Pass | BP | 4/10/2016 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 4. Map tab pane appears with map loaded<br>5. A list of home contacts are show<br>6. Home information and floorplan is loaded | | | |
| **1.11** | Google map shows the correct pin placement on map | Home Map | Selected address "2600 Clifton Ave" from search page | | Google map pin appears at the address of UC's campus | Pass | BP | 4/10/2016 |
| **1.12** | Homeowner contact information is displayed | Home Contacts | Selected address "2600 Clifton Ave" from search page | | Homeowner name is "John Doe" with a phone number of: 123-123-1234 | Pass | BP | 4/10/2016 |

## Appendix 1.6

### Brand Image

We have developed a brand image for the Sparky application. The icon and logos can be seen below.