

Serendipity is a UW HCI Capstone presented by Jen Kang, Tony Fan, and Brendan Lee, students from the Informatics, Economics, and Computer Science Departments.

*Motivating Problem:*

Backpackers in foreign countries have difficulty exploring and navigating a city when they do not have any sort of data or internet connection for their mobile device. Serendipity is a mobile application designed to help backpackers flexibly explore a foreign city, with or without an Internet connection.

*The Backpacker:*

Our work was based on a previous MHCDE capstone project. We used the user research from this project to inform our understanding of the user and the design problem. This research included a survey of eighteen participants with backpacking experience and four in-person interviews with backpackers. The key takeaways from this research helped us define the target user of Serendipity and informed our design of the application.

From this research, we defined our target user as the intrepid backpacker, let's call her Emily. Emily uses Serendipity for urban exploration. Emily has a few distinctive qualities that separate her from other travellers.

- A. She is flexible. Emily is the type of traveller who does not plan out her trip in advance and may not even know which hostel she will be staying at the following night.
- B. She is frugal. Emily does not want to spend money on any extraneous elements, including tour guides or guidebooks. Specifically, Emily is not one to purchase any sort of international data plan for her cellular device.
- C. She is social. Like most backpackers, Emily enjoys interacting with fellow backpackers to learn more about her surrounding area. Emily often picks up tips from fellow backpackers at her hostel about interesting places to check out the next day.

*Design Goals:*

From our understanding of the traveler, Emily, we designed three goals that would empower Emily to explore at her own pace.

1. **Plan:** Emily can explore the world around her while online and make a plan for future travel that includes interesting places she would like to visit.
2. **Journey:** Emily can successfully navigate to the her selected points of interest without a data connection and find new points of interest along the way.
3. **Share:** Emily can share interesting discoveries with fellow backpackers and discover noteworthy places that other travelers have shared.

## The Design Process:

After we spent time understanding the traveler and the design space, we decided to proceed by simultaneously building some of the base components of the app while mocking up some of the interesting features we would be adding. We built a vertical prototype of some of the basic capabilities of the application that we would need regardless of the designs of the new features. These basic capabilities included displaying a map of the traveler's current location and displaying nearby points of interests with relevant data. Parallel to this development, we started designing mockups of the unique features in our application.

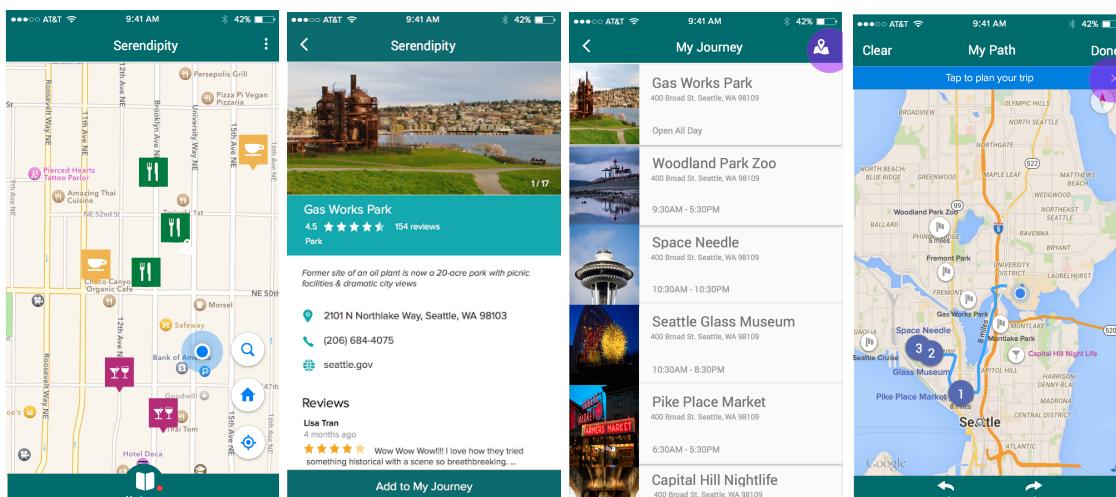
The final products of our work include:

