Travel On the Go

A data-driven transportation display for the Greater San Juan Islands

Interaction Design Studio I: Section C
Assignment 2: Data-Driven Environmental Display
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Purpose and Design Goals

Transportation hubs across the world depend on a clear display to inform their visitors of continuously changing data. When dealing with such large amounts of data, designers face the challenge of understanding what information is crucial for their users and finding efficient ways to relay this information. Through our design, we want to promote transportation around the San Juan Islands and create an easy and flexible experience for our users throughout their travels.

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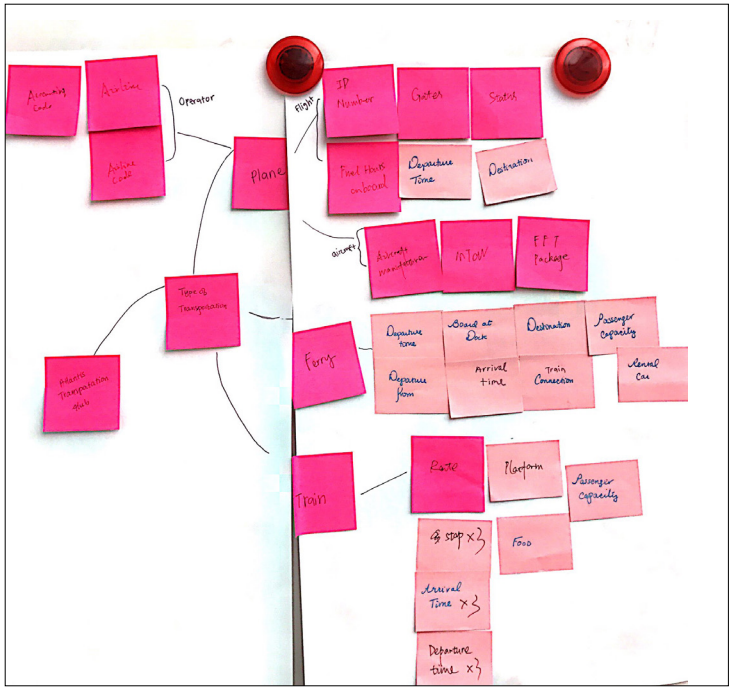
Premise

For this assignment, our task was to create a data-driven environmental display for the Atlantis Hub, a major transportation hub around the San Juan Islands. Our main focus was to optimize usability, usefulness, and decision-making.

We considered typography, composition and color to create a clear point of entry, clarity, signal important data, support scanning, and provide multiple sequences and levels of reading.



Initial data breakdata in class

Research

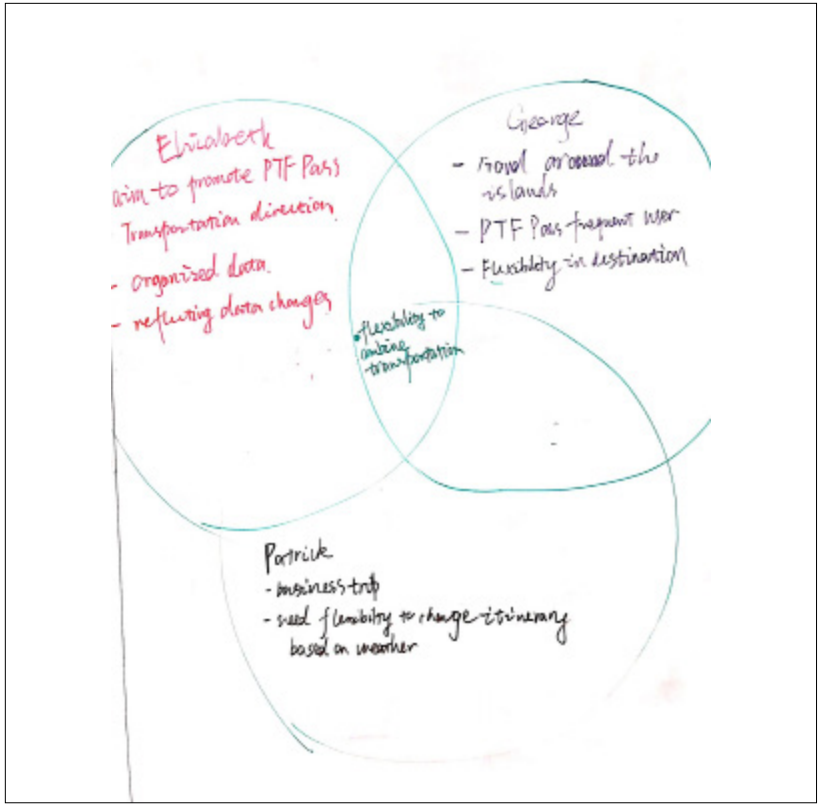
The context of our design space is the data from the Atlantis Transportation Hub which serves as a main hub for different destinations around the San Juan Island.

The Atlantis Hub, under the direction of Elizabeth Duarte, our stakeholder persona, serves different types of travelers and different transportation modes. As presented in our assignment, "Elizabeth's goal is to educate the public about the ease with which travelers can make itineraries by combining plane, train, and ferry trips through her new program, the PTF Pass, which allows customers a great value and a lot of flexibility."

We received a spreadsheet with multiple columns and rows containing flight, train and ferry itineraries to more than 10 destinations across the greater San Juan Island. We also were presented with two user personas, in addition to our stakeholder persona.

