



User Manual

Prepared for: ECSE 424, Human-Computer Interaction

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INTRODUCTION

Motivation for the project

Blueprint is a system for indoor navigation. It was designed to improve human-spatial understanding by giving users context-relevant information at specific points of interest. Implemented as a web application for smartphone devices, specific webpages are accessed through URLs broadcasted using iBeacon technology. This manual describes the functionality of a prototype for this system, which has been adapted for the Brown Building at McGill University.

Suggested hardware

We highly recommend that you use an iPhone for testing, because the prototype unfortunately *does not work properly on Android devices* at this time. You will also need at least one (1) Estimote beacon and a good internet connection. To launch the prototype, simply go to <https://myblueprint.herokuapp.com/>.

Prototype limitations

In this version, only four navigation routes have been implemented, which we believe is sufficient to test the core functionality of the application. The implemented routes are:

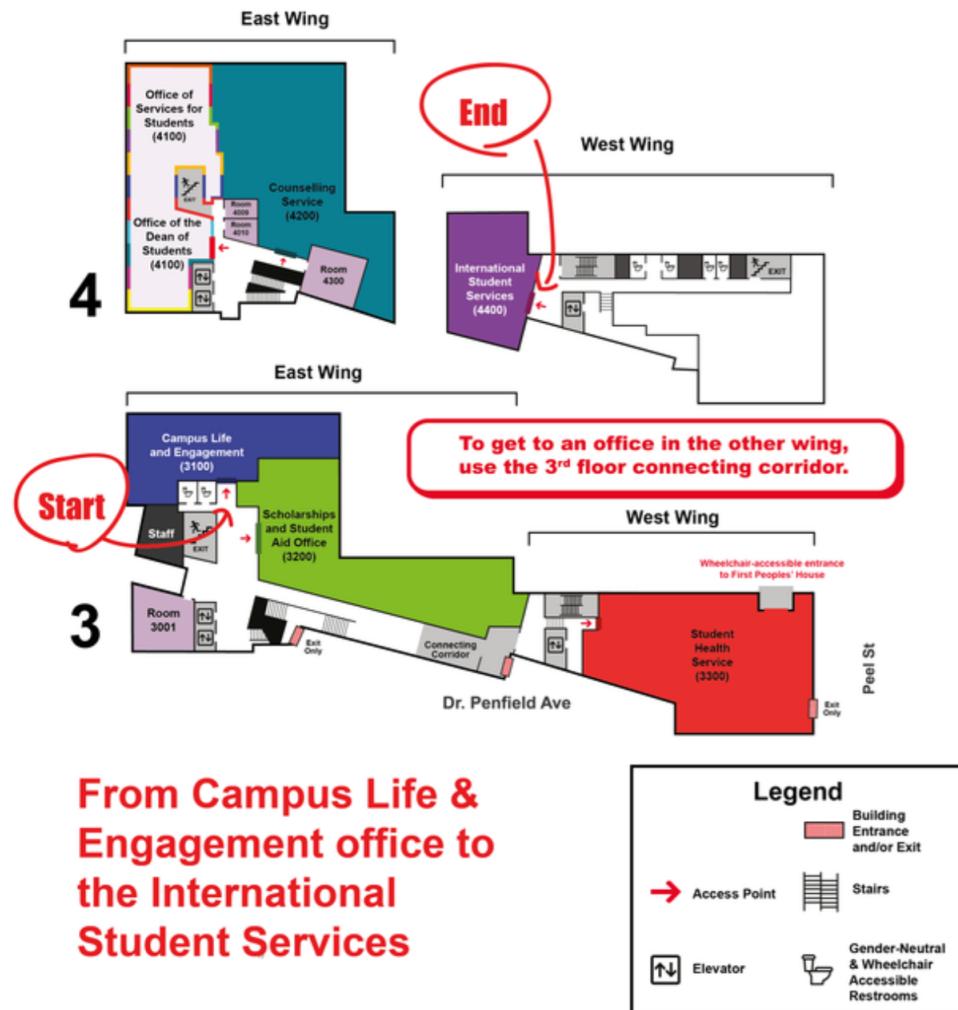
- from the Campus Life & Engagement office to International Student Services
- from the main Lobby to Conference room 3001
- from the SSMU basement entrance to the Counselling office, using wheelchair-friendly directions
- from the Ave. Docteur Penfield entrance to a nearby restroom