- High quality digital mockups of three key scenarios that meet our design goals
- A functional iOS application that includes all working features of our design, except for turn-by-turn navigation and caching data for offline access

## Key Scenarios:

**Plan:** The scenario begins with Emily planning out her following day while in her hostel.

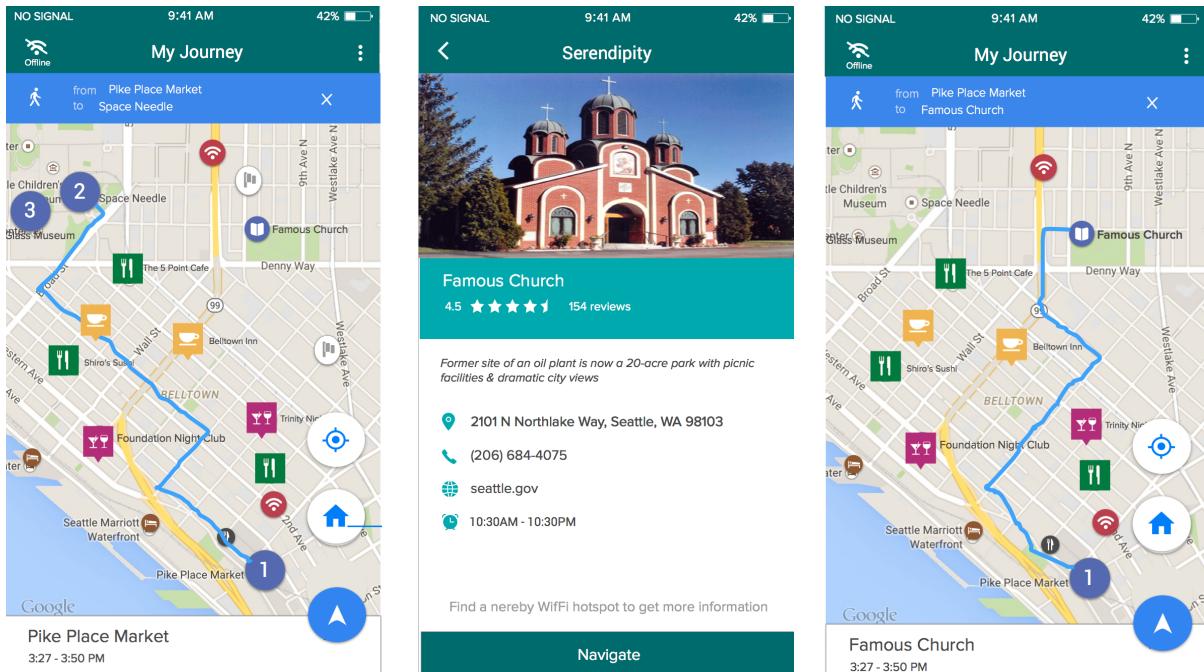
1. The main view of Serendipity displays a map that is populated with nearby points of interests. These points of interests include restaurants, cafes, hostels, museums...etc. In addition, they are categorized by icon and color on the map (refer to the first image below).
  - a. We provide filters so she can easily focus on places that interest her.
  - b. We provide a search feature in case Emily knows exactly the place she is interested in going to.
2. Emily can view important details about a place (refer to the second image below).
3. Emily can add interesting points to her "Current Journey".
4. The "Current Journey" is a collection of points of interest (refer to the third image below) and is available from a button at the bottom of the map. We wanted to make this easy for the user to navigate to this view, so we placed it on the main screen.
5. From the current journey view, Emily can plot all the points on a map and tap them in the order she wishes to visit them the next day. Any points she does not tap will be saved for later, but not included in her navigation (refer to the last image below).



Now, she has finished planning her journey for the next day. She can put away the application. In the background, Serendipity downloads and caches all the relevant data she will need for her journey (and more), so she can go through the following two scenarios with or without a data connection.

