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# CyBeacon

*iBeacon Android Application*

## PROJECT PLAN



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# 1 Introduction

## 1.1 PROJECT STATEMENT

Our project is based on iBeacon, which is a mobile Bluetooth device developed by Apple in 2013. We will utilize this device and create a new Android App which will have the primary functions of silencing phones and sending information about a class such as announcements, lecture slides or homework with the potential for more functionality to be added in the future.

## 1.2 PURPOSE

This project aims to give students a better lecture environment by automatically silencing their phone once they entering the classroom, and that day's class materials will be displayed on their mobile device. It will be quite convenient not just for education purpose, but could also be used for commercial presentations, business meetings and so on.

## 1.3 GOALS

The goal of this project is to complete:

- Automatically silence phones when students enter a classroom.
- Automatically display information about a class on a mobile device within a classroom.
- Potentially add more functionality.

All goals are to be completed on time, under budget, and with priorities of safety.

# 2 Deliverables

In order to meet the goals outlined in the introduction, our project will give:

- A complete working App on android device.
- An associated iBeacon device.
- Testing report.
- Budget report.

## 3 Design

### 3.1 PREVIOUS WORK/LITERATURE

iBeacon is a new emerging technology that is just starting to be used commercially and is also being used in a wide variety of applications.

#### Launch Here App

iBeacon was used by the app “Launch Here” for use around a house. iBeacons are placed around the house and when the device approaches it, the Launch Here app opens a relevant app such as a TV remote, Alarm Clock, Grocery list etc.

Source: Mallik, Neha. 2016

### 3.2 PROPOSED SYSTEM BLOCK DIAGRAM

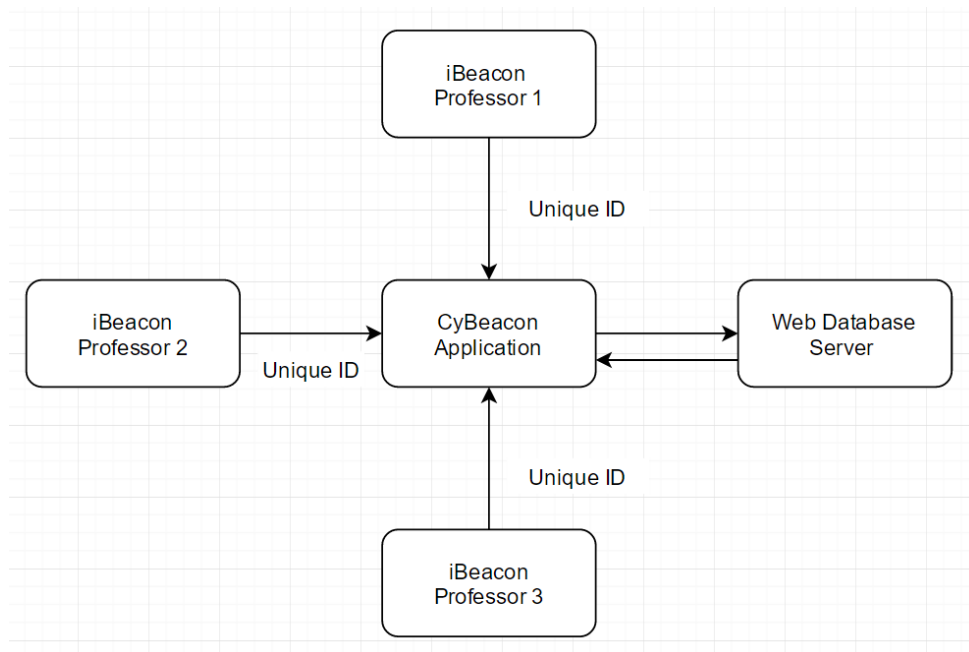


Figure <sup>1</sup>

### 3.3 ASSESSMENT OF PROPOSED METHODS

For this project, each member will be tasked with specific parts to program and research. For everyone to work on the same program, GitHub will be used so that multiple members can work on different parts of the same program. This will also allow us to collaborate in android studio produce a finished mobile application.

### 3.4 VALIDATION

This project will be validated and tested by downloading the application to a mobile device and verifying its functionality. If the phone silences and also brings up useable data from the specified class, while within range of the programmed iBeacon; then the project will be confirmed and completed.

## 4 Project Requirements/Specifications

### 4.1 FUNCTIONAL

The application will be able to detect an iBeacon when it is in the same area, such as a classroom. It will then query information from a database related to that specific iBeacon device. This information could include announcements, homework, lecture material and commands, such as silencing the phone. The professors are able to upload information that students can access via the application. This flexible design allows will allow use to easily incorporate additional functionality in the future.

### 4.2 NON-FUNCTIONAL

As a student or a professor enters a classroom in which an iBeacon is set, their cell phones or tablets with the app installed shall be silenced immediately. The course related information including announcement, course slides, and homework will also pop up on those devices. We will add more functions if we can finish those basic functions ahead of schedule.

## 5 Challenges

The most significant challenge for this project is that some members in our group have little experience Java programming and in UI design for Android app. Therefore, it will take a while for every group member to do some research and get familiar with those corresponding knowledge.

There are some technical challenges as well. Firstly, the detecting range of the iBeacon is not easy to control. We need to make sure every student in the classroom will receive the information, and we also need to avoid sending information to students in other classrooms. The second technical challenge is that the durability of iBeacon is uncertain. We are not sure if intensity of the signal transferred from an iBeacon is enough to cover the whole classroom is another technical challenge.

## 6 Timeline

### 6.1 FIRST SEMESTER

During the first semester, we will getting all members of our team familiar with android studio and start working on UI design of the application.

Our goal is to successfully communicate with an iBeacon device using our android application.

### 6.2 SECOND SEMESTER

During the second semester we will work on the functionality of the Cybeacon system. We will also test the functionality of our system including the physical range of the iBeacon devices. The full functionality will be completely specified and implemented as well.

Title:	iBeacon
Time	Event
24/10/2016	Get start
<b>31/10/2016</b>	<b>Learning iBeacon</b>
7/11/2016	Do deep research on iBeacon
<b>14/11/2016</b>	<b>Play with android studio</b>
21/11/2016	Learning UI design
<b>28/11/2016</b>	<b>Make final changes to UI</b>
5/12/2016	Connect android to iBeacon
<b>12/12/2016</b>	<b>Finish data transmission</b>
19/12/2016	First semester report
<b>9/1/2017</b>	<b>Test for transmission</b>
16/1/2017	Test iBeacon distance
<b>23/1/2017</b>	<b>Finish all sensitivity test</b>
30/1/2017	Working on first function:silence phone
<b>6/2/2017</b>	<b>Keep working first function</b>
13/2/2017	Test for first function
<b>20/2/2017</b>	<b>Start second function: announcement</b>
27/2/2017	Keep working second function
<b>6/3/2017</b>	<b>Test and debug for functions</b>

Figure <sup>2</sup>

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Figure <sup>2</sup>

Project Distribution Plan	
Database Server	Chenliang Xu
UI design	Ming Wu
iBeacon Communication	Sam Jones
Functions: -Silence phone -Announcement	Xin Ying Loh Xiayang Sun Lyle Bishop



## 7 Conclusions

An Android App will be developed to work with the iBeacon technology in functions beneficial to a particular environment, in our case, a classroom. The app will enable phones within the specific area to be silenced and retrieve information of the class such as announcement, lecture slides and homework which enhances the educational experience.

## 8 References

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Getting Started with iBeacon: <https://developer.apple.com/ibeacon/Getting-Started-with-iBeacon.pdf>