



BUS ALERTS

One Alert Away From Your Next Bus

Writing: Viswanathan Kumaragurubaran

User Testing: Sanjana Prasain

Program Manager: Jia Le He

Design: Kegham Bedoyan

Problem and Solution Overview

Public transit riders often need to plan their trips in advance in order to optimally utilize their time. Publicly available schedules of transit systems (such as the bus schedules) are useful but not accurate. They do not provide real time information for each stop. Applications such as OneBusAway have solved this problem by extracting real time information provided by transit officials and presenting it to users through the web, voicemail, texts and applications on smart phones. Although this application provides pertinent information to users in a timely manner, users often resort to periodically checking real time arrival information despite fixed and routine schedules (such as for working professionals, students). Routine searches for bus arrival information may be time consuming, redundant and inefficient. We are looking to automate this process by providing real time alerts through this proposal. BusAlerts would build upon the existing framework provided by OneBusAway. By registering and configuring arrival and departure schedules, the user can set alerts through the smartphone application. BusAlerts also intends to integrate weather information within the alerts so the user can avoid checking multiple applications for the same purpose (travel).

Task Analysis Questions

Who is going to use the system?

The target users are existing OneBusAway users. All bus riders with a mobile device can still use the BusAlerts feature, but since we are building upon the OneBusAway application, our focus is drawn to current OneBusAway users.

What tasks do they now perform?

Currently, transit riders have to look at posted timetables at stops or utilize mobile apps such as OneBusAway. From our Contextual Inquiry, we saw that users of OneBusAway typically performed simple tasks such as searching and bookmarking stops for checking on the go.

What tasks are desired?

Based on our Contextual Inquiry, frequent bus riders and users of OneBusAway supported a mobile notification/alert system for buses. Alternatively, first time users of OneBusAway were confused about the app's capabilities and suggested trip planning or better search features. With a focus on avid OneBusAway users and frequent bus riders, BusAlerts tasks will encompass setting up, customizing, and receiving bus notifications and weather alerts. Additionally, with alert focused tasks, we hope to make it clear to new users that BusAlerts is designed to display bus information and not provide bus planning.

How are the tasks learned?

Since BusAlerts is focused on bus riders, our tasks are fairly straight forward for frequent riders. For users that are not as familiar with bus routes and stops, BusAlerts provides basic tools to search for bus stops and routes to set up alerts. Since BusAlerts promotes in-phone alerts over constantly navigating our app, our interface will strive to be as simple as possible to accommodate less frequent use. Otherwise, tasks would be learned through experience of using the system.

Where are the tasks performed?

BusAlerts tasks can be performed theoretically anywhere a mobile device has connection to wifi or a cell signal. For example, the proposed tasks may be performed from home/office, at the bus stop, or on the way to the bus stop.

What's the relationship between customer & data?

Displayed BusAlerts data will be based on current Metro information as well as public weather data. With this given data, the customer will be able to make better-informed decisions about their transportation. For instance, they may decide to take a later bus if they see that their intended bus was early and they would be unable to make it to the bus stop on time. Or, they may decide to bring an umbrella with them if they see that it is raining.

What other tools does the customer have?

1. Posted bus timetables.
2. OneBusAway, Metro real time tracker applications etc. for real time transit arrival information.
3. Independent weather apps based on user input location or GPS location.
4. Google Maps, and Sound Transit Trip Planner for route, schedule and directions information.
5. Calendar applications with alerts.

How do customers communicate with each other?

In our app, there is no direct communication between customers. However, some customers of BusAlerts might be asked to provide information about route and arrival information to other people at bus stops.

How often are the tasks performed?

By implementing an alert system, users do not need to frequently check OneBusAway or a similar app for bus updates. Instead, BusAlerts users only need to set up their alert schedule once to stay up to date. In a situation where a user's bus schedule changes frequently, the tasks of setting up alerts may need to be performed multiple times.

What are the time constraints on the tasks?

Tasks that require the user to set up a schedule of bus alerts can take some time. Similar to setting up a calendar, the user is generally expected to set up a group of alerts ahead of time. In the case where the user wants to set up one or two alerts on the spot, adding an alert should take no longer than 1 to 2 minutes. Tasks that include receiving alerts only require the user to look at their phone; this should take a matter of seconds.