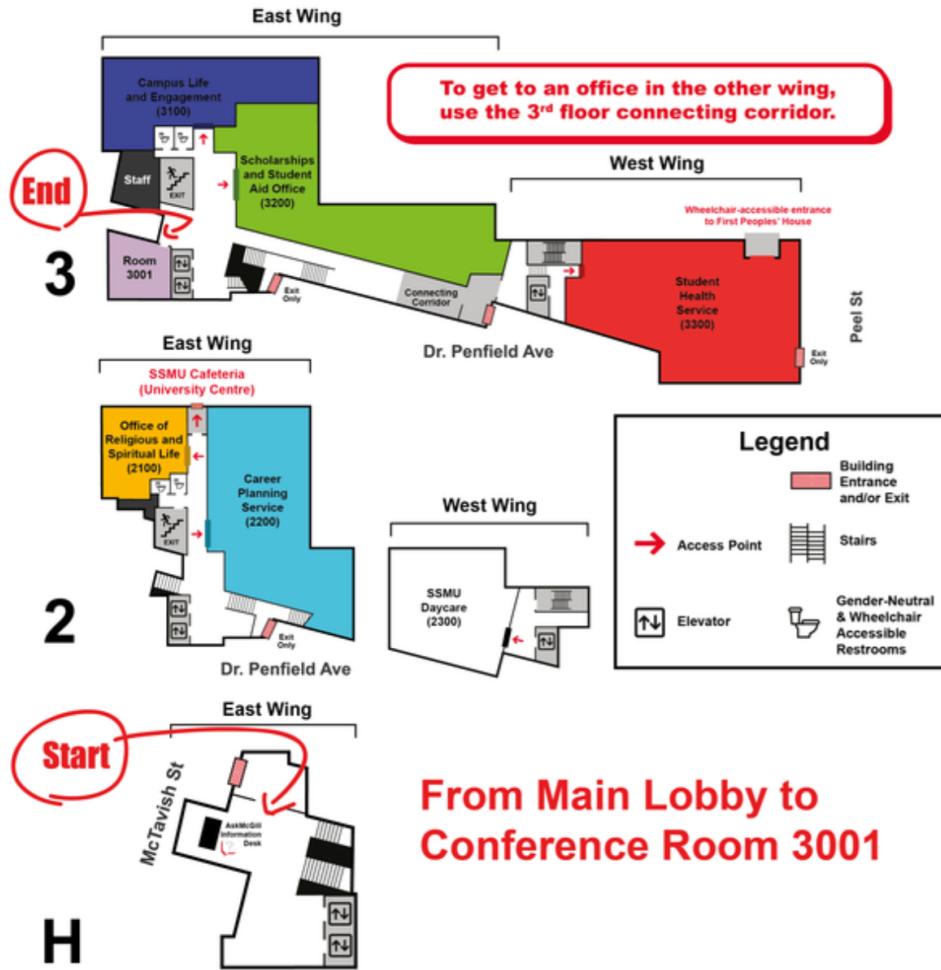
These routes all have different starting locations, which correspond to the physical locations you should place an Estimote beacon. If you wish to simulate application usage without using beacons, you (the examiner) *will have to manually select the start location* corresponding to your use case. See section “[Manually setting your start location](#)” below. This process is done automatically by the beacons during normal test procedure.

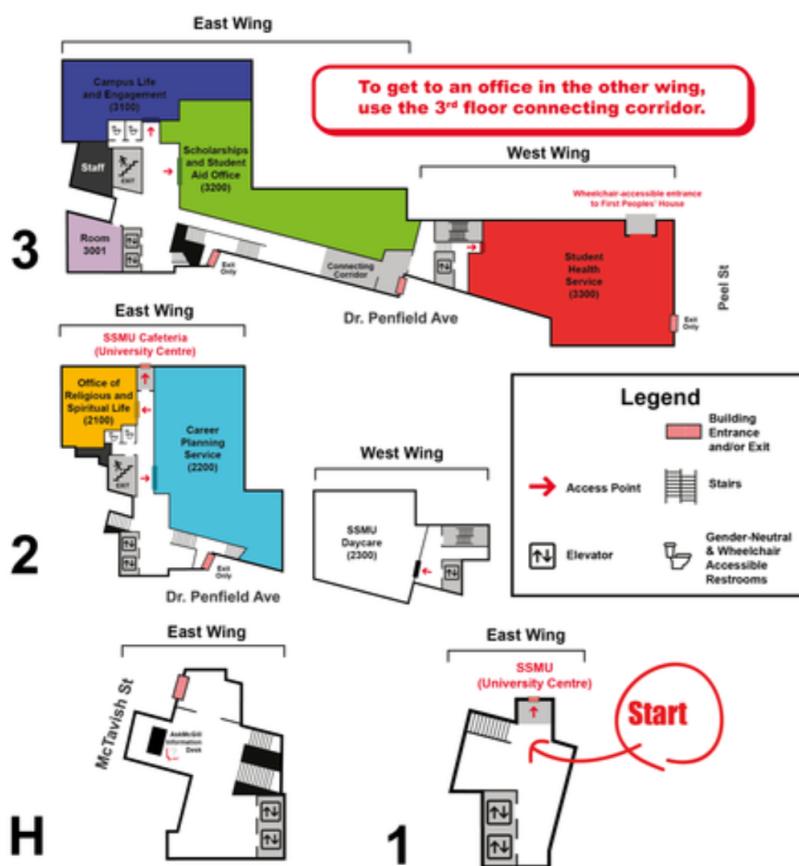
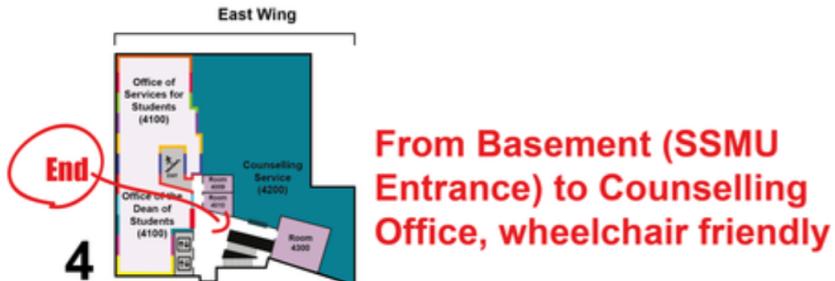
Please consult the following ‘[Building Maps](#)’ if you are having trouble finding the starting locations.