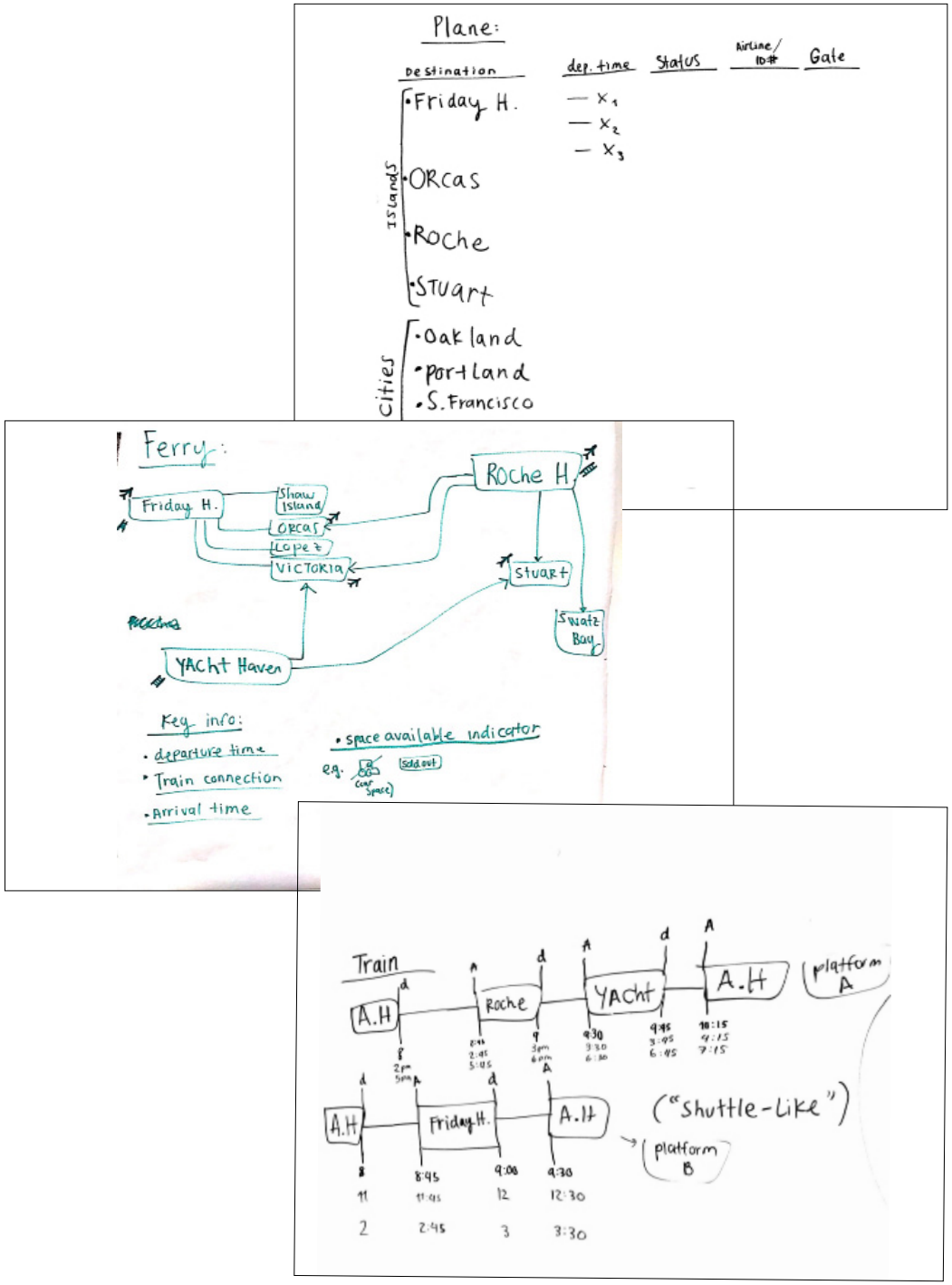
Understanding our stakeholders & users

Our users include George Shimko and Patrick Mulvaney. George is a resident of the San Juan Island who enjoys having his family over to travel and plan fun itineraries around the island and to his cabins on Orcas and Stuart Island. He plans on giving his family members PTF passes for this purpose. Patrick, an environmental engineer, spends an average of 3 days per week in the area for business reasons. The PTF pass can be a great resource for him enabling him to optimize his travel to accommodate changing weather conditions.



Understanding our data set

Upon this scenario, we started by breaking down the data and separating each mean of transportation by its specific features mentioned on the spreadsheet. We then modelled each transportation mode and realized that not all destinations can be accessed by one single transportation mode, and some even need a combination of these modes (i.e. train plus a ferry connection) in order to be reached.



Data Modelling

FLIGHTS

We categorized the flights by departing to islands or cities, and identified data sets that are more informative to the users.

TRAINS

Trains departing from the Atlantis hub have two main routes each departing from its own platform. On platform B, there is a shuttle-like route to Friday Harbour that departs every 2 hours starting at 8am. Platform A, has a train that goes to Roche Harbour first and the Yacht Haven. We used boxes to outline stops and arrival and departure times in rough sketch.

FERRIES

The ferry service is available only through connection at Friday Harbour, Roche Harbour and Yatch Haven. Friday and Roche Harbour both connect many islands, and different transportation modes.

Design Goals

FLEXIBILITY

Ultimately, we want our users to leave the Atlantis Hub with a clear understanding of their options and the ability to reach their destinations with ease.