What happens when things go wrong?

If the alert system/bus information is down, an alert will be sent out immediately notifying the user that they should not rely on alerts for a certain time-frame. On top of this, it is the responsibility of the user to remain connected, either through wi-fi or a cell signal. If a user is not connected, alerts will be received once a connection is reestablished. In situations where the user finds that alerts constantly fail or do not provide relevant data, the user can report these problems using the 'Report a Problem' button through OneBusAway.

Tasks

1. Recurring Weekday Alerts & Custom Ringer

Alex is a student at UW living in the U-district. He works part time in downtown Seattle's AT&T Store and commutes every weekday from NE 41st and University way. He works in the afternoon from 1 pm to 4 pm each weekday. He has to set up reoccurring alerts for his bus from the U-District to Downtown Seattle at 12:30pm as well as the return trip at 4:15pm every weekday.

2. Snooze & Selected Weekday Alerts

John takes the bus home after his class which ends at 3:30PM every Tuesday and Thursday. It would normally take him about 10 minutes to walk to his stop, so he has to set a reminder for Route #30 to alert him 15 minutes prior to the arrival of the bus at his stop. Today, he's running very late. He is alerted about an impending bus arrival on his smartphone, and decides to hit "Snooze". After hitting snooze, BusAlerts pops up another alert, telling John that the next Route #30 will be arriving at 4:00pm. Now having extra time, he walks to his bus stop leisurely. At 3:45pm another alert is sent letting John know that he should make his way to his stop.

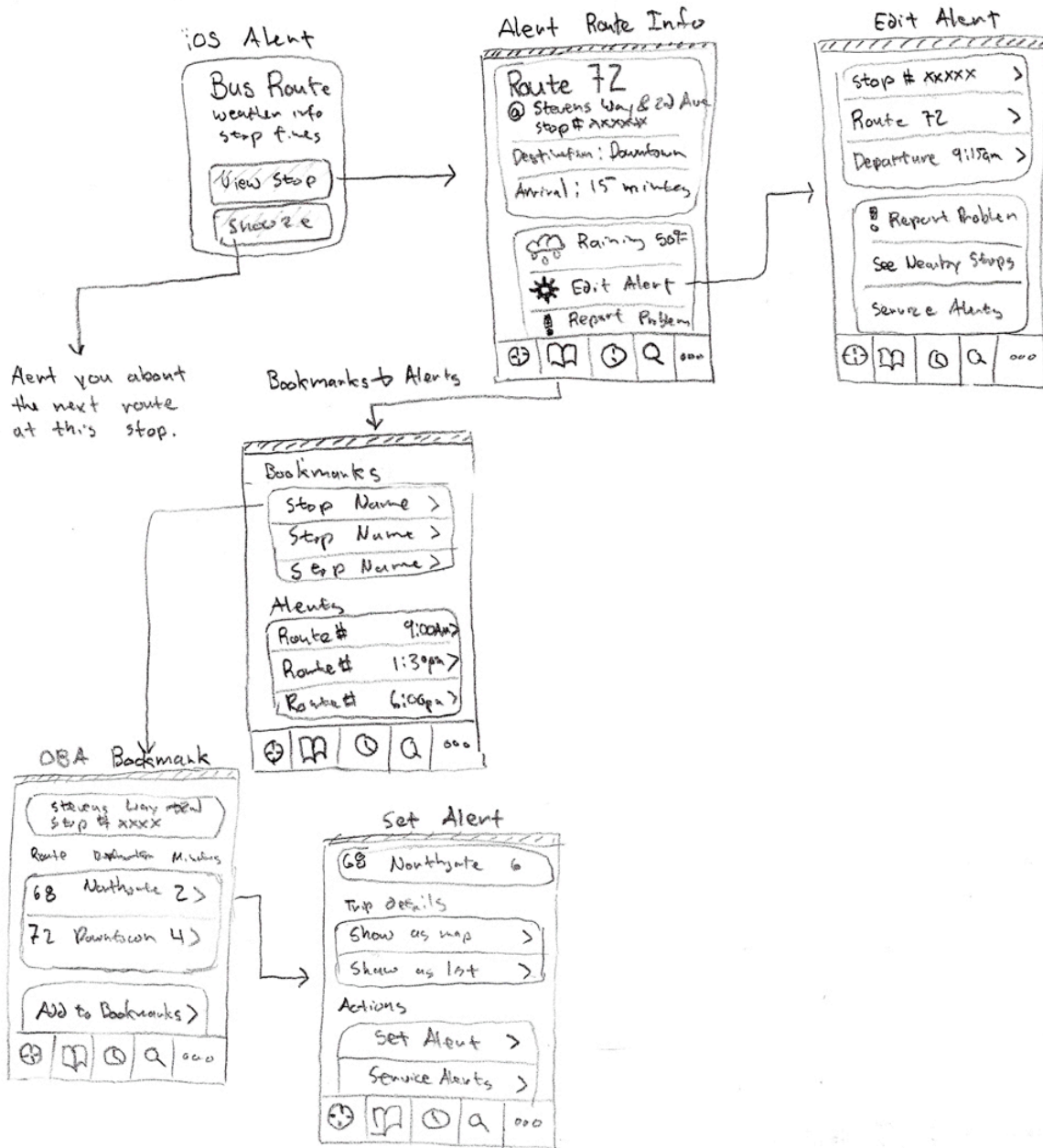
3. Delay Limits & Setting Alerts on the Go