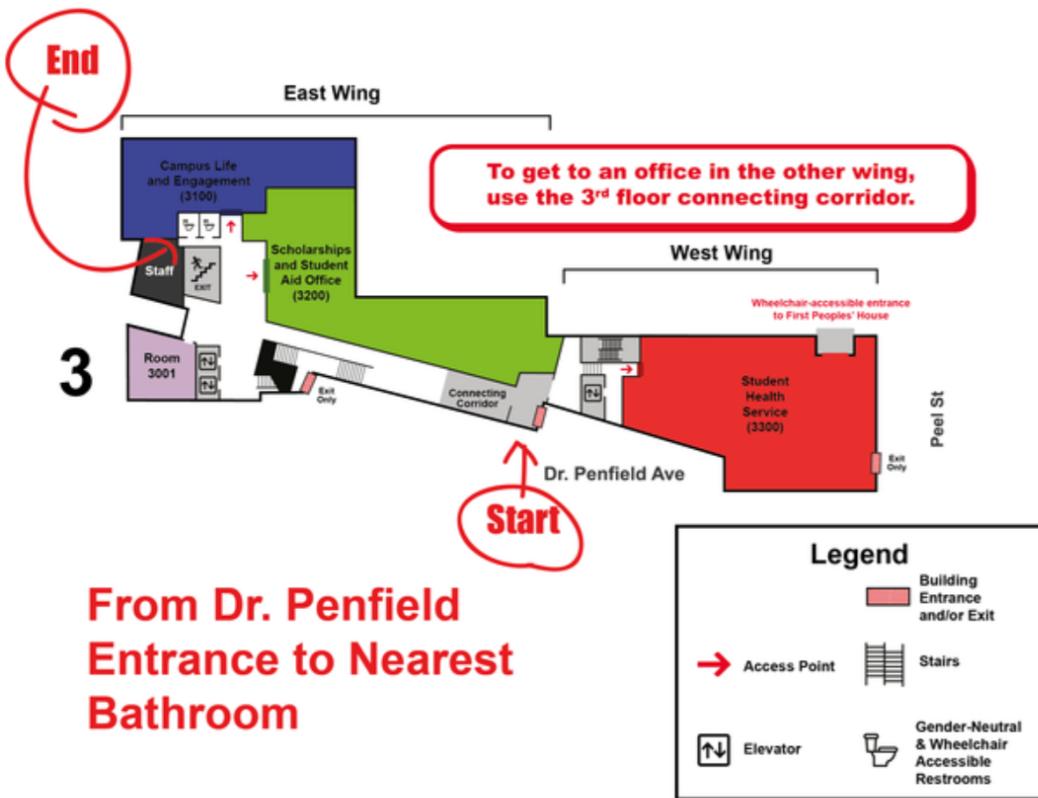
A copy of the poster provided with test materials is enclosed in the Appendix as the final page of this document.

BUILDING MAPS









**From Dr. Penfield
Entrance to Nearest
Bathroom**

BEACON SET-UP

Beacon set-up has many steps, but they are straightforward to follow. Please refer to the [Estimote developer documents](#) if you encounter problems not addressed here.

Estimote beacon configuration

To easily set up the beacons, you should download the Estimote iPhone application from the App Store. You will be asked to create an account if you have not previously registered with Estimote. Follow the steps provided.

Next, you will need set the URLs which will send users to the appropriate Blueprint webpage. A list of short-links for the prototype start locations is given below:

- Brown building lobby - <https://goo.gl/5H2DqN>
- Campus Life & Engagement Office - <https://goo.gl/n7ZDyD>
- Docteur Penfield entrance - <https://goo.gl/hTftsa>
- SSMU basement entrance - <https://goo.gl/qCquyk>

Open the Estimote application and click “Devices”. It is unlikely that other beacons will be *in range*, but select the nearest devices that appear on the interface. Scroll down to the bottom of the list of options that will appear for you, and select “Beacon in Motion”, then set “Flip to Sleep Mode” to ON. Turning a beacon upside-down will now turn its signal off (this is helpful to ensure you are holding the correct beacon in test set-up).

Now, return to the previous screen by clicking the *back* arrow and scroll up to the *Transmitted Packets* heading. Set “Primary Packet Type” to *Eddystone-URL*, then set the URL field to any of the start location short-links provided above.

Repeat the above procedure for any additional beacons you might wish to use (label the beacons to keep track of which URL is associated with which beacon), using a different start location short-link for each one.

Enabling the physical web

The second step in beacon set up is enabling your iPhone to automatically detect their signals. To allow this functionality, we recommend that you download the Google Chrome application from the App Store after the beacons have been configured. Once the download is complete, pull down the iPhone notifications tab from the top of the screen, click the “Today” tab, and then the “Edit” button at the bottom. Add the Google Chrome widget to your *allowed applications*, then click “Done”. A notification will alert you that “*Nearby objects are broadcasting webpages*”. Click “Ok, got it” to allow notifications from the Physical web.