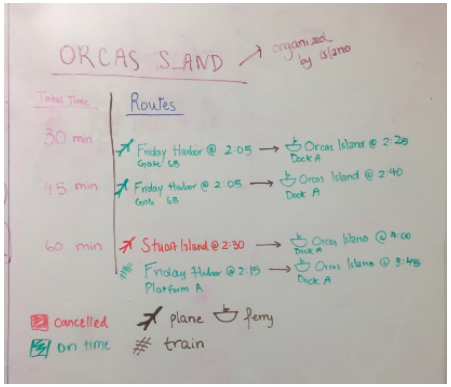
CLARITY

It is imperative that our users are able to read and understand the information we provide.

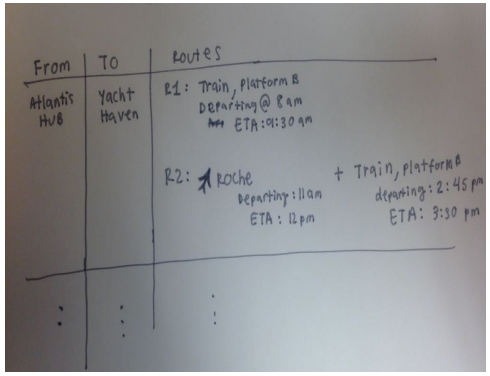
ACCURACY

With frequently changing schedules and statuses, we want to accurately and efficiently relay this information to our users

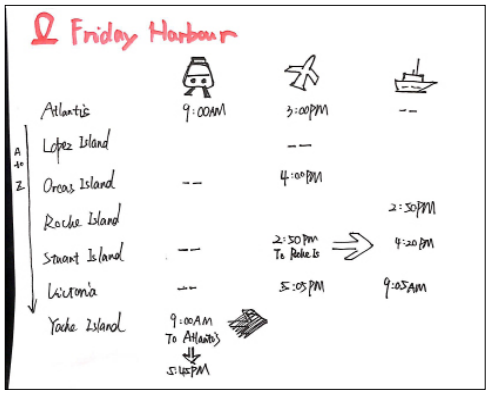
Ideation - Initial Sketches



Sketch #1: This first sketch organizes travel information by destination, total trip time and grouping different possible routes.



Sketch #2: This sketch builds on the previous idea but grouping by starting point and final destination.

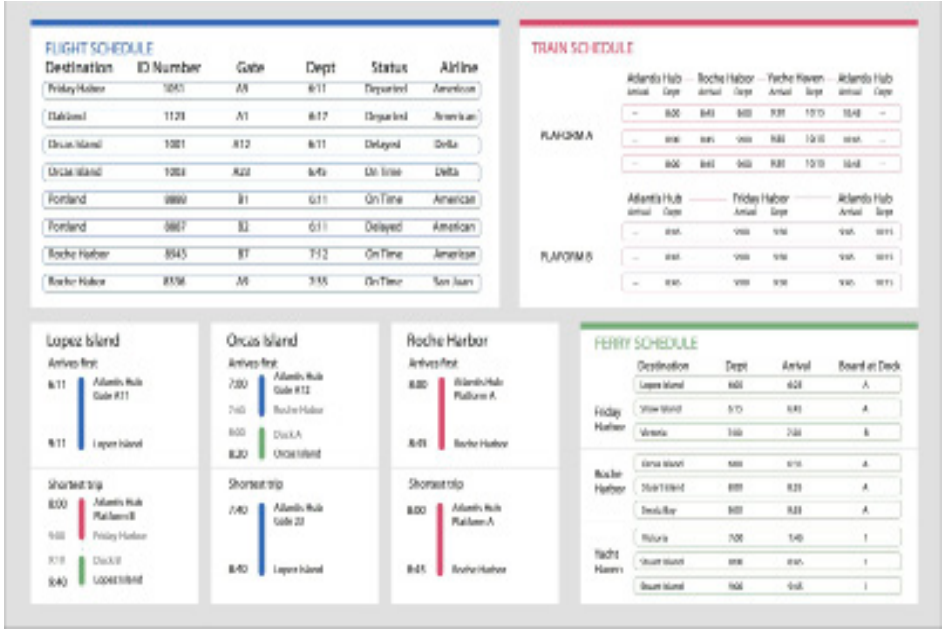


Sketch#3: The idea of this sketch is that displaying the Total Time of a route option may help people make decisions on the go.

Digital Sketch#1

We started to digitalize our paper ideas.

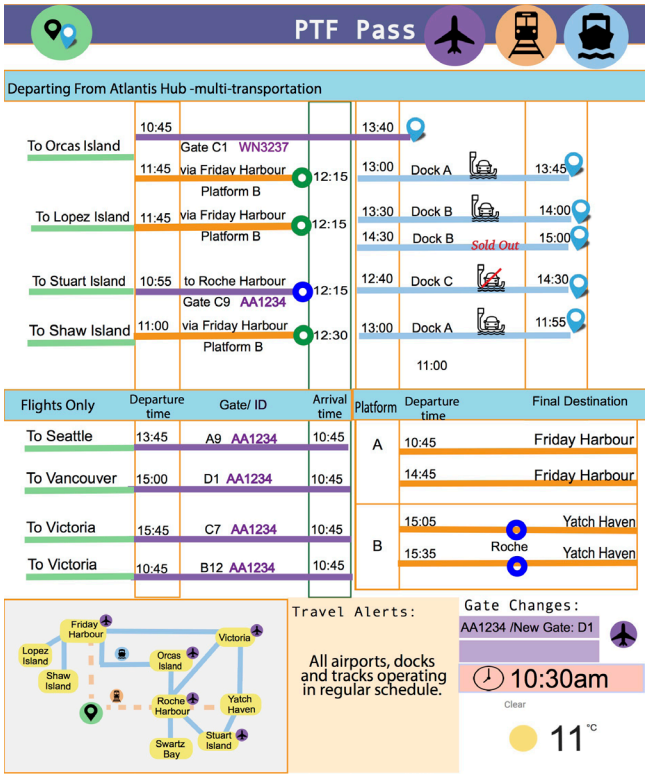
This sketch shows each transportation mode on a separate card. It also includes a special section that will show combined routes to specific destinations. The route that arrives first is shown first followed by the shortest trip available to this destination. Each transportation mode is color coded.