Becky is a Civil Engineer in a startup company who lives in downtown Seattle. She takes the 545 every weekday to work in Redmond. She has to go to sites quite often -- sometimes it is last minute. This morning, she sees that she has a new appointment at a site in Kirkland at 2pm, so she sets an alert for the appropriate bus, making sure to set a 5 minute delay limit to get to her appointment on time. At 1:20pm, she receives an alert that tells her the bus has been delayed over her 5-minute limit due to a traffic accident. Unwilling to be late to her appointment, Becky selects another route that will take her to her destination before 2pm and saves the modified alert.

Storyboards

1. BusAlerts Integrated with OneBusAway

In this design, BusAlerts is integrated within OneBusAway. Utilizing OneBusAway's bookmarking feature, alerts are included as an extension of bookmarking. Users can bookmark a stop, and at that bookmarked stop they can set an alert for a specific route and arrival time. In-app alert information also includes weather data and is overall similar to viewing a route in OneBusAway.



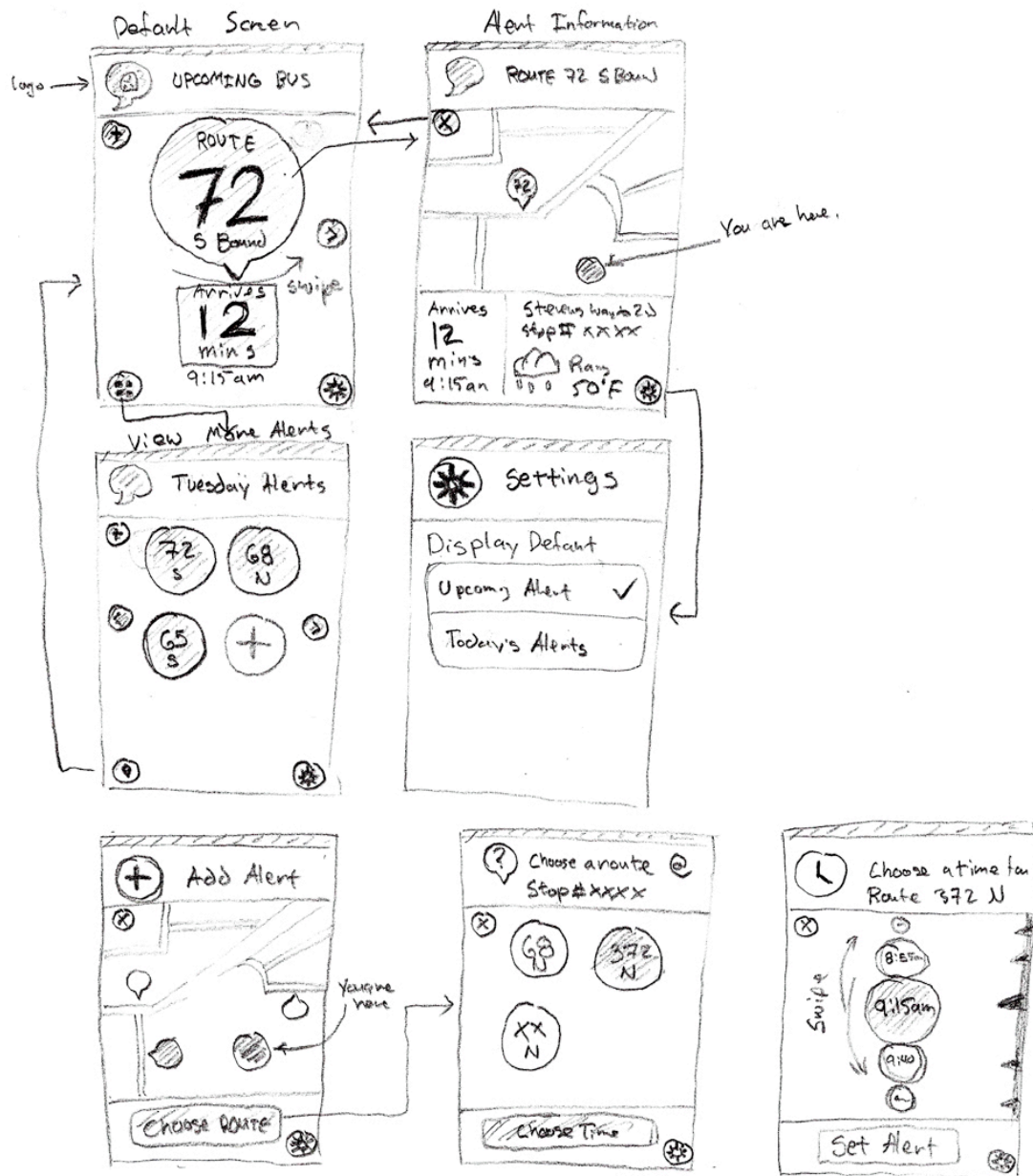
2. BusAlerts Tab Design