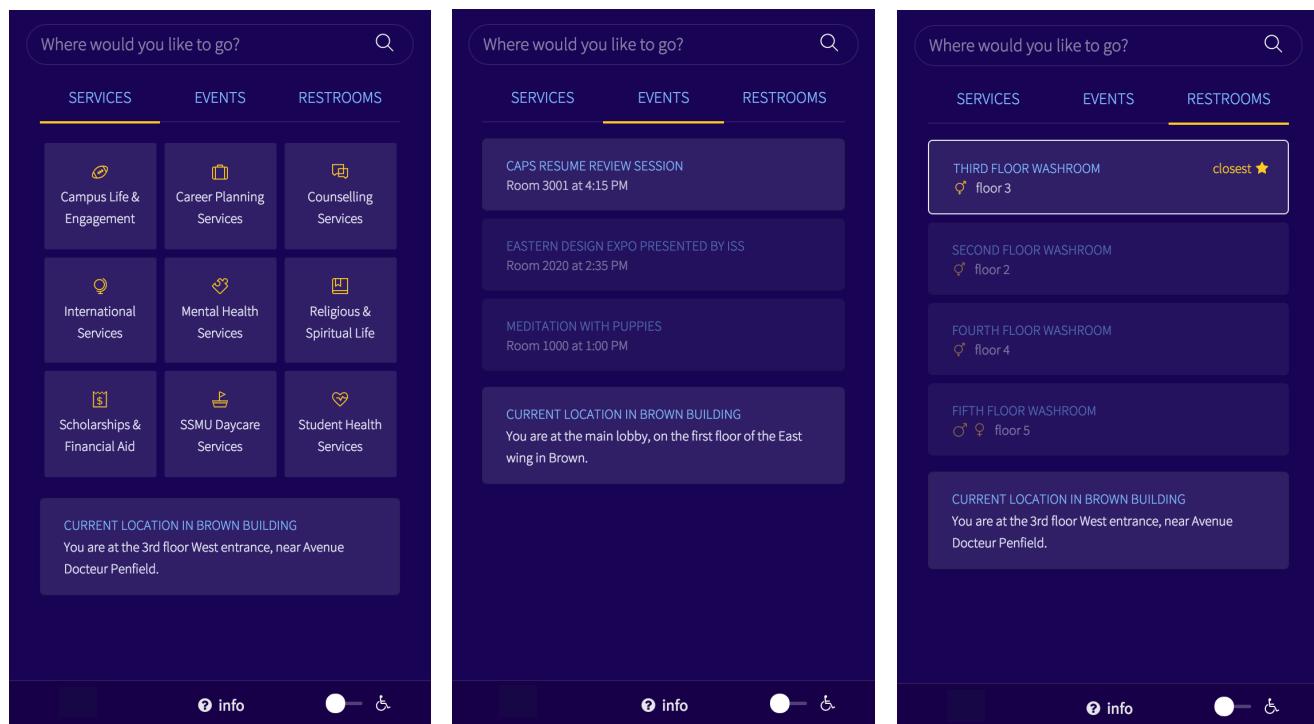
The URL you entered in the previous steps should now be visible on the “Today” tab of the notifications menu.

SCREEN OVERVIEW

The prototype consists of two main screen types.