Digital Sketch#2

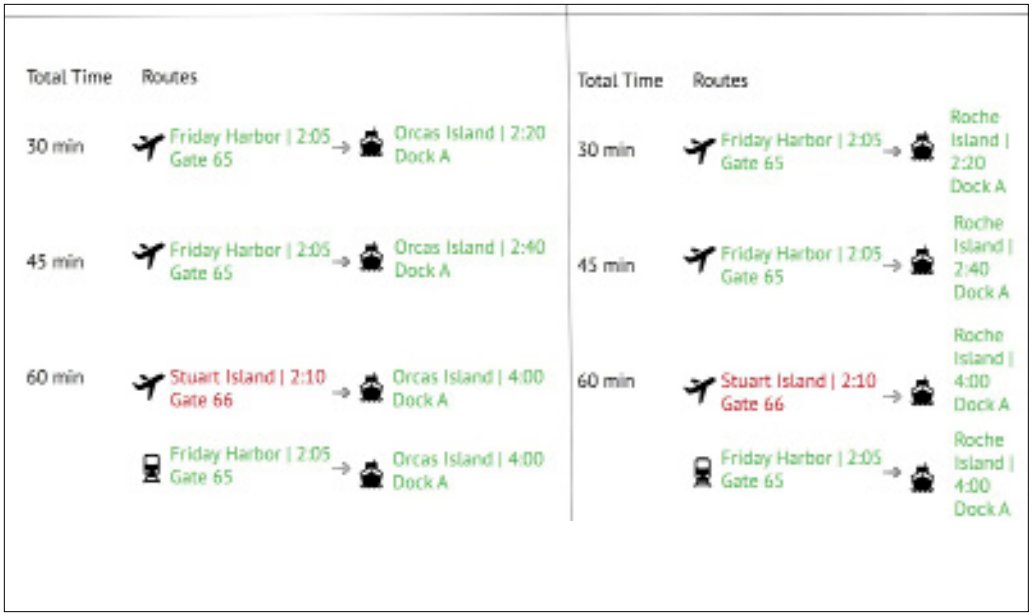
This sketch uses icons and colors to distinguish each transportation mode. It also includes a PTF pass ad/ symbol to highlight and promote the program on the display. Combined routes, routes that include flights, trains and ferry rides, are shown first. The right column shows the final destination. Circles highlight connection points as well as detailed departure and arrival times for each connection.

Flights only and train only options are shown on the lower part of the display. There is a map that does not follow the geographical location of the destinations but rather highlights the connections among them and the transportation types available. The map's purpose is to orient users who are new to the greater San Juan Island area.



Digital Sketch#3

This sketch uses a design idea of having a card for each destination. Different available routes, combining different transportation types are presented in order from the shortest to the longest total transit time.



In-class Critique

After we showed our team's three digital sketches in class, we received a lot of con-sturctive feedback on both our visual design and our information architecture behind.

We highlighted some common problems in our design and decided to integrate all the merits of the 3 digital sketches by making a consolidated one.

Point of entry

A common feedback we received was that we needed to improve on creating a more clear point of entry so our users know where to start when they see the display.

Avoid repetitive information

From the critique, we also learned to be more aware of the information or icons that were repetitiev and were push to think of new ways to better present the data in a neat and clean manner.

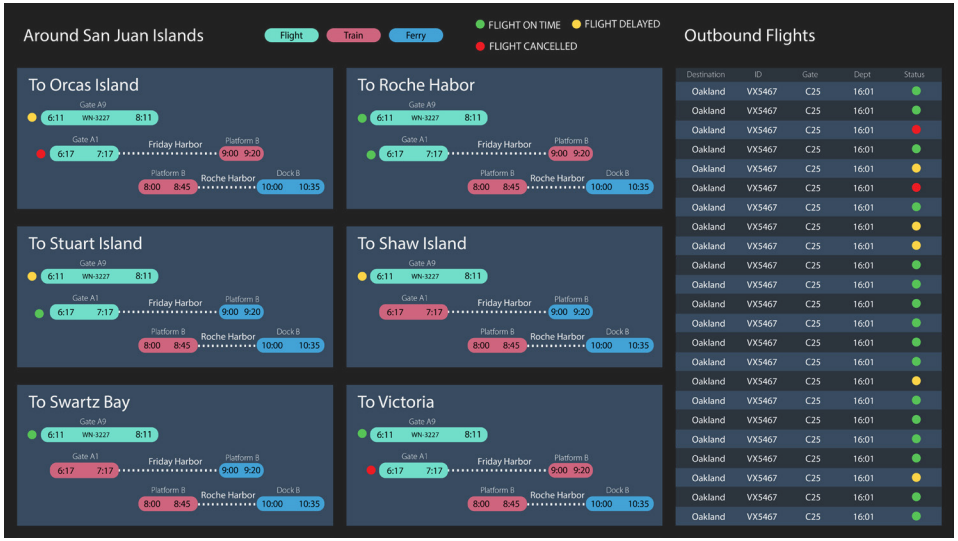
Visual hierarchy

It was also pointed to us that our sketches all seemed to display the information from the same visual hierarchy, which created difficulty for people to look for information. We were prompted to reconsider our typographic as well as color choices.