Unlike OneBusAway and other navigation apps, this interface focuses solely on alerts, leaving users with a simple interface to quickly modify bus alerts for their busy schedules. Alerts can be set and viewed by specific days of the week. Tabs help the user differentiate the reoccurring alerts they have throughout the week, and keeps alerts more organized. Current settings allow the user to customize their phones alert method as well as toggle weather data for in-phone alerts. Settings may be expanded later on.



3. BusAlerts Circles Design

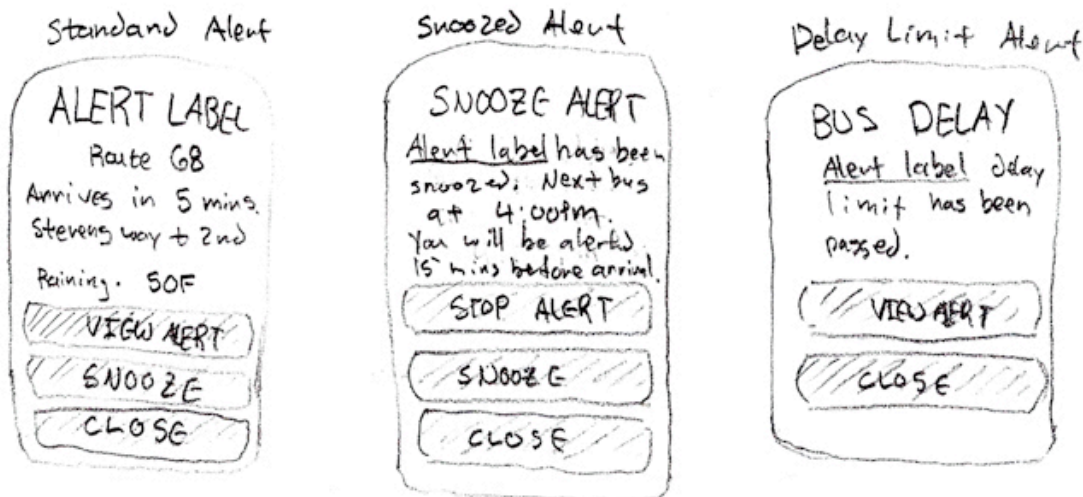
This circles design takes a more graphical approach to the interface. Instead of listing alerts, alerts are now much larger and require the user to utilize touch gestures more. On the 'Default Screen' pressing the '>' or swiping right to left allows the user to move through the day's alerts. Clicking on the large circular alert minimizes the circle to reveal a map and more detailed information. Adding and sorting through alerts is more engaging than a list. In settings, the user can set whether all alerts of the day are displayed by default, or if the upcoming bus/alert is shown. More settings will most likely be added.