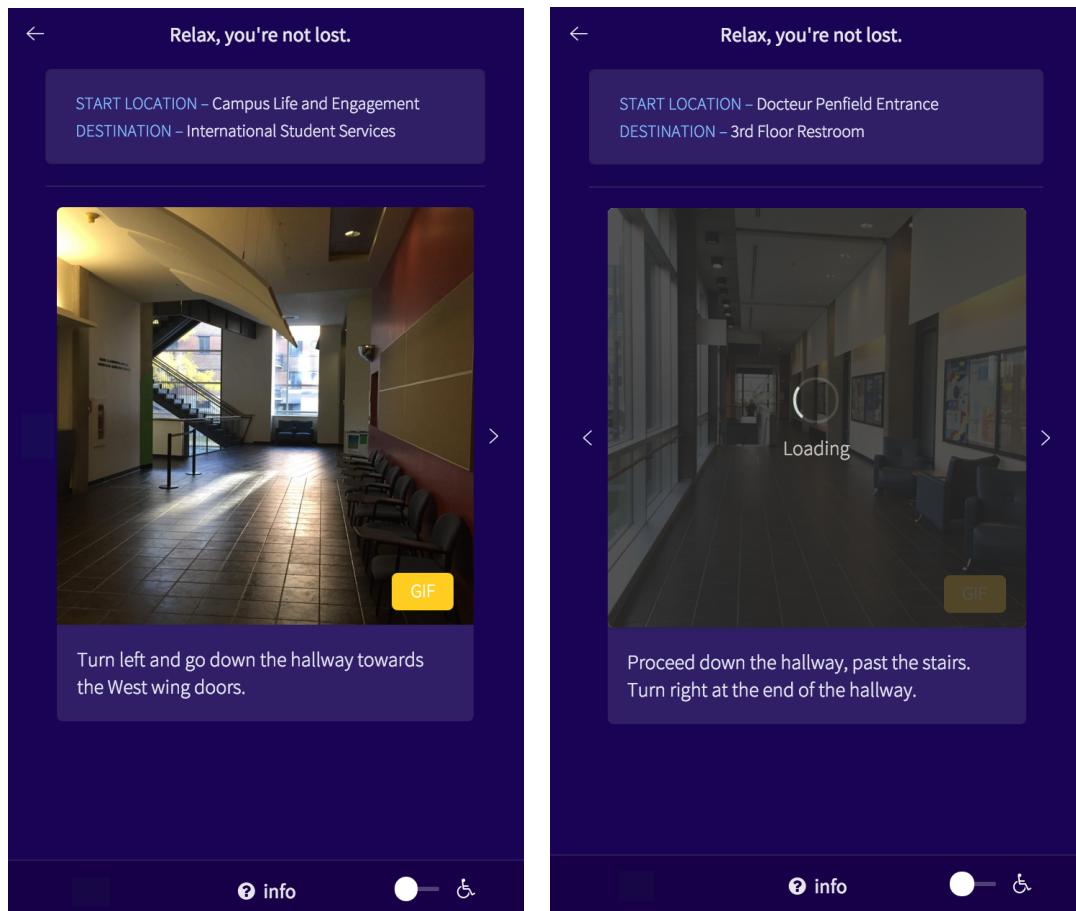
Homescreen and selection screens

The homescreen lists different destination points for navigation, by default showing the Brown services. You can use the tabs at the top of the interface to switch between different destination categories. The wheelchair toggle, located at the bottom-right of the screen, can be used to request wheelchair-friendly navigation. The search input at the top can be used to filter through all possible destinations, or access a particular room.



Navigation screens

The navigation screens are intended to lead users to their chosen destinations. The main element on this screen is a large graphic: either a photo, a GIF, or both. When both a photo and a GIF are available, the GIF starts playing when the user taps the image. Users can access the next direction by swiping left, and the previous direction by swiping right. Arrows located at the sides of the graphic can also be used to navigate through directions. Beneath the graphics are textual instructions, which elaborate the directions further.



As can be seen above, the user's route is always displayed above the directions. The *invisible* settings button (see next page), info button, and wheelchair option can also always be accessed in the footer. When a GIF or an image is loading, the loading wheel is displayed such that the user is aware their directions will be available shortly.

Feedback and prototype-specific screens

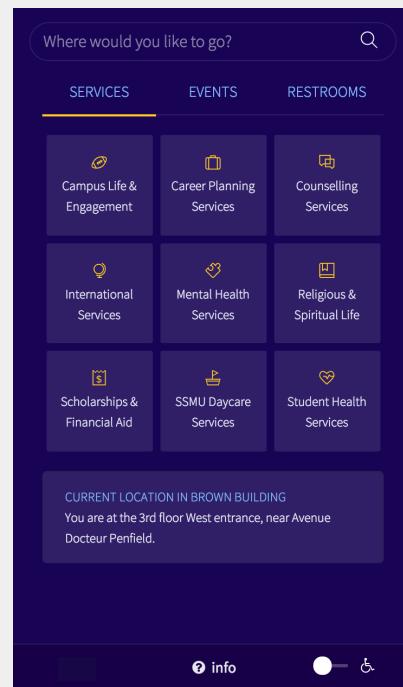
There are 3 screens which offer additional information to any users of this prototype: (1) The “current location” page (below left) is used to manually set the user’s starting location, (2) the “FAQ” page (centre) exists to offer additional facts and information to users, and (3) the “route unavailable” page exists to let users know that this prototype has not included the route they are requesting.

The image displays three mobile screen prototypes side-by-side, each with a dark blue header and footer bar. The first screen on the left is titled "WHERE ARE YOU RIGHT NOW?" and contains a list of four locations: "BROWN BUILDING LOBBY", "CAMPUS LIFE AND ENGAGEMENT", "DOCTEUR PENFIELD ENTRANCE", and "SSMU BASEMENT ENTRANCE". The second screen in the center is titled "FREQUENTLY ASKED QUESTIONS" and features four sections with questions and answers: "WHAT DOES THIS WEBPAGE DO?", "HOW DOES IT WORK?", "WHAT CAN I FIND?", and "ARE THERE ANY FANCY FEATURES?". The third screen on the right is titled "Relax, you're not lost." and shows a "START LOCATION – Docteur Penfield Entrance" and a "DESTINATION – ..." field, followed by a message stating "THIS ROUTE IS UNAVAILABLE" and explaining the reason. Each screen includes standard mobile navigation icons at the bottom: a back arrow, a magnifying glass for search, a battery icon, a signal strength icon, and a wheelchair accessibility icon.

STEP-BY-STEP PROCEDURES

Viewing the homescreen

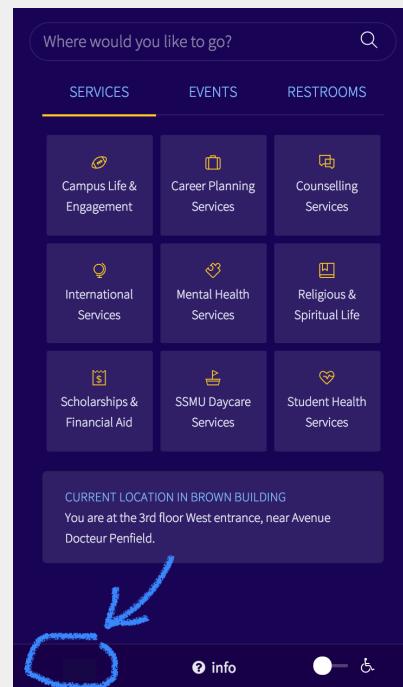
1. Open the application by going [here](#) in the Chrome browser on your iPhone. You will be taken to the homescreen.