1st Iteration

After our initial critiques, we tried to compile the best parts of each design into one.

We wanted to display each destination as a distinct card with the upcoming routes to get there. The routes were displayed as combinations of transportation optimized by total travel time. We added animation to show flight status with a flashing dot next to the route as well as to shuffle the cards after a few seconds. We also displayed all of the outbound flights on the side for people with purchased tickets who just wanted to glance at the screen to get the information they needed.

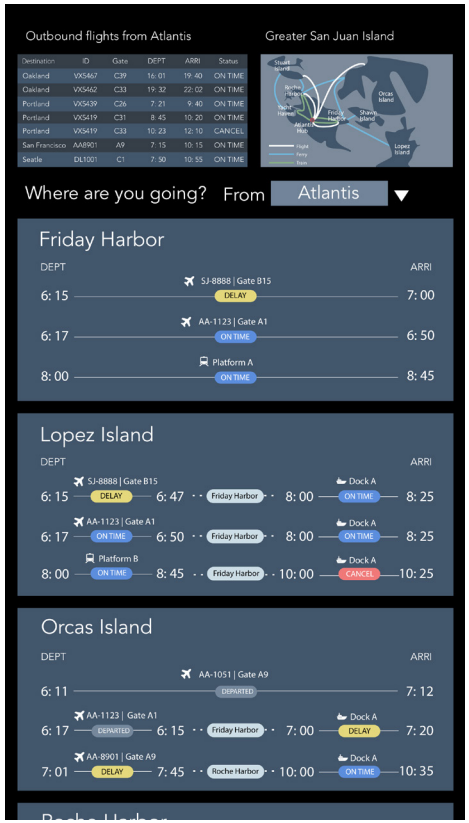


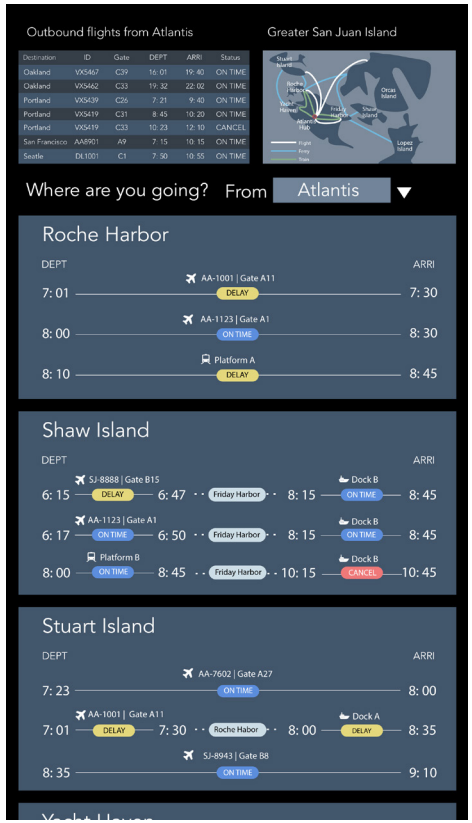
Keep On Reflecting

During our critique our peers provided a lot of helpful feedback for our design. For one, people found it hard to know where to look. We didn't have a distinct point of entry. Additionally, after looking at each card, people found it hard to follow what was being displayed. The two legends made it difficult for people to quickly look and understand. Others also brought up that the outbound flights section probably shouldn't take up so much real estate and that that many flights probably didn't exist in the data. We could create more space by limiting the section. People also found it helpful to have a map and suggested that the new space be allocated for one. The colors were also brought up to be mimicking the conventional red, green, yellow, and blue and we were challenged to find a more complementary and appealing color palette.

2nd Iteration

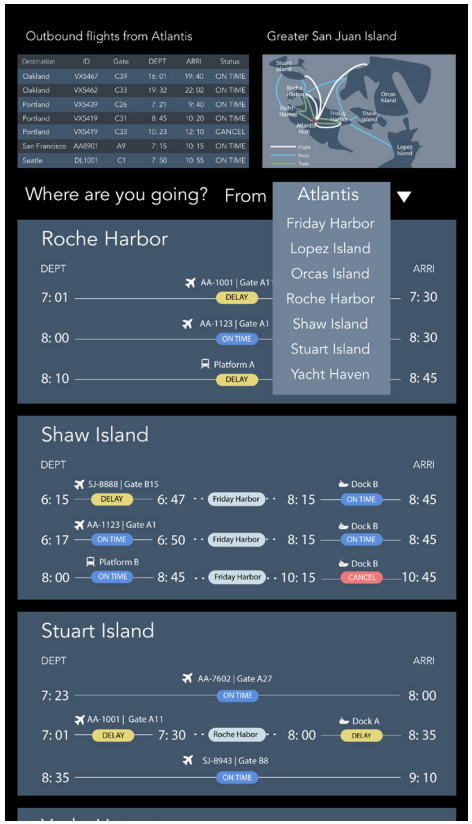
Taking in the comments from the in-class critique, we decided to take out some of the colors in the display such as green and pink to avoid confusion. We also realized that using colors to represent different transportation modes would actually add in an extra step of information processing for our users to remember, so we decided to use icons instead. To have a clearer visual hierarchy and point of entry, we switched to a vertical view and cut down the space that outbound flights took up.

