CMPUT 401: Requirements Document and Plan V3
Project: Scout
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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 user base will be business owners that wish to collect data on how long and how frequent its customers will visit their business. In addition, our second user base will also consist of the customers that want to participate in a loyalty program set up by business owners. The technology we will tentatively use consists of new 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 and used by a customer. Bluetooth sensors will communicate with the app and a web service for which the app can relay this information by business owners. 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 w hen 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, a business owner can identify how long a customer was in the produce aisle.

Planning:

Release Plan:

Story ID	User Story	Priority	Story Points	Sprint
1	As a customer, I'd like to sign in and interface with a business using a smartphone application	High	5	1
2	As a customer, I'd like to register for the Scout rewards program using my smartphone application	Medium	3	1

4	As a customer. I'd like to be able to view the number of points I have on my smartphone	Medium	3	1
7	As a business owner, I'd like to be able to install BLE sensors to interact with customer smartphones	High	8	1
11	As a business owner, I'd like to be able to add, remove, or edit the list of available rewards for my business	Medium	3	1
12	As a business owner, I'd like to use an online dashboard to view the number of new customers at my store	Medium	3	4
15	As a business owner, I'd like to know how long customers have stayed in my business, and how many points such customers have	High	8	3
18	As a customer, I want the mobile app's screen to screen transition to respond in less than one second	Low	5	5
19	As a business owner, I want the web dashboard screen to screen transition to respond in less than one second	Low	5	5
22	As a business owner, I'd like to be able to know a customer's approximate location within a certain radius of the beacon	High	8	2
23	As a business owner, I'd like to utilize the hardware's ability to trilaterate the user's approximate movement within the store	High	13	2
24	As a customer, I'd like to be rewarded points for visiting a business and on a daily basis.	Medium	3	2
26	As a business owner, I want the app to run in the background to collect data	High	8	2
27	As a business owner, I want the average time a customer was in the store to be visible on my dashboard	Medium	2	4
28	As a business owner, I want to know the number of points I have given customers visible on my dashboard	Medium	2	4

29	As a customer, I would like to be able to sign in to the mobile application	High	2	1
30	As a customer, I want to be able to redeem my points for rewards defined by the business owner via a scannable QR code	Medium	3	3
31	As a business owner, I want to be able to sign in onto an online dashboard	High	5	1
33	As a customer, I want a minimum amount of defects in the mobile app	Low	5	5
34	As a business owner, I want a minimum amount of defects in the web dashboard	Low	5	5
35	As a business owner, I'd like to be able to visually see a heat map of my store on the web dashboard	High	21	3
36	As a business owner, I'd like to be able to see the movement of the customers on my dashboard within the heat map	High	21	4
37	As a customer, I'd like a polished, navigable and interactive smartphone user interface	Low	5	5
38	As a business owner, I'd like a polished, navigable and interactive online dashboard user interface	Low	5	5
39	As a business owner, I want to allow users to accumulate 1 point for every minute they are in my store	Medium	8	2
40	As a business owner, I would like the ability to prevent users from logging into the same account on multiple phones at the same time	Medium	3	2

Release Story Map:

Sprint	Smartphone App	Dashboard	BLE Beacon
1	R1 - As a customer, I'd like to sign in with the business with a smartphone application		
	R2 - As a customer, I'd like to register for the Scout		

	rewards program using my smartphone application		
			R7 - As a business owner, I'd like to be able to install BLE sensors to interact with customer smartphones
		R31 - As a business owner, I want to be able to sign in into an online dashboard	
	R29 - As a customer, I would like to be able to sign in to the mobile application		
		R11 - As a business owner, I'd like to be able to add, remove, or edit the list of available rewards for my business	
	R4 - As a customer. I'd like to be able to view the number of points I have on my smartphone		
2			R22 - As a business owner, I'd like to be able to know a customer's approximate location within a certain radius of the beacon
			R23 - As a business owner, I'd like to utilize the hardware's ability to trilaterate the user's approximate movement within the store
	R26 - As a business owner, I want the app to run in the background to collect the data		