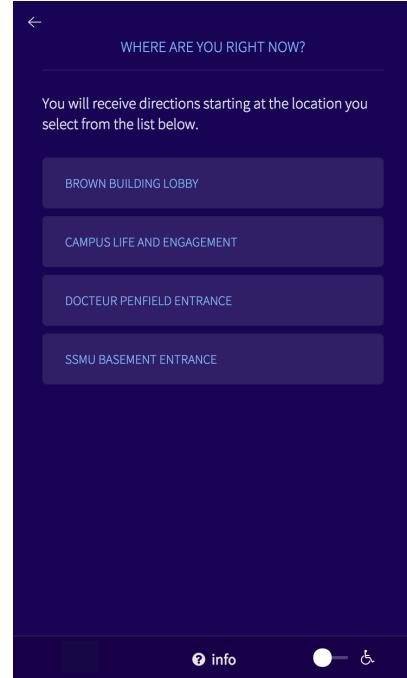
Manually setting your start location

1. Click on the location indicated to the bottom-left of the home screen.

*This functionality should not be accessed by test subjects, so the button allowing it is invisible.

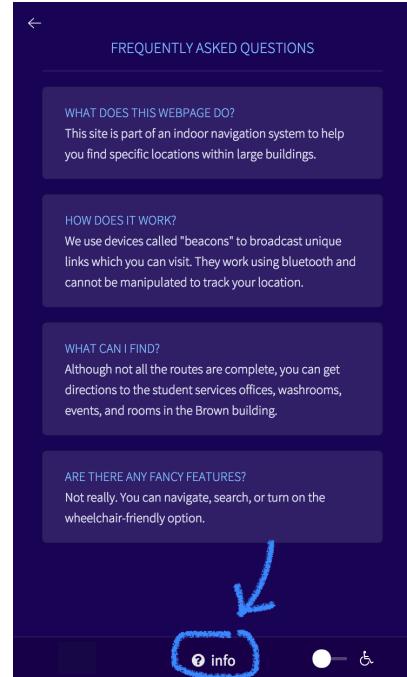


2. Choose your starting location from the list.



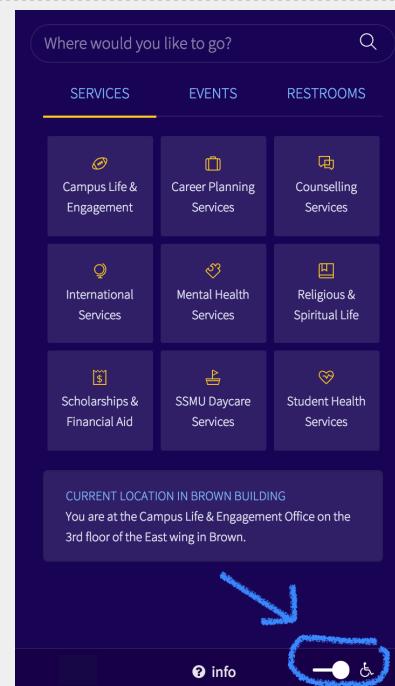
Accessing more info (FAQ)

1. On any of the screens, clicking the information icon in the centre of the bottom bar will take you to an information page. You can return to the homepage by clicking the “back” arrow in the top-left.



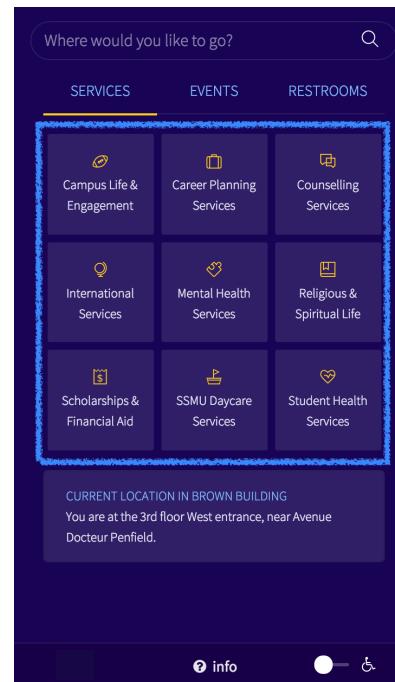
Activating wheelchair-friendly mode

1. On the home or navigation screen, toggle the wheelchair icon in the bottom bar. The slider bar will get brighter, indicating that you are now in wheelchair-friendly mode.



