

## **CMPUT 401: Requirements Document and Plan**

### **Project: Scout**

**Due: Jan. 23, 2015**

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### **Project Overview:**

The objective of this project is to test the effectiveness of a new technology in gathering customer data. The main user base will be business owners that wish to track information about their own customers. This new technology is tentatively Bluetooth wireless technology. Data that is collected may include the number of customers that enter a business owner's building, the amount of time that a customer was in the building for, and the frequency of which a customer visits the building. Ideally, the developed system will include an app, which resides on the customer's phone, Bluetooth sensors that communicate with the app, and a web service for which the app can relay this information. The envisioned system will work as follows:

1. One or more Bluetooth sensors will be placed within area of interests within a business owner's business location. For example, in a grocery store, two Bluetooth sensors can be placed in the produce aisle and the snacks aisle.
2. A customer will enter one of the business locations, and when the customer's phone is within proximity of a Bluetooth sensor, the Bluetooth sensor will relay its ID to the customer's phone.
3. Our app on the customer's phone will then query this information to our database using the web service.
4. The business owner (i.e. our customer) will then be able to view the information about their customers on the web server's dashboard. For example, they can identify how long a customer was in the produce aisle.

### **Planning:**

Release Plan:

Story ID	User Story	Priority	Story Points	Sprint
<i>alpha v1.00</i>				
1	As a customer, I'd like to interact with the business with a smartphone application	High	8	1
2	As a customer, I'd like to register for the service using my smartphone application	Medium	3	1

3	As a customer, I'd like to get a promotion for my first visit	Medium	2	3
4	As a customer. I'd like to be able to view and redeem my accumulated points for rewards on my smartphone	Medium	5	3
5	As a business owner, I'd like to reward a customer with a set number of points for once a day for staying a period of time at my business	Low	3	4
6	As a business owner, I'd like to have the option to allow customers to gain additional points for staying longer at my store	Low	3	4
7	As a business owner, I'd like to be able to install or utilize existing hardware to detect a customer smartphone	High	13	1
8	As a business owner, I'd like to track whether a customer is inside my store with their smartphone	High	13	2
9	As a business owner, I'd like to keep track of customers visiting my business and track it in a database	High	5	3
10	As a business owner, I'd like to use an online dashboard that can interact with customer data stored within a database	High	13	2
11	As a business owner, I'd like to add to a list of available rewards for my business for redemption for a number of points	Medium	3	3
12	As a business owner, I'd like to use an online dashboard to view the number of new customers at my store	Medium	2	4
13	As a business owner, I'd like to use an online dashboard to view the number of points awarded to customers in a week	Medium	2	4
14	As a business owner, I'd like to use an online dashboard to view the gender ratio of my customers	Medium	2	4
15	As a business owner, I'd like to keep track of how long customers have stayed in my business	High	8	3

16	As a business owner, I'd like to use an online dashboard to view which customers have visited my business	Medium	2	4
17	As a business owner, I'd like to give customers that has not visited my business in a week a promotion	Medium	2	3
18	As a customer, I want the mobile app to be fast and responsive	Medium	5	4
19	As a business owner, I want the web dashboard to be fast and responsive	Medium	5	4
<i>alpha v1.10</i>				
20	As a business owner, I'd like to be able to track a customer's coordinates throughout their stay in my business	Medium	13	5
21	As a business owner, I'd like to view which locations of my business is the most popular through my web dashboard	Medium	13	5

#### Release Story Map:

Sprint [pts]	Customer Interaction (Story ID)	Customer Analytics (Story ID)
<i>alpha v1.00</i>		
Sprint 1 [24]	1, 2	7
Sprint 2 [26]		8, 10
Sprint 3 [25]	3, 4	9, 11, 15, 17
Sprint 4 [24]	18, 19	5, 6, 12, 13, 14, 16
<i>alpha v1.10</i>		
Sprint 5 [26]		20, 21

#### Project Glossary:

**BLE (Bluetooth Low Energy)** - This is the specification for one type of signal that beacons transmit. There are other types of signals that power beacons (e.g. audio signals) but Bluetooth LE has the advantage that it is low energy and is 'native' to most modern phones and tablets. Utilizes Bluetooth smart technology and aimed at providing a source of longevity

application for healthcare, fitness and marketing groups with low energy consumption while withholding its broadcast range.

**Triangulation** - Precise and/or relative location pinpointing given 3 different sources of emitting signals. The signals usually come as either Bluetooth or Wi-Fi. The location of the device is determined given the signal strength of the different sources emitted around the device. The signal strength is usually measured in dBm (decibel-milliwatts).