Selected Interface Design Discussion

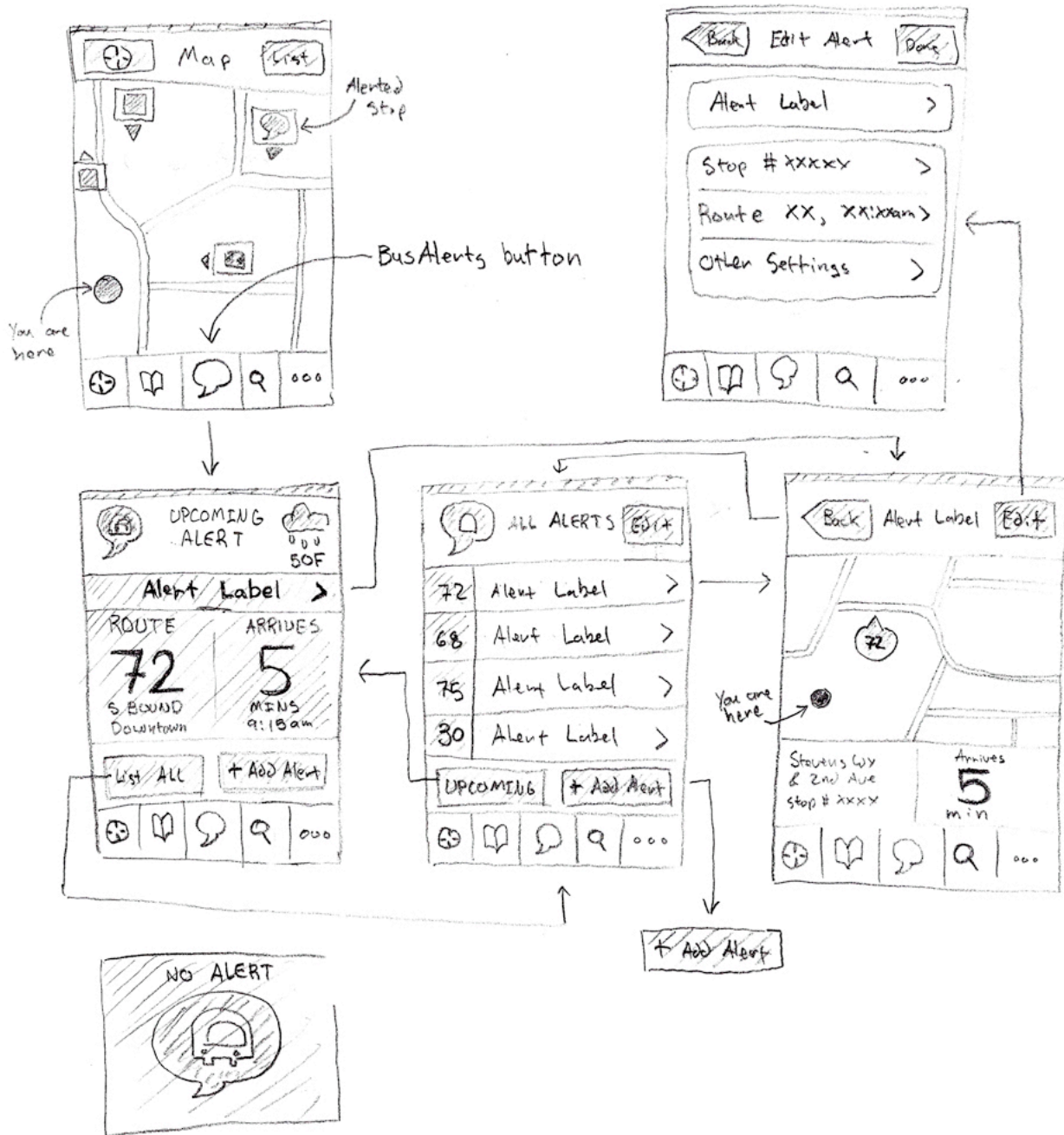
Various Alerts

BusAlerts offers various in-phone alerts to notify users. The standard alert shows the user inputted alert label, bus route number, arrival time, bus stop address, as well as weather information. In this alert, users can select “View Alert” to go to the OneBusAway app and display further alert information. “Snooze” can be selected to ignore the current alert, and notify the user about the next upcoming bus. If the user selects “Snooze,” a snoozed alert will immediately pop up, notifying the user of the scheduled time of the next bus, and how many minutes ahead of time the user will be alerted (alert times are set up beforehand). A snoozed alert also includes a “Snooze” button, so the user can delay their next bus alert multiples times without ever opening the app. In cases where there is a severe bus delay (delay limits are set beforehand), the user will be notified with a delay alert, and the user can click “View Alert” to find more information about their bus status and modify their alert. “Close” buttons are included to dismiss alerts.



