

# Product Requirements Document

## Project: Easyplan

### Team Mapfolio:

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### Revision History

1/22/15 - Initial Draft

2/24/15 - Draft 2

### Introduction

Landlords and tenants expect rental process to be a convenient online experience. While much of rental process has been moved online, the process of efficiently creating and effectively presenting a visual of a rental unit has not yet been perfected. Tenants do not want to waste their time trying to figure out a complex floor plan with no indication of what the property actually looks like. Landlords want a more modern way to present their property information to potential tenants.

Using the gyroscope and accelerometer in a mobile device, this mobile application will allow landlords to generate a floor plan that can be stored in the cloud. When using the application, landlords will be able to input features of a room such as doors, windows, and major appliances. Landlords can also enhance their floor plan by associating actual photos of the room with points on the floor plan. Tenants can interact with floor plans that a landlord has generated and made available online. The application will also provide a backend that will allow the landlords to store this data online. From this backend, they can export the data, share it with tenants, or edit it to suit future changes.

### Glossary of Terms

Application: Our product, that can be used through the Internet, to create, view, and do related tasks with floor plans.

Landlords: Users who use the application to create a floor plan.

Tenants: Users who will interact with a completed floor plan.

Floor plan: In our application, a floor plan is a representation of a real property or structure and is made up of data that is collected by the application.

## **System architecture overview**

We will be using Javascript running in a mobile browser to access the phone's accelerometer, gyroscope, and camera, in order to create a floor plan and add features of the room to the map. Ruby on Rails will be used to serve up the Javascript content and store the data in a database.

When the landlord creates the floor plan, they will be using a Javascript library called "full tilt" to utilize the phone's sensors. The values from full tilt will be put through some equations to create (x,y) points on a cartesian grid.

To show the completed floor plans, we are using fabric.js which based on HTML canvas. Javascript will pull the points from the active record database and find intersections between the lines the points lie on. These intersections are connected with lines and drawn to show the final room.

We are using Microsoft Azure to serve up our master branch on GitHub. The link is "mapfolio.cloudapp.net".

## **Requirements**

User stories:

1. As a landlord, I can start the measurement, in order to test the distance between two points.

Acceptance test: The landlord is able to successfully move the application from an idle state to a state in which is actively collects data.

Points estimate: 4

2. As a landlord, I can stop the measurement, in order to test the distance between two points.

Acceptance test: The landlord is able to successfully move the system from a state in which it is actively collecting data, to an idle state, and all the data tracked is retained.

Points estimate: 4

3. As a landlord, I can read the distance, in order to test the distance between two points.  
Acceptance test: The device is able to accurately measure distance between two points.

Points estimate: 8

4. As a landlord, I can take a picture, in order to show off how great an apartment is.  
Acceptance test: The landlord is able to use the application to take a picture with a phone's camera.

Points estimate: 4

5. As a landlord, when I take a picture the position and orientation are preserved, in order to make the photos more clear to tenants.  
Acceptance test: The application is able to determine the position and orientation of the device when taking a picture and save it along with the image.

Points estimate: 4

6. As a tenant, when I look at a floor plan, I can see where each photo was taken, in order to more clearly understand the floor plan.  
Acceptance test: Each photo is labeled on the floor plan in such a way that the position and orientation of the device at the time the photo was taken are accurately represented.

Points estimate: 4

7. As a landlord, I can view a floor plan I have created, in order to check my work.  
Acceptance test: The application can store that data collected and show it to the landlord so that they may verify the details.

Points estimate: 8

8. As a landlord, I can indicate the features in the apartment in some manner, in order to add detail to the floor plan.  
Acceptance test: The user is able to mark the features of the room as he/she is creating the floor plan, and the features of the room are accurately represented in the finalized floor plan image.

Points estimate: 4

9. As a landlord I can click a button to access instructions on how to optimize the measuring process.

Acceptance test: When the the landlord taps a button on the application they are prompted with a guide for how to properly use the application the best way to optimise accuracy and overall output.

Points estimate: 2

10. As a landlord I can specify a location or address for each floor plan I create.

Acceptance test: Verify that the location or address for a particular floor plan is correct.

