BEACON Preliminary Design Document

INTRODUCTION

We are planning to build Beacon as an Android app that allows users to find events near their location in real-time, share events they are hosting with other Beacon users, comment and post photos on the page of an event they went to/are currently attending, and broadcast their events to a wider radius if they are a business account.
This document will cover the high-level architecture and design of our system.

SYSTEM ARCHITECTURE AND RATIONALE

BEACON consists of the following major components:

1. Android application
2. Google Maps API
3. Firebase server

Android Studio (Java)

We are going to be working with Android Studio to write and test all of our code for the app. We have chosen Android Studio because it allows us to easily simulate our application on multiple Android devices. Most of our team has experience using Android Studio, so we can begin our implementation faster.

Google Firebase

We are employing the use of Google's Firebase platform in order to handle multiple aspects and functionalities of our application. These include:

- User Authentication
    - Google
    - Facebook (Later)
- Remote, Real-Time Database, To Store,
    - User Information
    - Event Information
- Storage of Media
    - Photos related to an Event
    - Videos related to an Event
- Targeted Advertisements
    - Provide users with ads which are relevant to their search history

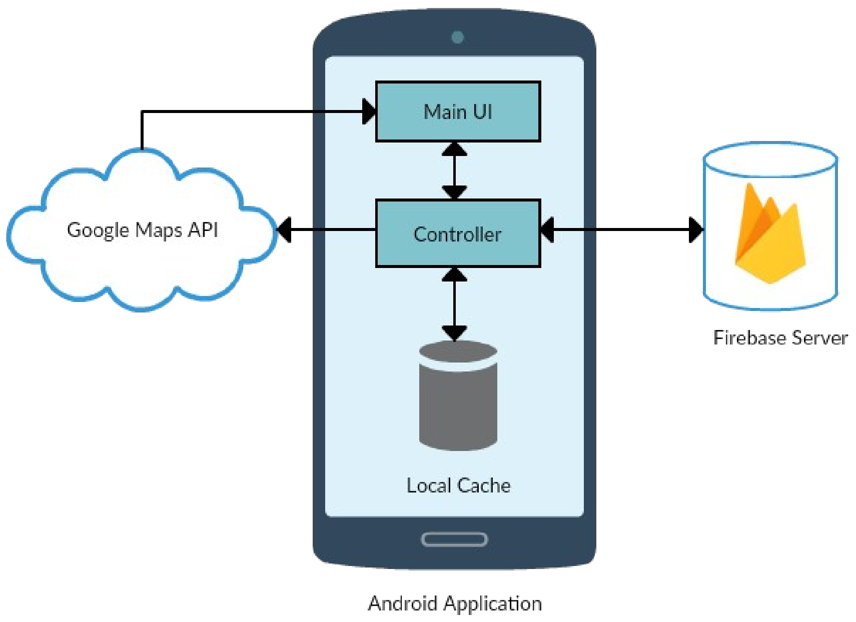
We chose to use Firebase instead of available alternatives because of the platform's simplicity. All of the features listed above are, for the most part, handled by Firebase. This allows us to focus more closely on the user's experience and making the app more useful, as opposed to spending time on the technical server-side aspects of the project.
Furthermore, Firebase offers offline services. This means that if a user is using BEACON while they have no internet connection, the full functionality of the app will not be compromised. Any changes made by the user during their offline usage can be seamlessly merged with the

existing, online data. This capability will increase the robustness of BEACON and improve the overall user experience.

Google Maps

We will be using the Google Maps API for the app’s location-based features. Google Maps is by far the most used and robust map API. Google Maps will allow users to see locations that have been pinned by people hosting events in an intuitive UI. Since many users have already used Google Maps, it will make our application very intuitive for the average user. It will also provide directions to these locations for users who have Google Maps installed on their device.