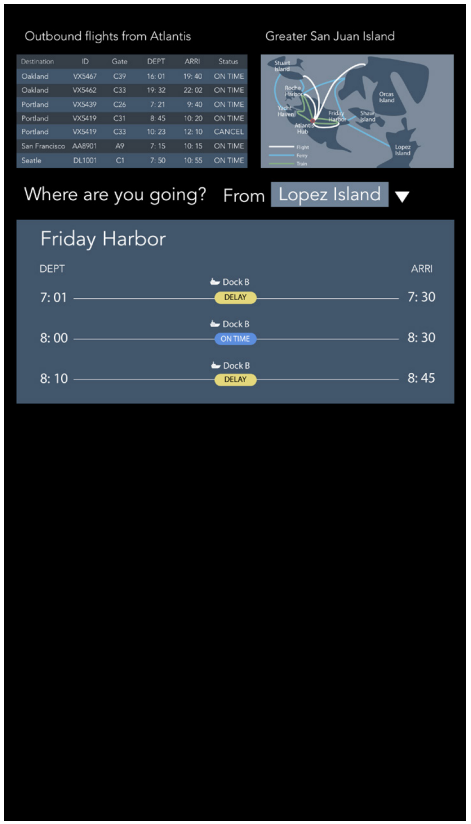




2nd Iteration

We also thought about the question that if we are only providing transportation information from one departing location, users might not know whether it is possible for them to go to other islands from their next destination and would therefore not be able to plan their trips. In this iteration,we decided to add in a map with transportation routes to provide guidance. We also explored adding the control option for user to choose where they are departing from so they can get to see all the information without being constrained by where they are at the moment.





But...

This iteration was quickly invalidated when we were asked by Ellen what if our users want to plan their travel itineraries not only in the time window we provide, but throughout the day? That was the moment when we realized that providing only the next few transportation routes to keep our display clean and legible created a tradeoff that users can only see the information in the time we give to them. And for our two main user personas George and Patrick, planning their travels ahead was definitely an important need that we could not choose to ignore.

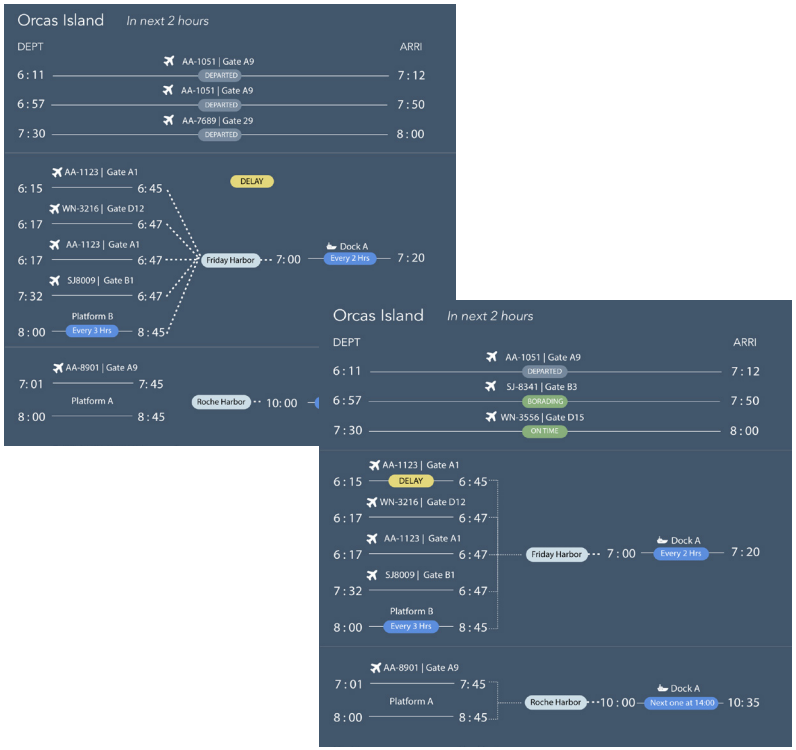
Reconnecting to the users

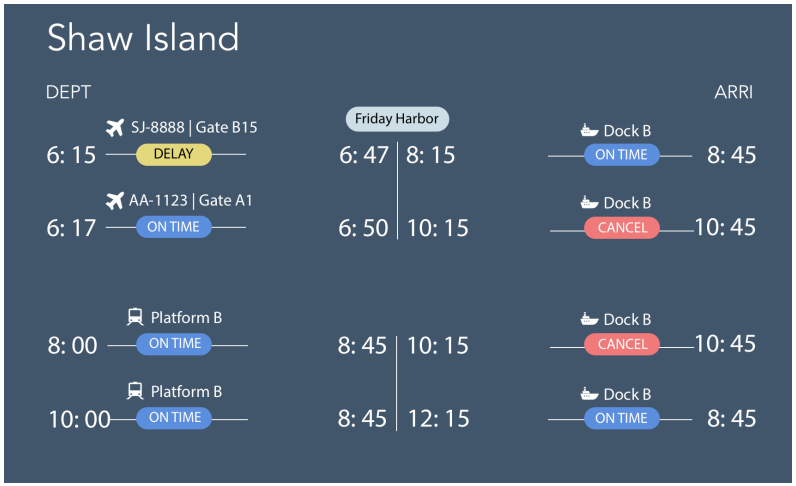
Exploring the possibilities

After realizing the importance of helping user plan their all day itineraries, we were in a dilemma between trying to provide all available information while being constrained by the limited screen size. So we decided to dive into the data set again to see if there is any pattern or method to simplify the routes.