BusAlerts Primary Screens

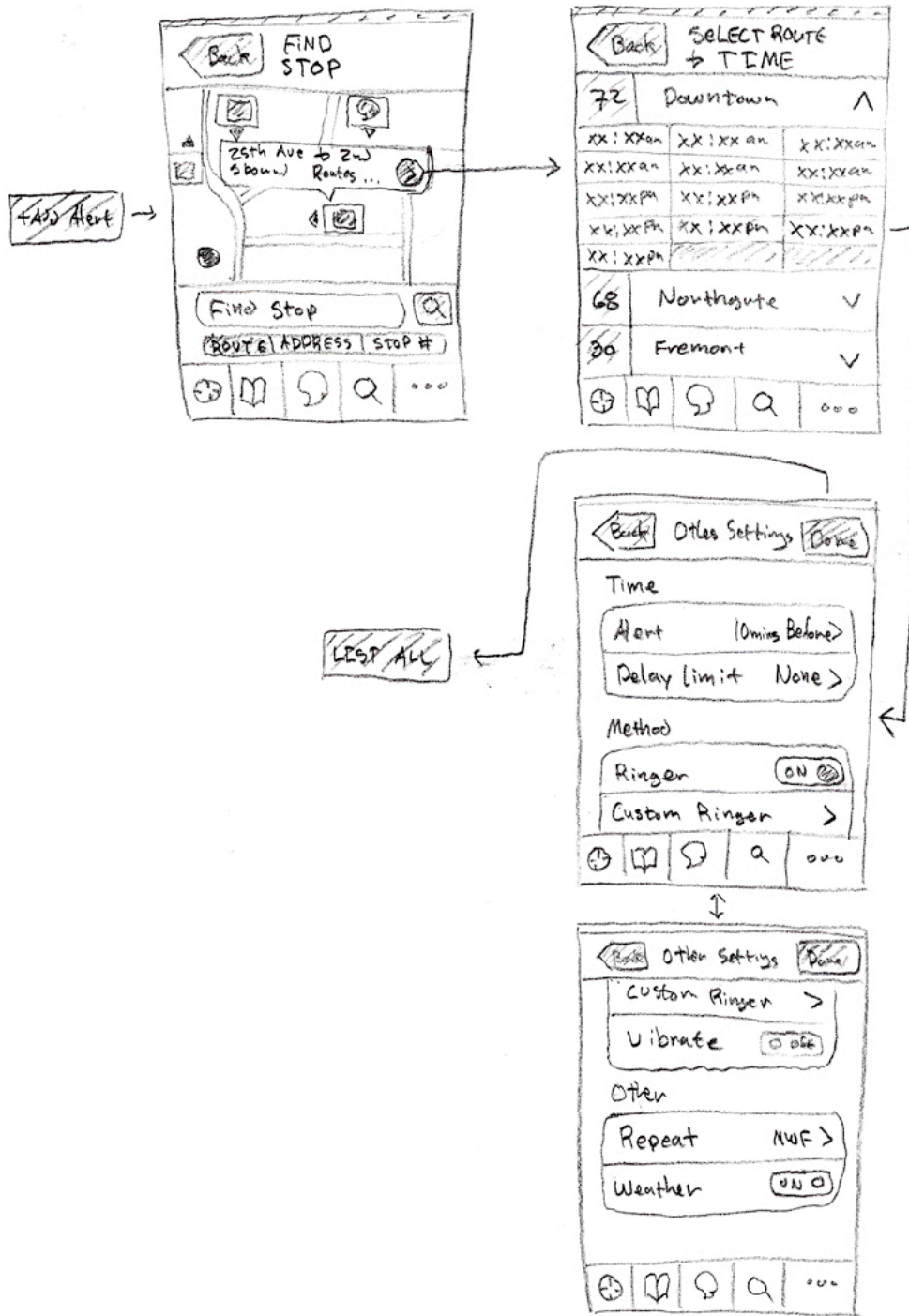
With BusAlerts integration, the default OneBusAway map now differentiates between alerted and unalerted stops. Stops that are associated with an alert will display the BusAlerts bubble icon rather than the usual bus icon. This helps users identify the stops they plan to use. The “Recent” button has been removed to make way for BusAlerts. When the user selects BusAlerts, they are sent to the default screen displaying the users upcoming alert. Here, the user can quickly check the current weather condition, temperature, and bus route and arrival time for their upcoming alert. “List All” displays all set alerts, while “Add Alert” allows the user to set up a new alert. The user can select an alert to view the location of the alerted stop on a map and further stop/bus route information. If no alerts have been set, a “No Alerts” notification is displayed on both “List All” and “Upcoming” screens.