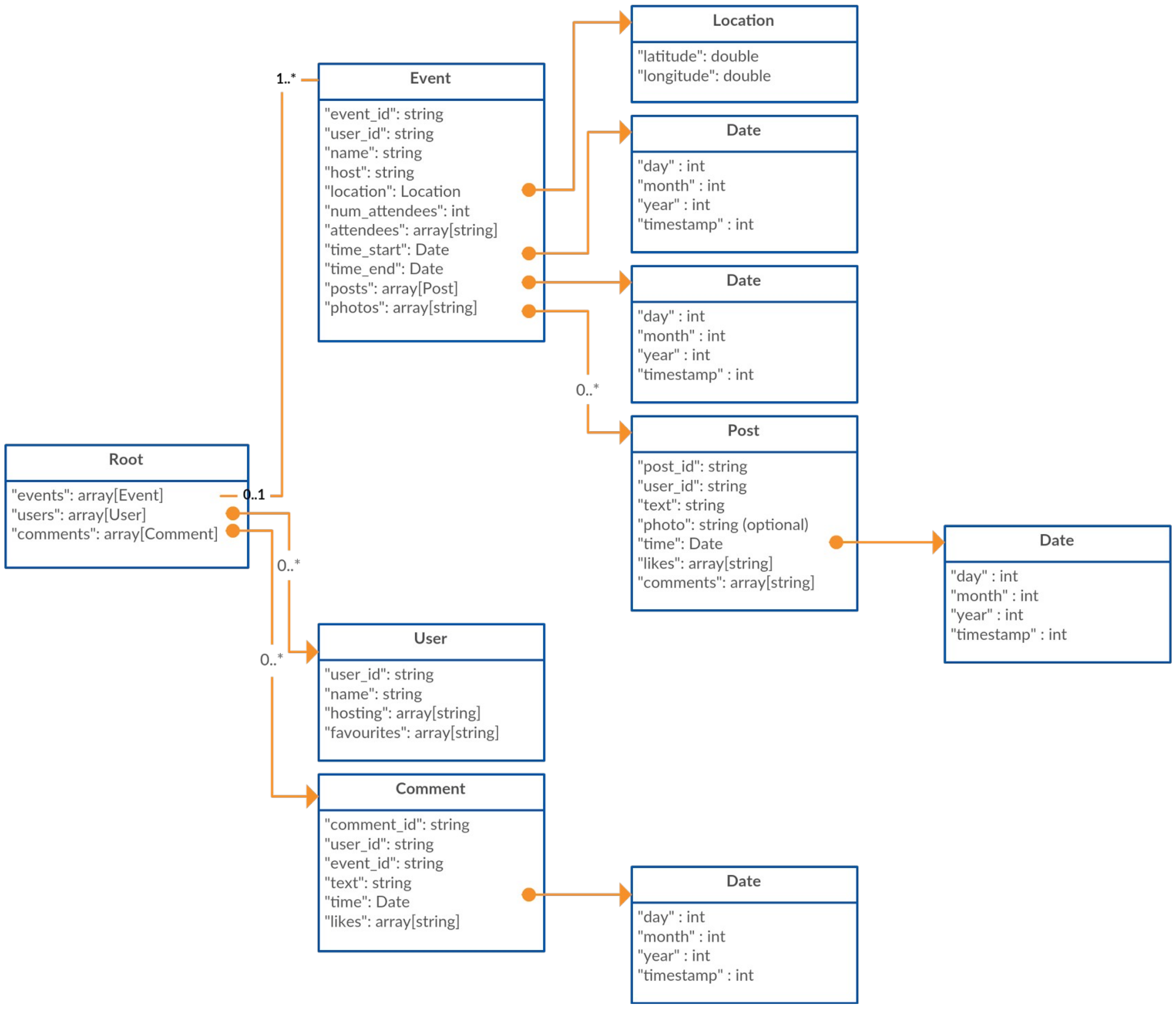
Model-View-Controller Architecture of the App



- The Main UI is the different pages/ views that the user can see. It sends information to the Controller telling it which button has been pressed and the Controller sends information back telling the UI which page to display.
- The Google Maps API interacts with both the Main UI and the Controller. The Controller sends locations for BEACONS to be placed on the map. The map tells the Main UI to display the map with the updated pins.
- The Local Cache stores user information, favourites, and a select number of closest nearby events. The Controller is then able to access this data.
- The Firebase server will contain all of the event and user information in the its database. That information within the Firebase database will be called upon and written to by the controller. Furthermore, the controller will contact the Firebase server in order to