			R38 - As a business owner, I'd like a polished, navigable and interactive online dashboard user interface
	R24 - As a customer, I'd like to be rewarded points for visiting a business and on a daily basis.		
	R40 - As a business owner, I would like the ability to prevent users from logging into the same account on multiple phones at the same time		
	R30 - As a customer, I want to be able to redeem my points for rewards defined by the business owner via a scannable QR code		
		R15 - As a business owner, I'd like to know how long customers have stayed in my business, and how many points such customers have	
		R12 - As a business owner, I'd like to use an online dashboard to view the number of new customers at my store	
3		R35 - As a business owner, I'd like to be able to visually see a heat map of my store on the web dashboard	
4		R36 - As a business owner, I'd like to be able to see the movement of the customers on my	

		dashboard within the heat map	
		R28 - As a business owner, I want to know the number of points I have given customers visible on my dashboard	
		R27 - As a business owner, I want the average time a customer was in the store to be visible on my dashboard	
5		R34 - As a business owner, I want a minimum amount of defects in the web dashboard	
	R33 - As a customer, I want the minimum amount of defects in the mobile app		
	R18 - As a customer, I want the mobile app's screen to screen transition to respond in less than one second		
		R19 - As a business owner, I want the web dashboard screen to screen transition to respond in less than one second	
	R37 - As a customer, I'd like a polished, navigable and interactive smartphone user interface		
		R38 - As a business owner, I'd like a polished, navigable and interactive online dashboard user interface	

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.

Trilateration - 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.

Customer - A person who is consuming or is being provided a service for a cost by a business
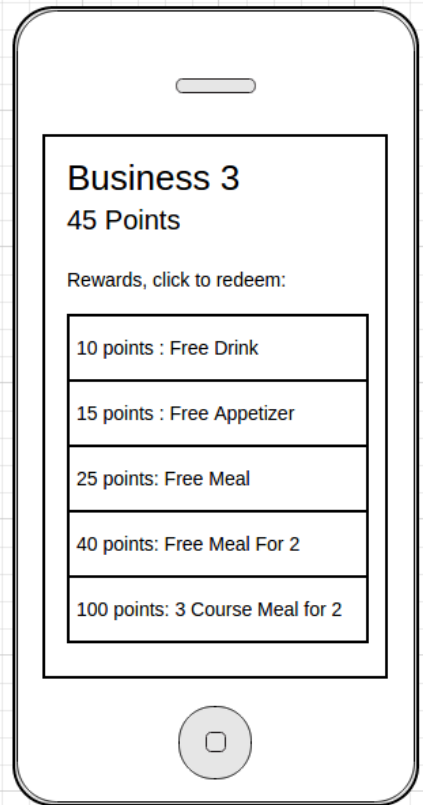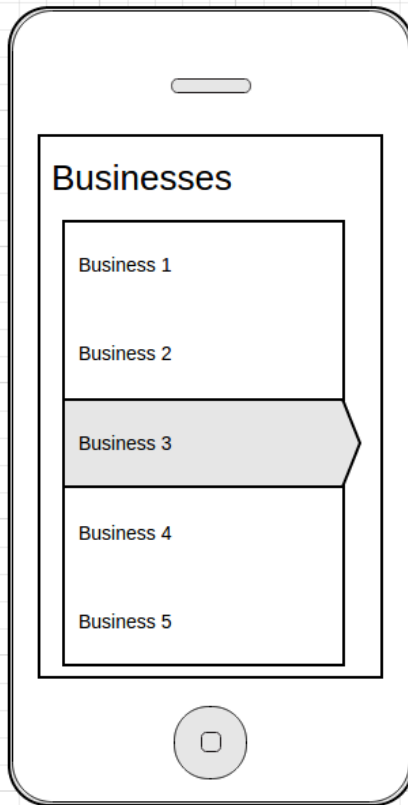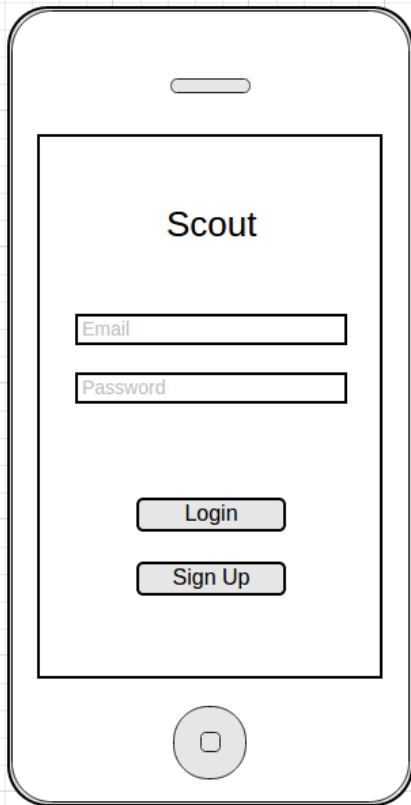
Business Owner - A person who is providing and selling a product or a service for a cost

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

Claim - To exchange points for a reward at a business

Dashboard - A web interface that allows business owners to define and control how points and rewards are delivered to the customers. As well as displaying the information collected from the customers in a meaningful manner.

