Microsoft Spot Market 2 | 18/11/16

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Introduction

Over the past two weeks a lot of progress has been made regardless of some issues. We made small modifications and added new content like previous reports into the website. Also, we managed to get together to brainstorm and consolidated the ideas for the application's functions with testings that could go with them. Exploring Visual Studio Tools for Applications (VSTA) was another focus of ours during the bi-week.

Progress

First of all, we thought the project's website would be better with a slight improvement on the looks. We modified the website a little so that it would be more user-friendly and beautifully-designed. The change also included an addition of the new information like the latest report and some project-related findings compiled over the course of the period.

Secondly, we all got to spend some time playing around with VSTA the platform which most of the project would be based upon. None of us had ever used it before so some studying and experimenting were required. In addition to navigating around, we went through some highly useful documents on how to get better at using the platform sent by the client to gain a better understanding of VSTA.

Lastly, one meeting was dedicated to the design of the application and any necessary experiments to be carried out. In this meeting, we managed to come up with ideas of how we could tackle the challenge of the project and methods that could be used to test the ideas which are expected to be implemented in the following weeks.

Conceptual Application

After a series of discussions we had in the past weeks, we reduced all the ideas for our software into two major components.

The first major one we explored was that we could get shop owners to upload the floor plans of their shops as an initial step. Having done this, shop owners would then get to customise their own stores by using the application to split the stores into different zones where each zone

would be assigned its own beacon which would be used to represent the current location of a user relative to his/her item of interest. Although implementing this could be simple enough for shop owners, it could lead to a number of issues like working out optimal positions when the user is at the border between 2 zones. This led us to explore the second way we could be using as an approach to this.

The second method uses triangulation, involving multiple beacons placed at a certain distance. the app would calculate the user's position only relating to the closest 3 beacons' positions. As an advantage over the first method, the position of the user would be approximated on the map (with a specific error), instead of only telling the user the number of the zone he is located in. The major drawback is that the beacons have to be placed pretty precise.

In order to prevent any complications that might come with beacons we thought that instead of using one beacon per zone, shop owners could customise their shops' maps (uploading a map then splitting it into different zones) and hang physical zone signs from a ceiling to indicate a zone number of a particular area in a store through a method called triangulation which would require 3 beacons per zone. When a user arrives at the store he/she would then be guided and provided with the whereabout of the item of interest in terms of zone numbers via. However physical objects like zone signs would be necessary in this method.

All the three methods have their pros and cons that we will need to carefully consider. So our plan is to propose these two ideas to the clients in our upcoming meeting first before taking any further actions.

Conceptual Experimentation

Following ideas of the software we brainstormed on experimentations that could be carried out in order to test out the ideas as follows.

> **Phase 1:** Integrating a beacon with the Engine (one of the codes from last year) to find out more about the compatibility of these two and how beacons could be coded in this project.
> **Phase 2:** After building a platform to upload floor plans of stores, we will be inputting real data to test the system.

These do not cover all the aspects of every tests we will be carrying out due to some of the issues we had been having during the past weeks.

Problems

The only major problem we countered was that the code given to us from last year did not compile and the reasons had not been worked out yet. This was the code our project would be built upon, so it was such a challenge for us to even start designs on functionality of the application as well as the testings that would go with it since we had no access to any of its

APIs. This really affected our vision of the project since we were unable to come up with the designs that would accurately represent the final version of the software resulting in a delay for the project. Our assigned TA is currently looking into the issue and hopes to get it all fixed by the next couple of days.

Evaluation

Overall we worked well as a team. We managed to reach the target number of meetings we previously set to have during the bi-week while exploring different aspects to the project. Nevertheless, the team's progress was limited by the fact that we were unable to compile last year's code in order to see the bigger picture of the project. We are expecting to progress through at a faster pace in the coming weeks after the issue with the code has been resolved.

In the next two weeks

The coming weeks are going to be a lot about experimenting. We will be obtaining a beacon before starting to write some codes to the beacon to get a better understanding of the technology. We will then move on to integrating the beacon with code from last year. This plan is assumed that the all the issues have been resolved.

Individual paragraphs

Cosmin Nicolae Bresug

My contribution this week involved maintaining the website furtherly. We decided that another design would suit the webpage better so I am currently working on another version which I will change in the near future. Since we discussed the experiments this week as well, I created a page for them on the website and updated the progress.

Tudor Nica

Over the past 2 weeks, I continued my research on indoor positioning using Bluetooth beacons and I came out with the second idea presented in the **Conceptual Application** section. I also made some sketches of the basic functionality of the app and presented them to the rest of the team. Moreover, I started to read the documentation of the engine provided by our client, in order to think about how we can use it as a basis of our app.

Phoom (Thomas) Yenbamroong

Although not much had happened during the bi-week due to the issue with the code, I still decided to set up meetings with all team members to explore more on the project like the

method that we could implement with the map. The report writing was my responsibility and I inputted in the concepts of the application included in this report as well.