DATA

Our application's data model is as follows:



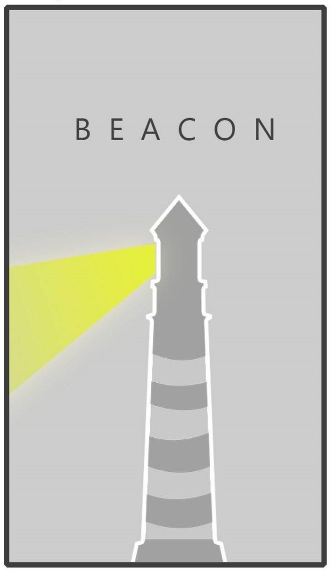
GUI

The UI is based on Google's material design. It will consist of an interactive map, and a list-view where nearby BEACONs will be displayed. Every BEACON will be a link to an event page, where information, comments, and pictures of the events can be viewed.

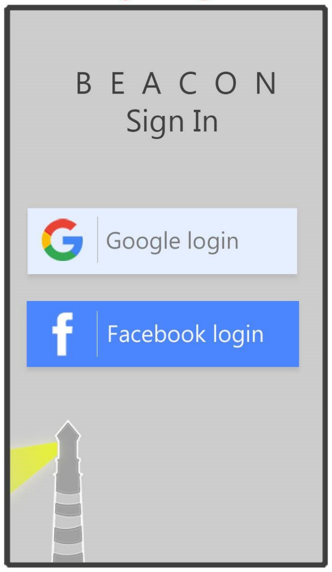
Login View

After clicking the BEACON icon, a splash-screen will display while the app is loading. Upon opening the application the Users will then be presented with a Google sign in page.

Splash Screen View

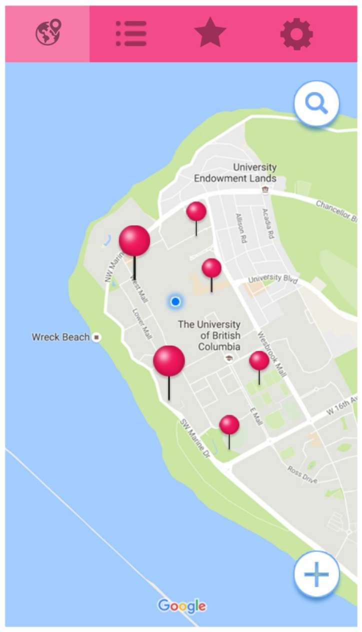


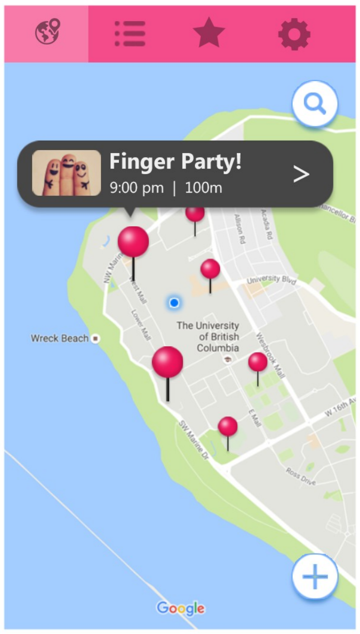
Login Page



Map View

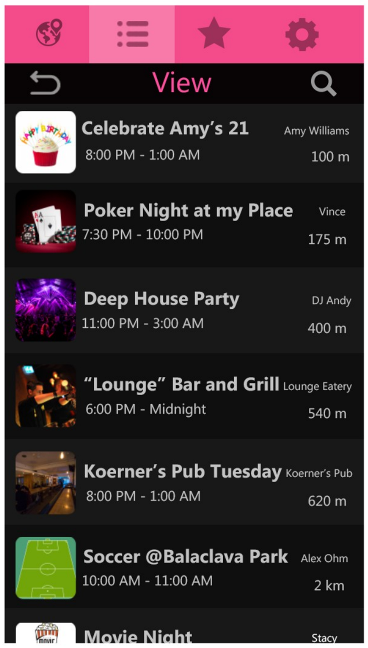
After users go through the login view, the main page is displayed. This page contains the map view - an interactive map that shows the BEACON pins that are nearby the user's location.