Points estimate: 1

11. As a landlord I can specify the type of room for each floor plan that I create.

Acceptance Test: After creating a floor plan of a room, the landlord can label the floor plan with the type of room it is. Verify that this label is displayed for the landlord.

Points estimate: 1

12. As a user, I can use the app on Android, iPhone, and Windows phones.

Acceptance test: Test the app on Android, iPhone and Windows phones.

Points estimate: 2

13. As a landlord, I can look at all of the floor plans I have made, and I can pick one of them to view or edit.

Acceptance test: in a certain mode of the application, all of the landlord's floor plans will be listed.

Points estimate: 2

14. As a landlord, I can alter a floor plan after I have made it, by changing the lengths of walls and the angles of the intersections.

Acceptance test: The floor plans are presented in a dynamic form and when the user is viewing them, s/he can also edit the wall lengths and angles.

Points estimate: 8

15. As a landlord, I can alter a floor plan after I have made it, by moving the elements in a room and adding or deleting new ones.

Acceptance test: The floor plans are presented in a dynamic form and when the user is viewing them, s/he can also edit room elements.

Points estimate: 4

16. As a landlord, I can alter a floor plan after I have made it, by changing any metadata I see fit.

Acceptance test: The floor plans are presented in a dynamic form and when the user is viewing them, s/he can change data like the address, name, owner, and any other metadata they feel needs to be updated.

Points estimate: 1

17. As a landlord, I can export a floor plan as a JPEG image.

Acceptance test: After measuring and viewing the floor plan the user can export the floorplan as a JPEG image. Verify that the image can be viewed with Apple IPhoto and Windows Picture viewer.

Points estimate: 2

18. As a landlord, I can export a floor plan as a vector based image.

Acceptance test: After measuring and viewing the floor plan the user can export the floorpan as a vector based image. Verify that the image quality does not suffer as the the image is resized.

Points estimate: 2

19. As a landlord I can easily link/display my floor plans on my own rental site so that potential tenants can see them.

Acceptance test: Verify that a landlord can post a link to the floor plan image on a web-page. Then verify that the link displays the floor plan that was linked.

Points estimate: 2

20. As a landlord I can combine multiple single room floor plans I have made, and display them as a complete, larger floor plan.

Acceptance test: make floor plans of each room in a larger apartment, then have them be represented and saved as a single floor plan image.

Points estimate: 8

21. As a landlord, I can delete photos that I have added to the floor plan in order to accommodate my preferences and remove inaccurate information.

Acceptance test: After a photo has been added to the floor plan, the landlord is able to remove it.

Points estimate: 1

22. As a landlord I can update the photos that are marked on a floor plan in order to keep my floor plan up to date.

Acceptance test: After a photo has been added to the floor plan, the landlord is able to take a new photo and replace the old one.

Points estimate: 2

23. As a landlord, I can create my own account that stores my floor plans.

Acceptance test: Verify that a landlord can create his/her account.

Points estimate: 4

24. As a landlord, I can choose a password to protect my account.

Acceptance test: When a user creates an account, they must specify a password that is required to access that particular account.

Points estimate: 1

25. As a landlord, I can change certain account settings, such as my password.

Acceptance test: When a user is signed in, they can view and submit changes to certain account settings (such as a password).

Points estimate: 1

26. As a landlord, I can limit access to only specified tenants for each floor plan.

Acceptance test: Verify that a landlord can create a list of tenants that can access a floor plan. Verify that only the tenants on that list can access the specified floor plan.

Points estimate: 4

27. As a landlord, I can limit access to only specified tenants for a group of floor plans.

Acceptance test: Verify that a landlord can create a list of tenants that can access a specified group of floor plans. Verify that only the tenants on that list can access the group of floor plans. Verify that each floor plan in the groups is accessible to the tenants on the list.

Points estimate: 4

28. As a landlord, I can include and display arced or rounded walls in my floor plan.

Acceptance test: Verify that the application can accurately measure and display arced and rounded walls in a floor plan.

Points estimate: 4

29. As a landlord, I can be notified if my password choice is not secure.

Acceptance test: When a user attempts to create or change their account password, they will be notified if their choice was successful if they choose a password that meets the site's security standards or unsuccessful if they choose a password that

does not.