Initiating navigation to a student service

1. Open the homescreen.
2. In the top part of the screen, the different student services are listed.

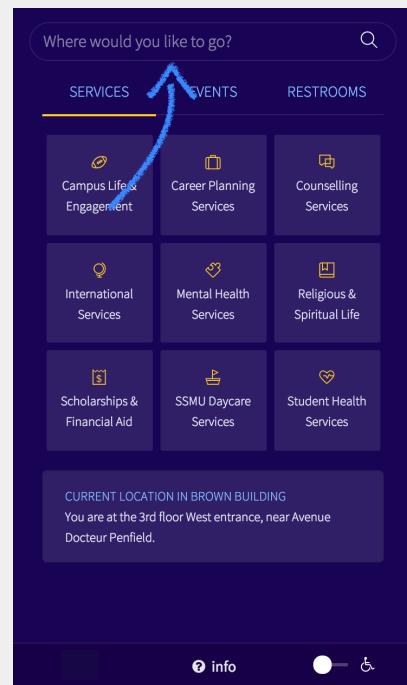


3. Tap the one you wish to navigate to. Navigation to the location will begin (see “Navigating to a destination”).

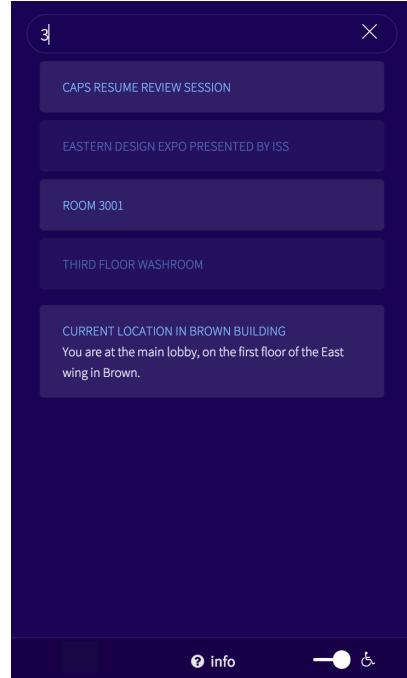
Initiating navigation to a specific room

1. Open the homescreen.

2. Tap the search icon on the top of the screen.



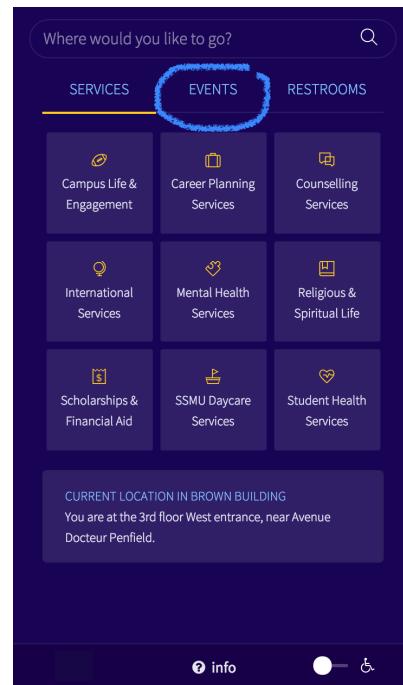
3. Enter the name or number of the room you are searching for. Results will automatically be displayed and updated as you type. Tap the desired result.



Initiating navigation to a building event

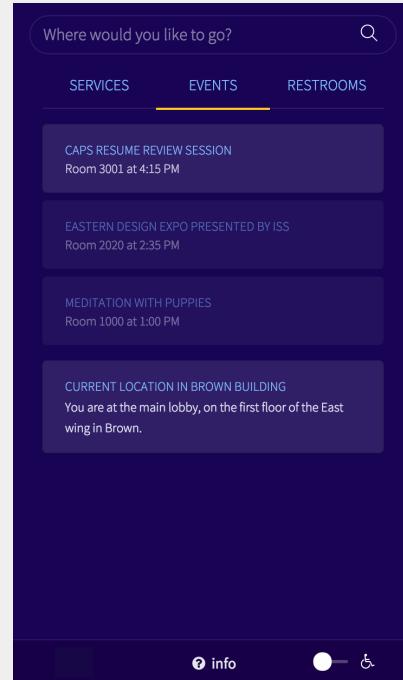
1. Open the homescreen.

2. Press the "Event" tab.



3. You will see a list of current events. Tap the one you wish to navigate to. Navigation to the location will now begin (see "[Navigating to a destination](#)"). Dummy events with no corresponding route will be greyed-out.

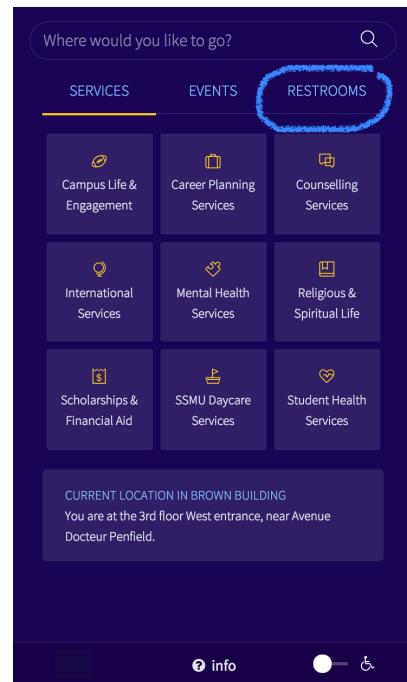
NOTE: If your event is not listed here, but you know the room number where the event is located, you can navigate directly to the room number (see section "[Navigating to a specific room](#)".)



Initiating navigation to a restroom

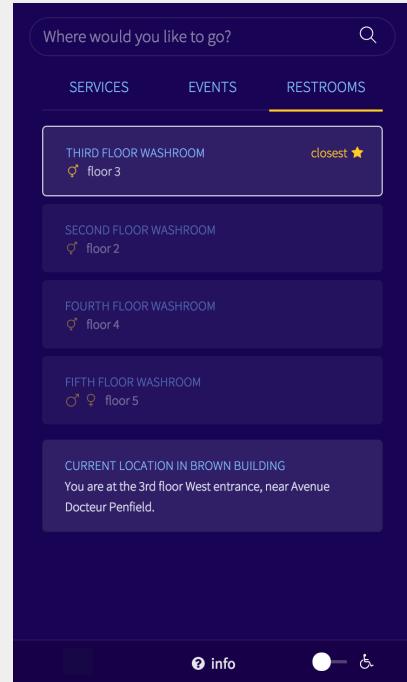
1. Open the homescreen.