University Endowment Lands
Wreck Beach
The University of British Columbia
Google



List View

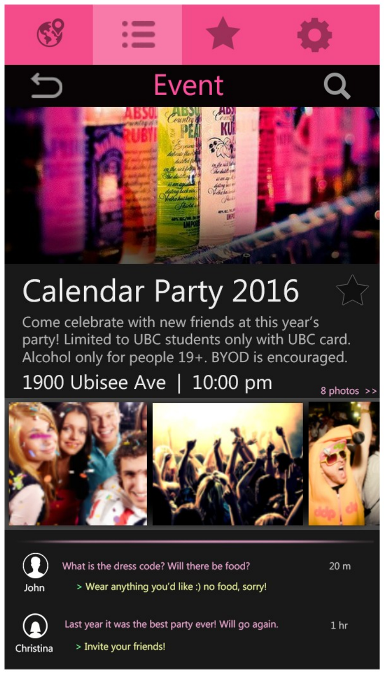
Users can also choose to see BEACON pins in the list view, which sorts events by name, location (i.e. distance), or time; and shows said basic information.


View

Celebrate Amy's 21	Amy Williams	
8:00 PM - 1:00 AM	100 m	
Poker Night at my Place	Vince	
7:30 PM - 10:00 PM	175 m	
Deep House Party	DJ Andy	
11:00 PM - 3:00 AM	400 m	
"Lounge" Bar and Grill	Lounge Eatery	
6:00 PM - Midnight	540 m	
Koerner's Pub Tuesday	Koerner's Pub	
8:00 PM - 1:00 AM	620 m	
Soccer @Balaclava Park	Alex Ohm	
10:00 AM - 11:00 AM	2 km	
Movie Night	Stacy	

Event Page

The event page will display all of the information that relates to an event: location, title, short description, comments feed (includes text and photos)


Event

Calendar Party 2016

Come celebrate with new friends at this year's party! Limited to UBC students only with UBC card. Alcohol only for people 19+. BYOD is encouraged.