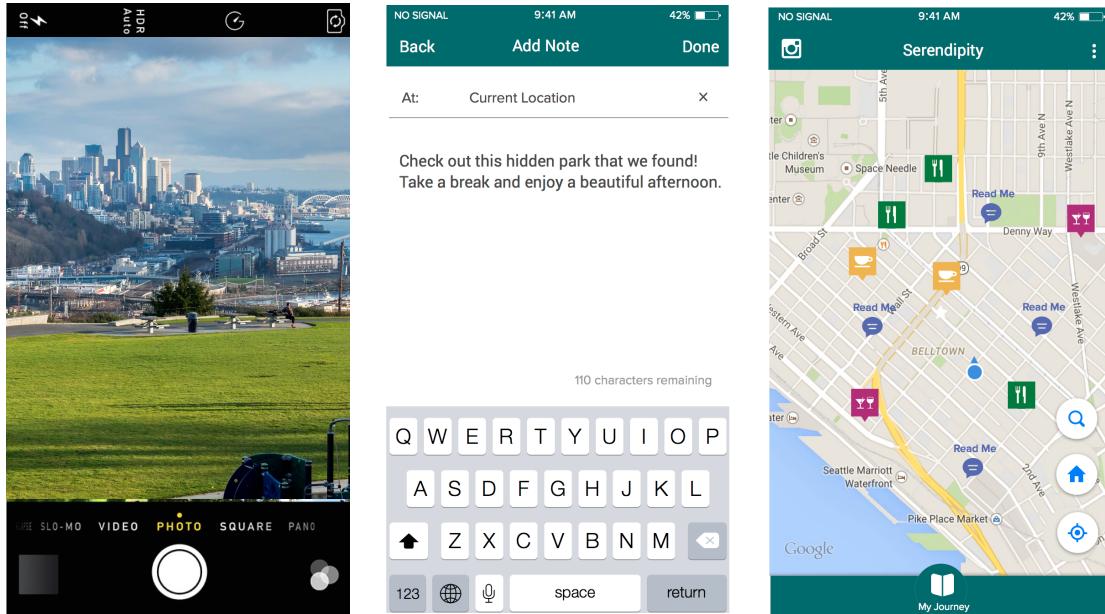
**Journey:** The second scenario takes place the following day. Emily is no longer connected to WiFi or any other data plan. But she can still use Serendipity to get around the city. The goal of this scenario is to show how Serendipity can help Emily flexibly travel and not be forced to stick to a predefined plan.

1. The application will begin navigating her to the first location in her current journey.
2. Along the way, she will still be able to explore points of interest that are nearby. For example, after visiting one or two of the places in her journey, she hears from a local about an interesting museum that is a few blocks away that she had not included in her journey. She decides to add this place to her current journey just as she did while online and will be automatically rerouted (refer to the second and third image below).
3. She may wish to download a free guidebook about the museum that she has just added to her journey. In order to do so, she notices that only the basic information was cached and therefore needs to find a WiFi hotspot to get the free guidebook. With Serendipity, she can use the WiFi filter to display nearby locations with WiFi. This filter only shows up when she is offline. This will route her to a WiFi hotspot where she can connect and download a guidebook.



**Share:** The final scenario shows how Emily can share interesting information using Serendipity. One of the most enticing aspects of backpacking culture is how easy it is for fellow backpackers to meet and share information. Most backpackers have experienced finding a very interesting place in a city because they heard about it from a fellow backpacker. We tried to incorporate this into Serendipity by providing an easy avenue for travelers to share noteworthy places they discover.

1. Emily stumbles upon a really neat park that did not show up as a place of interest on the map.
2. She pulls out Serendipity, and clicks the Drop Message button in the top left of the main map view. We placed it here so the user could quickly share in the moment.
3. She takes a picture of the park and adds a custom message.
4. Finally, she sends the message. A message icon will now appear on the map for any other travellers using Serendipity in the area.



#### *Conclusion and Acknowledgements::*

We believe that we have succeeded in achieving the design goals mentioned at the beginning of this document. While there is still room for improvements, we believe we have designed an application that will help backpackers flexibly explore a foreign city and discover interesting places they may otherwise miss or be unable to navigate to without a data connection. We conducted two final user interviews to assess what we had designed and the feedback we received was positive. Both interviewees understood how the application could help them and seemed genuinely interested in using it.

Our work was advised by Professor James Fogarty, and Teaching Assistants Daniel Epstein and King Xia. The project was inspired by a project from the MHCDE capstone entitled “Journey”.