We found that even though direct flights to the three major harbors or some of the islands have no pattern at all, ferries to each individual island departing from all three harbors all have a frequency pattern that we could extract, which would greatly help us minimize the number of transportation routes we need to display.

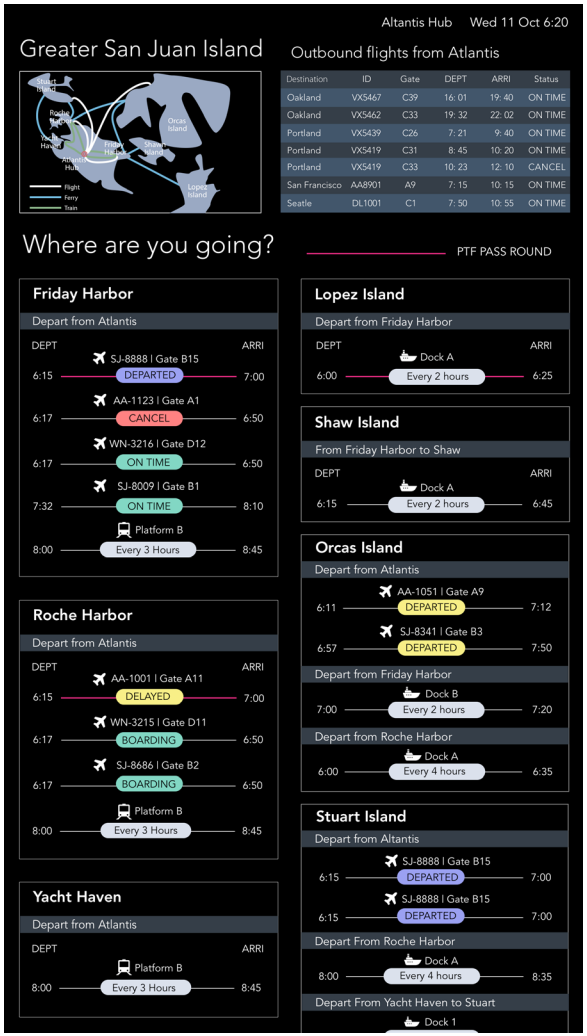
However, we also became aware of the drawback of showing the whole travel route from flights or trains to the connection points to transiting information to individual islands - we ended up repeating a lot of information since we had to display the same travel information to the connection points for every island.

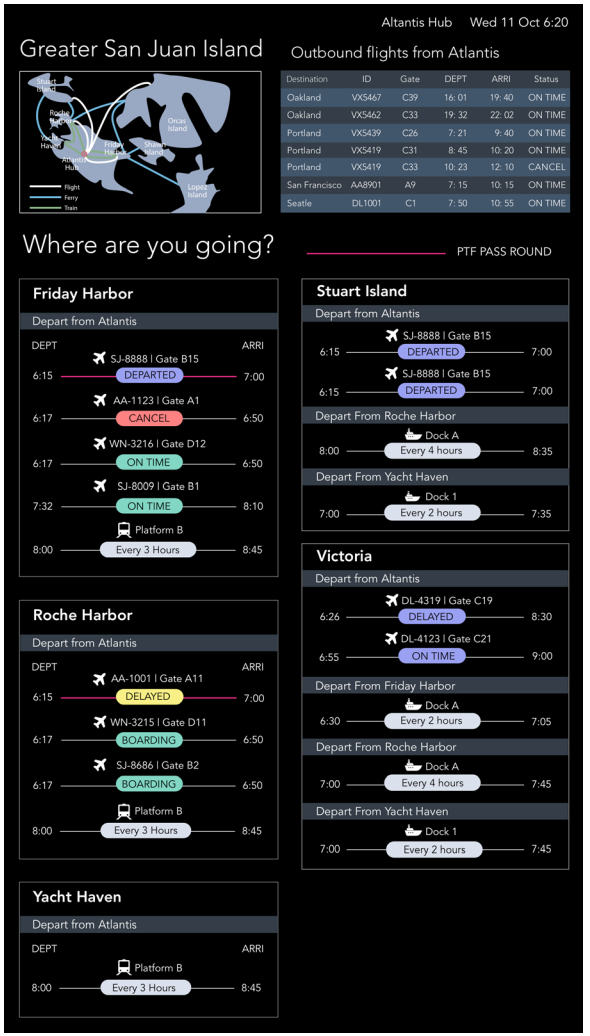




Final Design

Our final design decided to categorizing the routes by showing transportation to the three major harbors and to the individual islands.