**Beacon** - Any device that transmits a signal which allows another device to determine its proximity to the broadcaster. The beacon doesn't transmit *content*, it simply transmits a signal that lets a user's phone or tablet figure out what its proximity to the beacon.


**iBeacon** - Apple trademarked Bluetooth system that interacts with current iOS device via Bluetooth technology. Consists of protocols, devices and uses of Bluetooth LE to interact with iOS devices. Normally, the beacons are simply informing nearby Bluetooth enabled ios devices of its presence and its up to the applications on the phone to handle the available information. However, currently many iBeacon applications have extended their compatibility to android devices.

**Points** - The points system within the application will provide users with incentives to often visit stores. Currently as discussed, the points will be cumulated depending on the customer's frequency on visiting the said merchant. The points can then be spent by the customers with rules given by the business owners.


**Dashboard** - A web user interface that allows the users to define and control how points and rewards are delivered to the customers. As well as it displays the information collected from the customers in a meaningful manner.

## Story Board:


### The App




Places	Points	Profile
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**Company X**  
9001 Points Earned  
Discount widgets.



**Lotto Natto**  
Best natto in Edmonton




**Services Ltd.**  
We give good customer  
service 4 you

Places	Points	Profile
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Name:

Age:

City:

Picture: 

Gender:

Places	Points	Profile
Company X		60 points
7 points	50% off Widget X	
9 points	Free Widget X	
40 points	50% off any Widget	
74 points	Free GigaWidget	
You are currently earning points at:		
Company Y	9001 points	

Free Coffee

For being a great customer

Claim!

## The Dashboard

Moozilla


←

→

↻

🏠

http://moqups.com



Email Address

Password

Login

Signup

Moozilla

←

→

↻

🏠

http://moqups.com

### Dashboard

Campaigns

Analytics

Profile

Add a new campaign:

New Customer

Happy Hour

Streak Reward

Spaced Rewards

Custom...

New Customer:

Free Coffee

Happy Hour:

Double Points

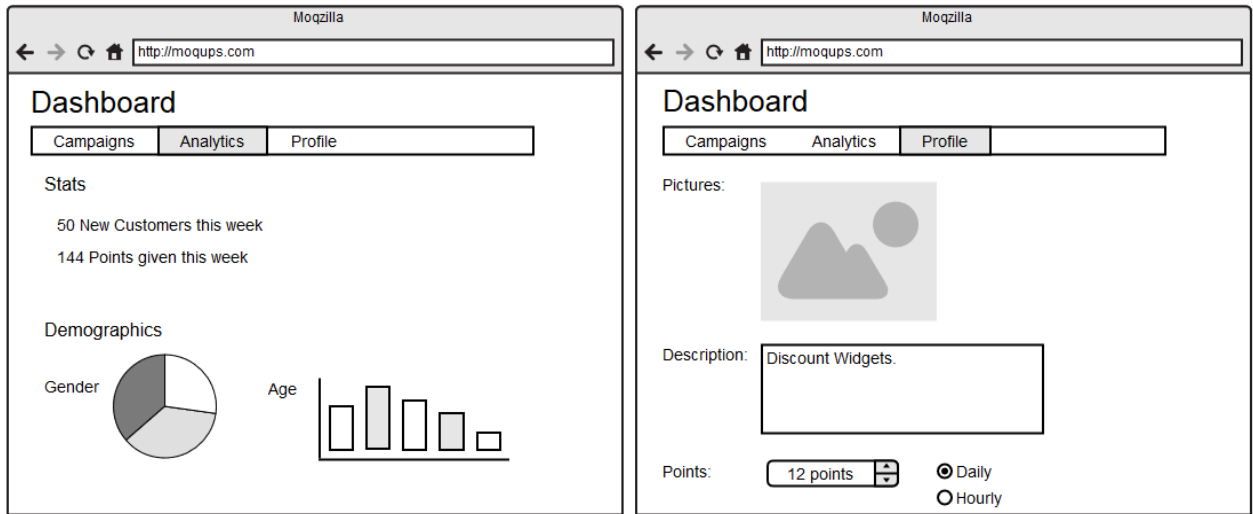
Between

4/22/2012

📅

4/22/2012

📅



## References:

<http://www.aislelabs.com/reports/beacon-guide/>

## Hardware Specifications: (Compiled Table of Most Viable Hardware Solutions:)

Product	Estimate: Beacon or Stickers Dev Kit	Radbeacon	Kontakt.io	Kontakt.io Cloud Beacon	Qualcomm Gimbal: Proximity Beacon Series 21
Website	<a href="http://estimate.com/">http://estimate.com/</a>	<a href="http://store.radiusnetworks.com/collections/all/products/radbeacon-usb-2">http://store.radiusnetworks.com/collections/all/products/radbeacon-usb-2</a>	<a href="http://kontakt.io/our-technology/kontakt-io-beacons-features-list/">http://kontakt.io/our-technology/kontakt-io-beacons-features-list/</a>	<a href="http://kontakt.io/our-technology/introducing-kontakt-io-cloud-beacon/">http://kontakt.io/our-technology/introducing-kontakt-io-cloud-beacon/</a>	<a href="http://www.gimbal.com/">http://www.gimbal.com/</a>
Form Factor:	Sticker or Standalone device	USB Dongle	Stand alone device	Wifi Standalone Device	Standalone device

Cost:	\$99 for a set of 3 beacons	\$21 per beacon	\$27 per beacon	\$79 per beacon	\$30 per beacon
Battery Life:	22.2 months (Non replaceable)	N/A	24.3 months (1 large coin battery)	24 months (4 coin batteries) Can be plugged in to wall	18 months 4 AA alkaline batteries (Replaceable)
Range:	70 meters	30 meters	70 meters	Bluetooth: Up to 70 meters Wi-Fi: Up to 200 meters	50 meters
Compatibility:	iOS & Android	iOS & Android	iOS & Android	iOS & Android	iOS & Android
Extra Notes:	<ul style="list-style-type: none"> <li>• Most well-known and established in beacon technology</li> </ul>			<ul style="list-style-type: none"> <li>• Uses built-in WiFi to reach the Internet</li> </ul>	<ul style="list-style-type: none"> <li>• Enterprise-level backend support for large companies looking for corporate-level solution(s).</li> </ul>
Problems:	<ul style="list-style-type: none"> <li>• <a href="http://beekn.net/2014/02/problem-s-estimote/">http://beekn.net/2014/02/problem-s-estimote/</a></li> <li>• 4+ weeks for delivery</li> </ul>			<ul style="list-style-type: none"> <li>• Uses Kontakt.io proprietary servers</li> </ul>	<ul style="list-style-type: none"> <li>• Pay per-user fee</li> <li>• <a href="https://manager.gimbal.com/fee-schedule">https://manager.gimbal.com/fee-schedule</a></li> </ul>
SDK:	<a href="http://estimote.com/indoor/">http://estimote.com/indoor/</a>	<a href="https://github.com/AltBeacon/android-beacon-library">https://github.com/AltBeacon/android-beacon-library</a>	<a href="http://docs.kontakt.io/">http://docs.kontakt.io/</a>	<a href="http://docs.kontakt.io/">http://docs.kontakt.io/</a>	<a href="https://gimbal.com/doc/android_quickstart.html">https://gimbal.com/doc/android_quickstart.html</a>

<https://docs.google.com/a/ualberta.ca/spreadsheets/d/1V8j8bxt7BNu-hCfx5GgsOEaf7oCA0U9DALL8bfgfEgU/edit#gid=0>

### Beacon Technology Overview:

<http://www.fosbury.co/beacon-comparison>

<http://beekn.net/guide-to-ibeacons/>

<http://www.nodesagency.com/list-9-biggest-beacon-manufacturers/>

### IBeacon Dev Tutorials:

<http://vincenth.net/blog/archive/2014/04/24/building-cross-platform-ibeacon-apps-for-ios-android-and-windows-with-c-and-xamarin.aspx>

<http://thenewstack.io/building-an-ibeacon-app/>

<http://beekn.net/developing-ibeacon-app/>

### Bluetooth Technologies Overview:

[http://www.ti.com/lscds/ti/wireless\\_connectivity/bluetooth\\_bluetooth-ble/overview.page](http://www.ti.com/lscds/ti/wireless_connectivity/bluetooth_bluetooth-ble/overview.page)



Bluetooth Smart (4.0 or newer) device is required, and the Android API 18 (Android 4.3) must be supported.

- Note: Nexus 7 and Nexus 10 (2012) with Android 4.3+ is not delivered with BLE enabled. To work with BLE, the Bluetooth Low Energy Enabler tool is needed.

**Competing/Similar Products:**

<http://app.onepouch.com/features>

<https://www.passbeemedia.com/>

<https://passkit.com/digital-loyalty-cards/>

**Glossary Definitions:**

<http://en.wikipedia.org/wiki/iBeacon>

<https://cseweb.ucsd.edu/classes/fa06/cse237a/finalproj/almula.pdf>

<http://www.bluetooth.com/Pages/low-energy-tech-info.aspx>