Story Board:
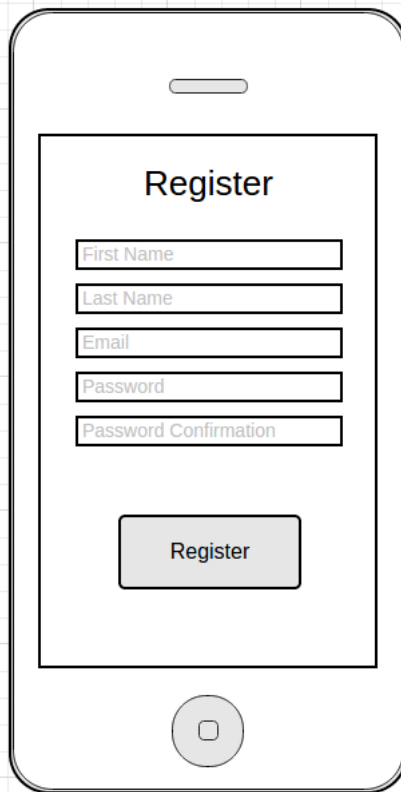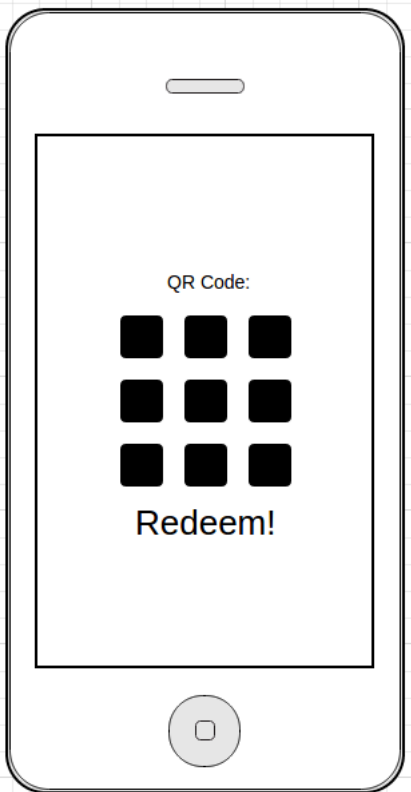
Scout

Email

Password

Login

Sign Up

Businesses

Business 1

Business 2

Business 3

Business 4

Business 5

Business 3
45 Points

Rewards, click to redeem:

10 points : Free Drink

15 points : Free Appetizer

25 points: Free Meal

40 points: Free Meal For 2

100 points: 3 Course Meal for 2

QR Code:

Redeem!

Register

First Name

Last Name

Email

Password

Password Confirmation

Register

The Dashboard

References:

http://www.aislelabs.com/reports/beacon-guide/
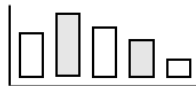
Hardware Specifications: (Compiled Table of Most Viable Hardware Solutions:)

Product	Estimote:	Radbeacon	Kontakt.io	Kontakt.io Cloud Beacon	Qualcomm Gimbal:

	Beacon or Stickers Dev Kit				Proximity Beacon Series 21
Website	http://estimote.com/	http://store.radiusnetworks.com/collections/all/products/radbeacon-usb-2	http://kontakt.io/our-technology/kontakt-io-beacons-features-list/	http://kontakt.io/our-technology/introducing-kontakt-io-cloud-beacon/	http://www.gimbal.com/
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:	• Most well-known and established in beacon technology			• Uses built-in WiFi to reach the Internet	• Enterprise-level backend support for large companies looking for corporate-level solution(s).
Problems:	•http://beekn.net/2014/02/problems-estimote/ • 4+ weeks for delivery			• Uses Kontakt.io propietary servers	• Pay per-user fee •https://manager.gimbal.com/fee-schedule
SDK:	http://estimote.com/indoor/	https://github.com/AltBeacon/android-beacon-library	http://docs.kontakt.io/	http://docs.kontakt.io/	https://gimbal.com/doc/android_quickstart.html

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/lsds/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