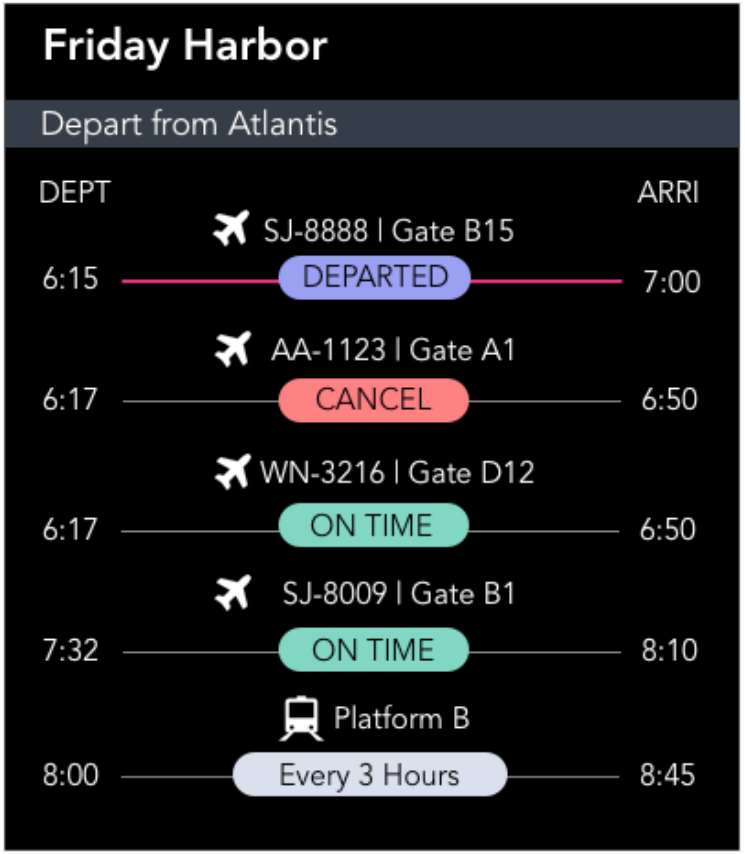




Final Design

Collection points: make fast decisions

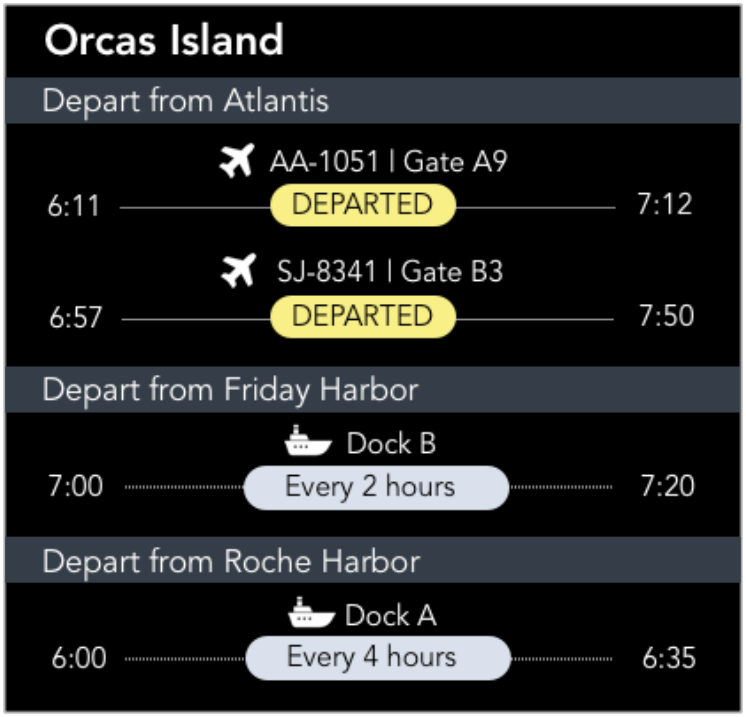
On the cards for the three connection points Friday Harbor, Roche Harbor and Yacht Harbor, we inferred that our users mainly wanted to go to these places so that they could transit to the islands to tour around, so we provided the earliest departure routes in the next 2 hours to help people get there as soon as possible.



Final Design

Individual island: multiple destinations with all day information on the go

For individual islands, we listed out the possibilities of going to the destination from different departing places, along with ferry frequencies, which will help users like Patrick or George's families plan their all day itineraries ahead just from looking at one single display.



Final Design

Adding in the animation & controls

Our main animation is the auto-refresh between the two screen. We also added in the control for users to scroll up and down the cards if they are in a hurry and don't want to wait for the refresh.

Considering the flight status change might be frequent, we think that adding the animation will also cause too much distraction. So we decided to only flash the status of 'boarding' and keep other status static. The flashing effect of 'boarding' was noticeable for people taking that flight while also not being too distracting for other users.

Reflections

This three-week long project was the first team design project we have ever experienced. As a non-design background team, this journey was both a challenging and fruitful one for all of our team members.

Along our process of rapid iteration, we learned how to always keep our minds open to new possibilities and not be afraid to negate our own ideas. We tried to think outside of our own preferences and put ourselevs in user's shoes. It was ertainly not a easy job, but we were excited to see how far we have come along just thinking like a designer while also thinking from the users.

We also realized that design could not please everyone even though we wanted to meet all of our users' needs. Every good design comes with tradeoffs. It was easy to get lost about where our design stands from in the process, and we learned to always come back to our initial design goals and design for scenarios.

At last, we would like to thank Ellen for giving us all those insightful feedbacks and also our classmates for those constructive comments as well as inspiring ideas for us to learn from.