Points estimate: 1

30. As a landlord I can sort the floor plans that I have created by the date that they were created.

Acceptance test: Verify that a landlord can sort the floor plans in his account by the date they were created. Verify that the sort order is correct.

Points estimate: 1

31. As a landlord I can sort the floor plans that I have created by the city in which they were created.

Acceptance test: Verify that a landlord can sort the floor plans by the city they were created in. Verify that the sort order is correct.

Points estimate: 1

### **Prototyping code and test cases (Github URL)**

<https://github.com/cscheung/CAPSTONE> (initial used for testing)

<https://github.com/cscheung/Mapfolio> (the one we plan to be using from 1/29/15 on)

### **Appendix A: Technologies employed**

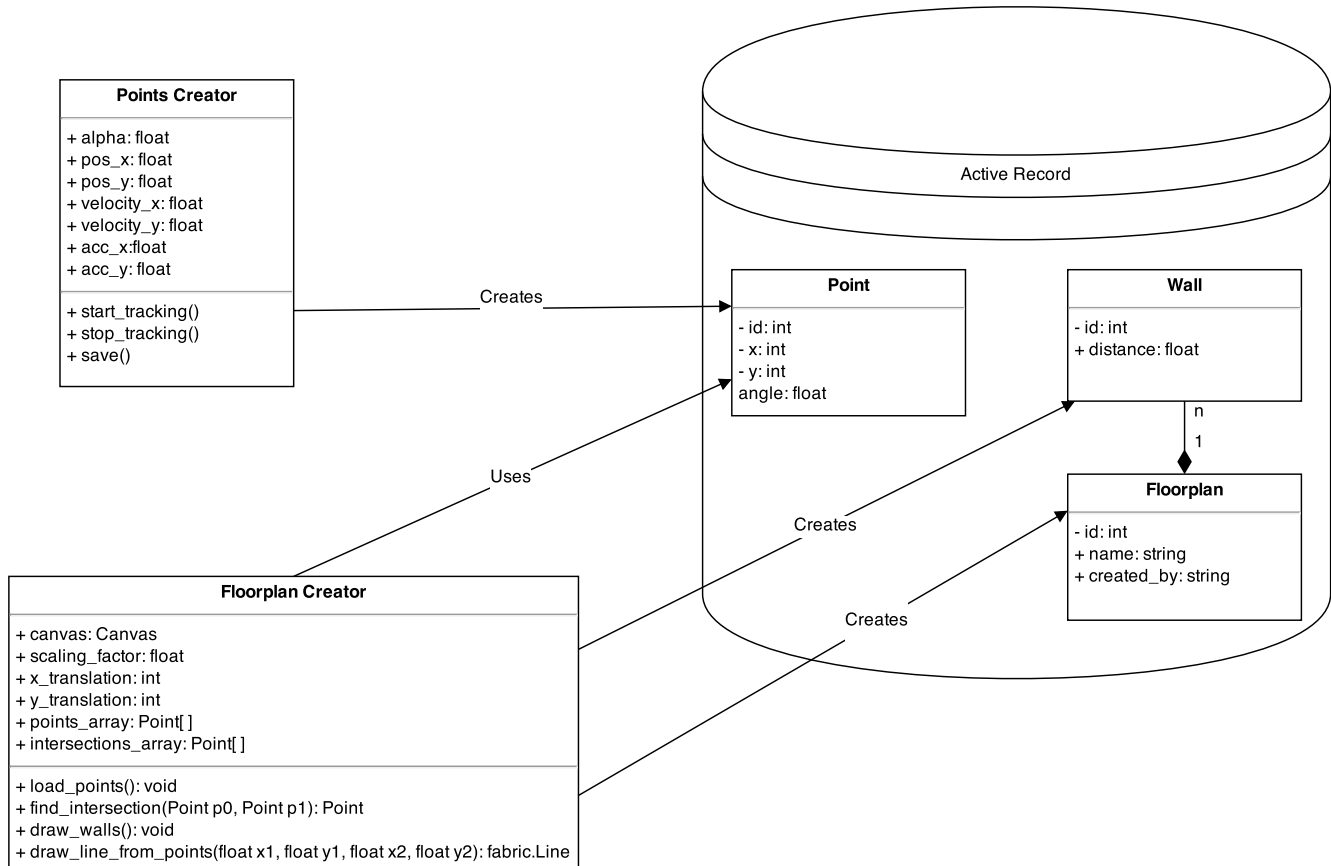
Front end:

- Javascript/CoffeeScript
- CSS
- HTML 5

Backend:

- Ruby on rails
- Microsoft Azure (Infrastructure as a Service)
- SQL Databasing implemented with Active Record

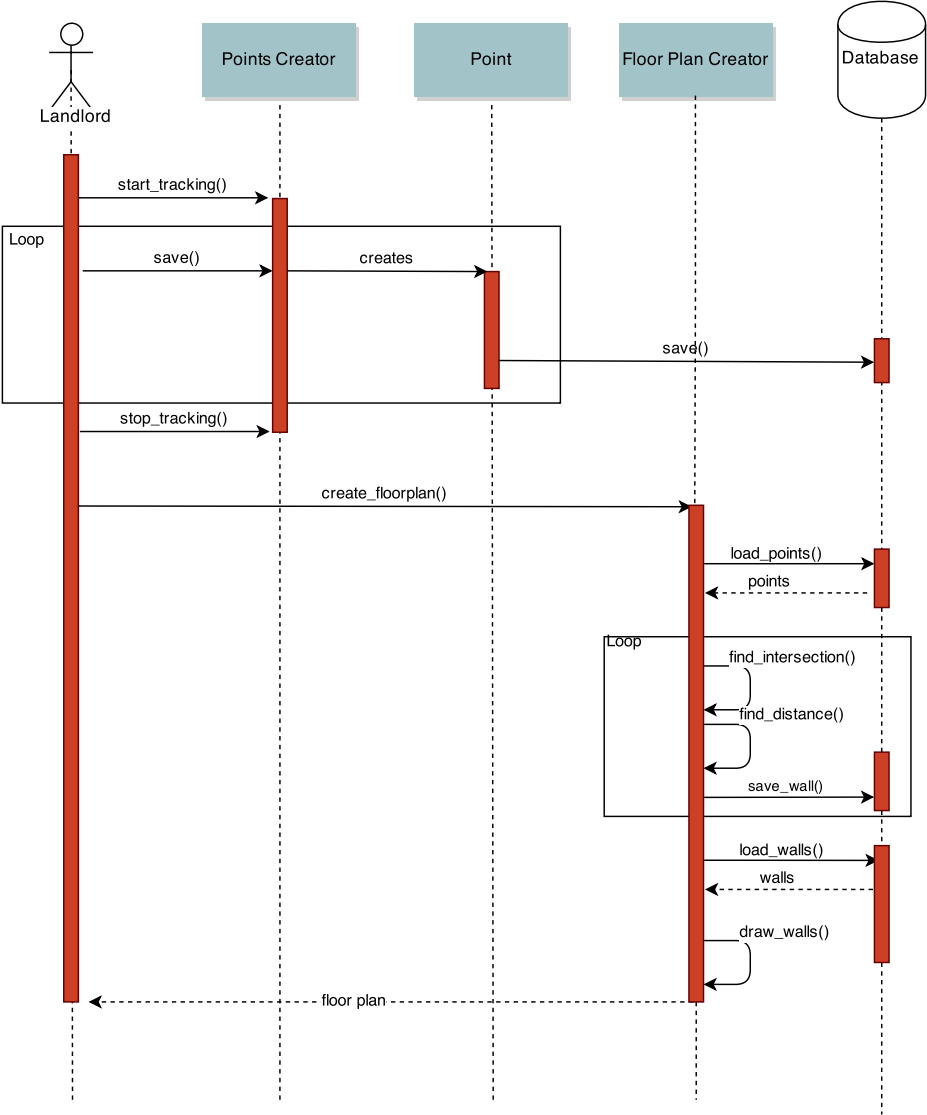
# Mapfolio UML Class Diagram





# Mapfolio Sequence Diagram

Generate Floor Plan



# Mapfolio Data Flow Diagram