Adding an Alert

When adding an alert, the user is first prompted with a map interface similar to the one provided in OneBusAway. On this map, the user can search for their stop. Bus stops that are already associated with alerts are marked. After a stop is selected, the user can select a route and associated route arrival time in an accordion like fashion (routes expand and contract to display scheduled times associated with the selected route). Once a stop and route is selected, the user is given a variety of other options to customize. Time-based settings allow the user to

choose how early they want to be alerted about their bus arrival. A delay limit can be set to notify the user if their bus is ever running too late. The user also has the option of setting two additional methods of alert, a ringer or vibrate. A ringer allows the user to select any music on their mobile device to play when an alert pops up. Finally, alerts can be set to repeat for various days of the week.



Reasoning Behind Design

Our interface combines the strengths and features of the integrated OneBusAway interface, Storyboard 1, along with a unique design shown in Storyboard 2. We considered creating a separate application just for setting up alerts, but found that OneBusAway contains features that are complimentary to BusAlerts, and vice versa, and ultimately decided to integrate the two. BusAlerts notifies users about real-time bus information without opening up OneBusAway. Integrating BusAlerts with OneBusAway allows frequent riders with routine trips to stay up to date easier, while still leaving less frequent users as well as users that want more bus information with the great features incorporated in OneBusAway.

Initially, we considered creating a complimentary online interface. This would require users to create an account online, set up alerts that could be synced, then log in through their mobile devices to have alerts synced across a variety of alert methods. Text and voice-based alerts were even considered, but all these ideas were later discarded because we decided that an online interface and multiple alert methods would be too complicated. Our primary goal was to create an interface that would allow users to easily set up alerts.