1900 Ubisee Ave | 10:00 pm

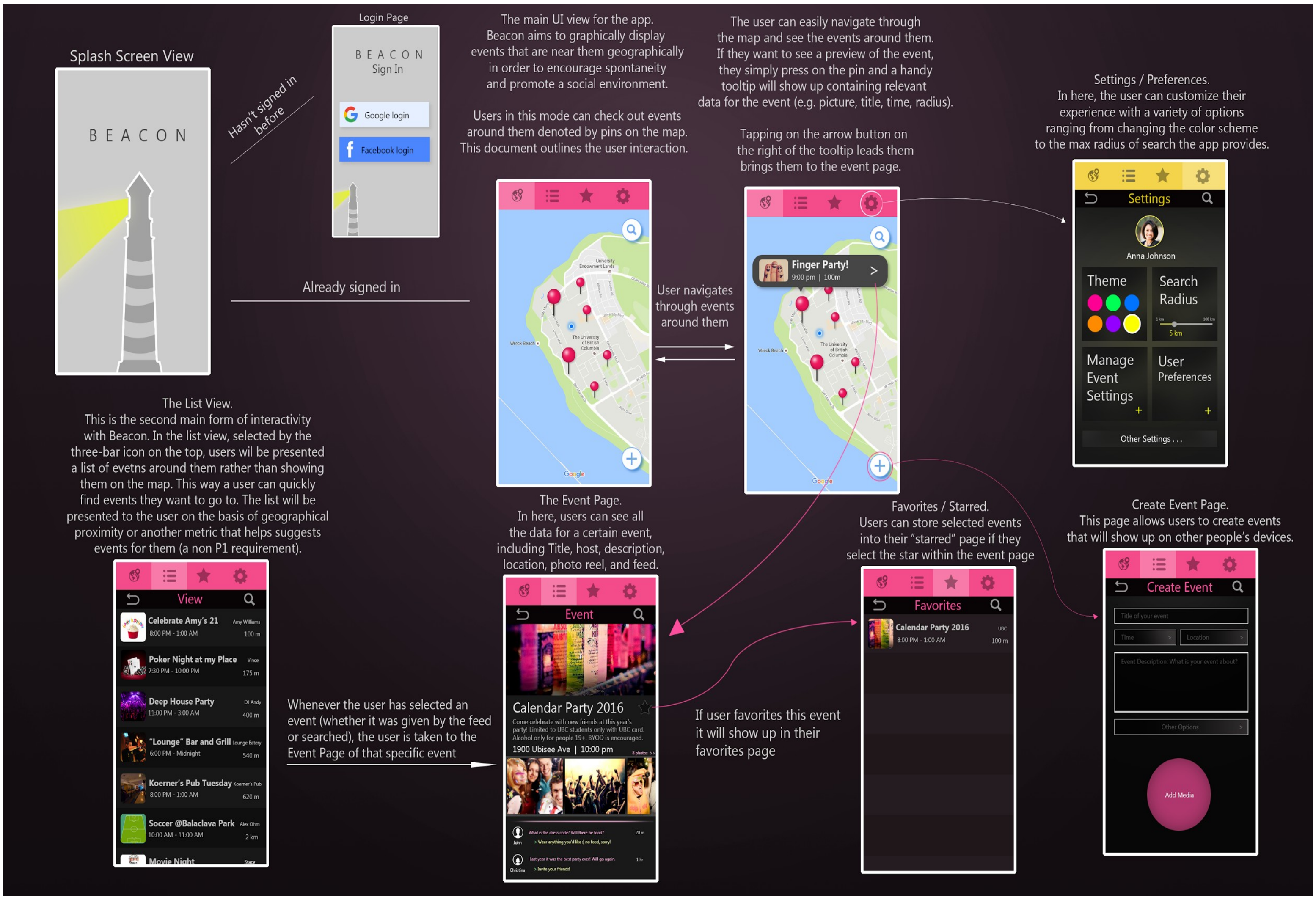
8 photos >>

John: What is the dress code? Will there be food? 20 m

> Wear anything you'd like :) no food, sorry!

Christina: Last year it was the best party ever! Will go again. 1 hr

> Invite your friends!



The main UI view for the app. Beacon aims to graphically display events that are near them geographically in order to encourage spontaneity and promote a social environment.

Users in this mode can check out events around them denoted by pins on the map. This document outlines the user interaction.

The user can easily navigate through the map and see the events around them. If they want to see a preview of the event, they simply press on the pin and a handy tooltip will show up containing relevant data for the event (e.g. picture, title, time, radius).

Tapping on the arrow button on the right of the tooltip leads them brings them to the event page.

Settings / Preferences.
In here, the user can customize their experience with a variety of options ranging from changing the color scheme to the max radius of search the app provides.

The List View.
This is the second main form of interactivity with Beacon. In the list view, selected by the three-bar icon on the top, users wil be presented a list of evetns around them rather than showing them on the map. This way a user can quickly find events they want to go to. The list will be presented to the user on the basis of geographical proximity or another metric that helps suggests events for them (a non P1 requirement).

The Event Page.
In here, users can see all the data for a certain event, including Title, host, description, location, photo reel, and feed.

Favorites / Starred.
Users can store selected events into their "starred" page if they select the star within the event page

Create Event Page.
This page allows users to create events that will show up on other people's devices.

Whenever the user has selected an event (whether it was given by the feed or searched), the user is taken to the Event Page of that specific event

If user favorites this event it will show up in their favorites page

Come celebrate with new friends at this year's party! Limited to UBC students only with UBC card. Alcohol only for people 19+. BYOD is encouraged.