2. Press the 'Restrooms' tab.



3. You will see a list washrooms in the building, sorted by proximity to your current location. The closest washroom is also outlined and tagged with a star. Tap the restroom you wish to navigate to. Navigation will be initiated. (see "["Navigating to a destination"](#)"). Dummy restrooms with no corresponding route will be greyed-out and disabled.

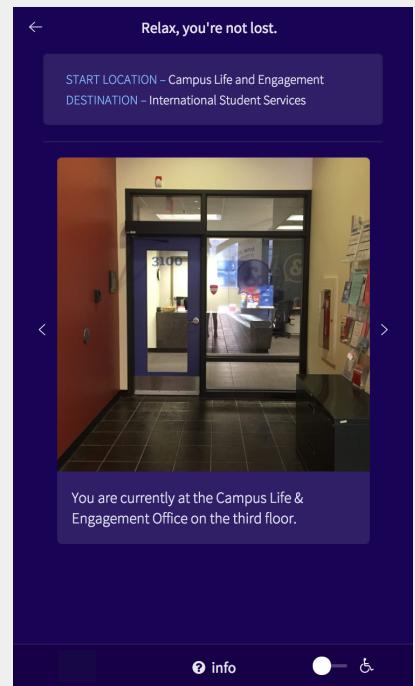
NOTE: As proximity detection is not included in the current prototype, the washrooms will be sorted by proximity to the floor of your specified starting location, see "["Setting your starting location"](#)".



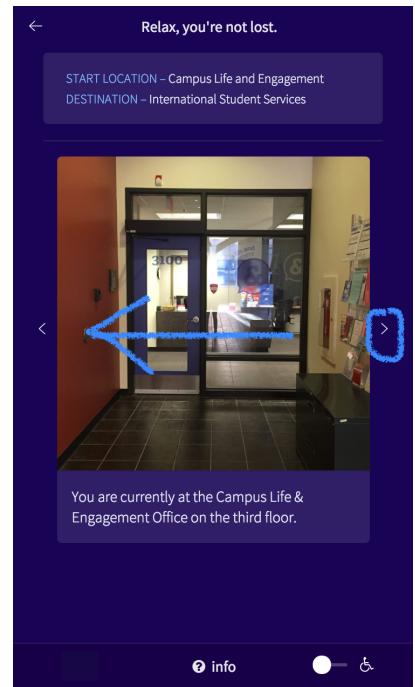
Navigating to a destination

1. Initiate navigation by one of the methods previously described in this section. You will be taken to the navigation screen, which will show you an image of your current location.

NOTE: If the route is not implemented, you will be redirected home.



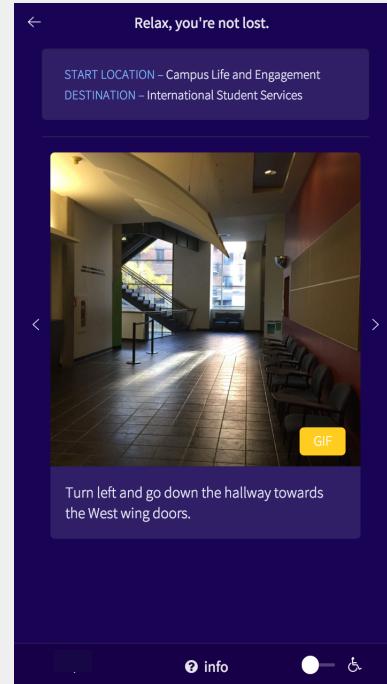
2. Swipe left to see the next instruction. Alternatively, press the arrow located at the right of the graphic.



3. You will be shown instructions of how to get to your next navigation waypoint. These will usually be in the form of an image and accompanying GIF.

You can swipe right at any time to go back.

You can tap the image or the "GIF" button on the lower right to play the GIF, which will show you how to walk to the next waypoint. Because GIFs are large, they may take some time to load, and you will be shown a spinner icon while waiting.



APPENDIX

1. Sample poster used for testing

Lost?

**Don't worry, you are at
an iBeacon Location.**

**Pull down your “Today”
Page and you will see a
link*. This link will take
you to a webpage that
can give you directions
to any office or room in
the **Brown Building**
from this location!**

**Google Chrome app is necessary to
access this feature.*

The circular icon on the poster depicts concentric arcs emanating from a central point, representing signal strength or location detection.

The screenshot of the smartphone screen shows:

- Top status bar: Bell, 1:25 AM, Today, Notifications.
- Home screen: Wednesday, November 25th.
- Weather widget: Mostly clear currently. It's -7°, the high will be -4°.
- Chrome app icon: + New Tab, Voice Search.
- Blueprint app notification: Blueprint | Home, https://myblueprint.herokuapp.com/lobby.
- Physical Web: Physical Web is on. [Disable].
- Bottom footer: Edit, Weather information provided by The Weather Channel, LLC.