We first began to narrow down our design selection by eliminating StoryBoard 3, since the overall design was rather unorthodox and may be less intuitive for users that want to quickly set up alerts. We had to keep in mind that, since we are dealing with alerts and promoting less frequent use of our app, we would want a design that was very intuitive. We concluded that we liked how Storyboard 2 took a simple approach to displaying and adding alerts. But, even though our primary goal was to allow users to set alerts, we thought that a new application concentrated on only alerts was too limited. Our contextual inquiry showed us that users have a variety of expectations for a real-time bus information app, so we thought it would be more beneficial to integrate and provide an additional feature to OneBusAway. While integrating BusAlerts, the “Recent” button in OneBusAway was removed. We believe that BusAlerts is a far more important feature than recently viewed stops.

The final selected design is simple and familiar to OneBusAway users. Setting up alerts through the BusAlerts feature is straightforward and allows for quicker access of information for an information filled app.

Functionality Summary

- All features from OneBusAway are provided (excluding features under “Recent”)
- Stops associated with alerts are marked on maps
- Alerts for bus arrivals can be set as well as edited and deleted
- Information of an alert, including bus route, arrival time, location and weather are viewable
- Allows user to receive in-phone alerts about bus arrival information without opening app
- Users can snooze an alert to be notified about the next upcoming bus

Scenarios

1. Recurring Weekday Alerts & Custom Ringer

Alex wants to set up a recurring alert to get to work in downtown Seattle during the weekdays. There is a bus that leaves the U-District for Downtown at 12:30pm everyday, as well as a return bus at 4:15pm. Alex opens up the OneBusAway application on his smartphone and selects the BusAlerts icon at the bottom. Having no current alerts, Alex selects the “Add Alert” button. He finds his stop in the U-District through the OneBusAway map. After clicking on his stop, Alex selects his bus route to downtown and selects the arrival time for his route. He then sets the alert to repeat for weekdays and notify him 10 minutes in advance. After inputting these departure settings, Alex adds a custom ringer, *Through Fire and Flames*, to his alert and selects “Done.” Alex is returned to a list of his alerts and once again selects “Add Alert” to set an alert for his return trip. He goes through similar steps to set up his return trip, and once he is done setting this second alert, he closes the app.

2. Snooze & Selected Weekday Alerts

John has already set up an alert for his return home trip at 3:30pm every Tuesday and Thursday. From recent trial and error, he has found that it normally takes 10 minutes to walk to his stop, so John wants to receive an alert to accommodate this. John opens up the OneBusAway application on his smartphone and selects the BusAlerts icon. He is directed to the default page displaying his upcoming alert. This upcoming alert is not the one he wants to edit, so he selects the “List All” button. With all alerts displayed, John selects the appropriate alert, and then clicks “Edit.” He sees a list of the properties he can modify and selects “Other Settings” and modifies the alert time. Here, John sets his alert to notify him 15 minutes before the bus arrives instead of the 10 minutes he previously had set and selects “Done.” Later that day, John finds himself running very late. At 3:12pm John receives an alert notifying him that his bus will arrive in 15 minutes. The bus is running 3 minutes ahead of time, making it impossible for John to get to his stop, so John presses “Snooze” on his alert. Another alert immediately pops up telling John that the next available bus stop is scheduled to arrive at 4:00pm and that an alert will be sent 15 minutes prior to this new bus’ arrival. At 3:45pm an alert is sent, John clicks “Close” and makes his way to his bus stop.

3. Delay Limits & Setting Alerts on the Go

Becky has already set up alerts for her routine commute to Redmond, but has to always add and modify alerts for constantly changing appointments. This morning, she sees she has a new appointment in Kirkland at 2pm. She opens up the OneBusAway application and selects the BusAlerts icon. She then selects the “Add Alert” button to set an alert for this new appointment. While she is setting up the alert time, she also chooses to set a delay limit. Becky cannot afford to be late to this appointment, so she sets her delay limit to 5 minutes. She closes her app after adding this alert. At 1:20pm, she receives an alert that, due to a traffic accident, says her bus has been delayed by 12 minutes, clearly over her 5 minute limit. She clicks “View

Alert” on the in-phone alert and is brought to the alert’s information in OneBusAway. Here, she clicks “Edit” to edit the alert’s bus route. After selecting a new route and an appropriate arrival time that will keep her on schedule, Becky selects “Done” and closes the app.