

tWave

Assignment 2: Data Driven Environmental Screen
Interaction Design Studio, Section A

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Total Time: 3 weeks

Design Process

Section	Page
Problem	01
Goals	02
Research	03
Inspiration	06
Ideation	07
Major Inspiration	10
Iteration	11
Solution	17
Perceptual Affordance	20
Animation	23
Control Concept Design	26

Large displays used by large volumes of people must be highly readable and easy to understand

Data driven screens are dense with information and are often used in high stress or time constraining environments. This often leads to misinterpretation when using information.

In this project, our focus was on creating more intuitive travel screens (for planes, trains, and ferries), which could be more accessible to large audiences, accomplish the specific requirements of our stakeholders, and mitigate the risks associated with misconception and misinterpretation during travel.

Physical Display

Goals:

Our goals were two pronged - to clean up the display & to fulfill the needs of all types of travelers. For our physical display, we had a few main foci:

- Make the screen more readable
- Present information differently
- Eliminate having a mixed color palette, which are the result of the logos and excess information
- Figure out a means to highlight important information, such as delayed or cancelled flights

Fulfilling the Needs of our Stakeholders

For Elizabeth:

- Create highly readable displays
- Generate more usage of the new PTF Pass

For George:

- Easy access to understand PTF Connections so his family can visit him on San Juan Islands
- Make San Juan Islands the central hub for travel

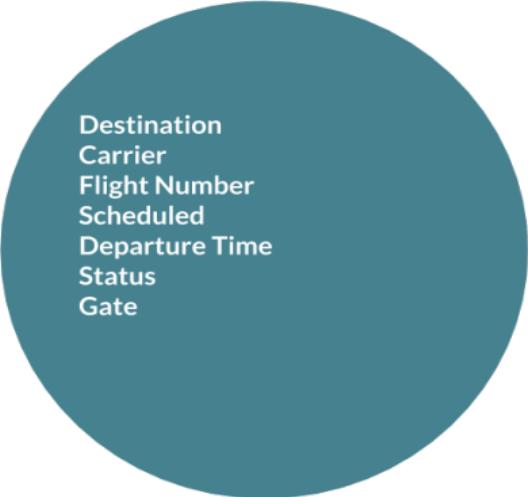
For Patrick:

- Find the most efficient way to use the PTF for work travel

Part I

We initially began with trying to break down the data and understand which feature were a priority for the differing forms of transportation

Plane



- Destination
- Carrier
- Flight Number
- Scheduled
- Departure Time
- Status
- Gate

Train



- Origin Station
- Destination
- Departure
- Platform
- Arrival time

Ferry



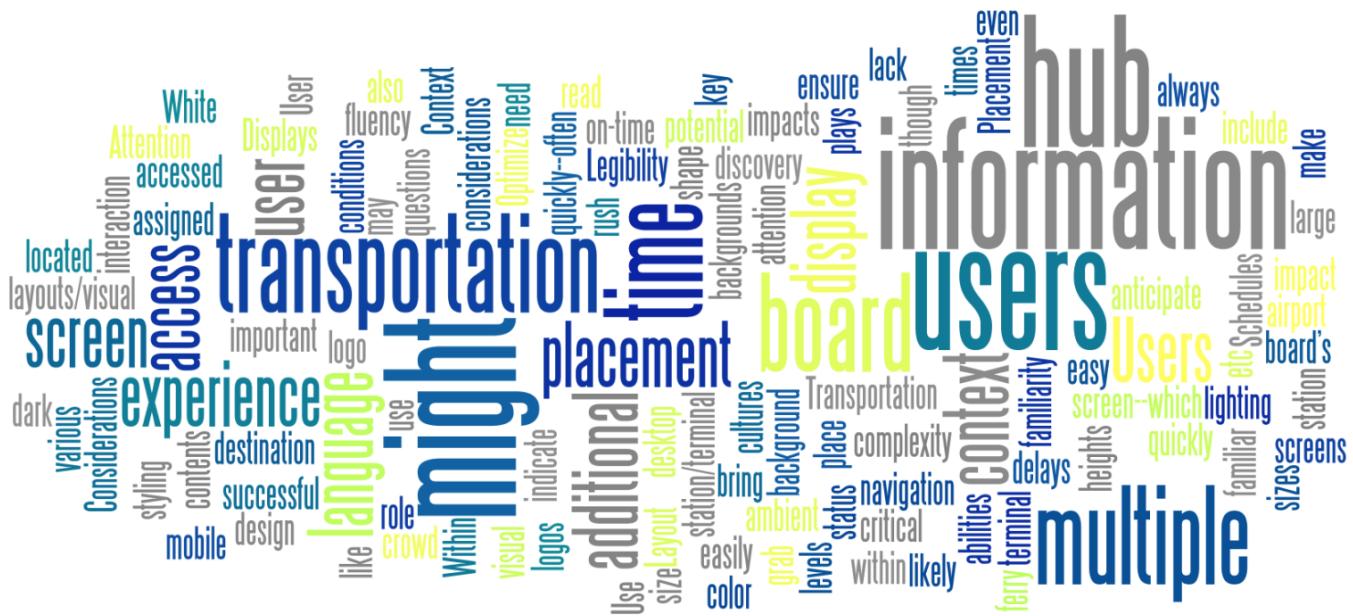
- Destination
- Departure
- Dock

Research

04

Part II

Our team researched and discussed information that we needed to take into account while designing the interface, such as various heights of users and display screen location within the Transportation Hub.. Here are some ideas that came about:



Part III

Our stakeholder's needs were crucial to the development of this project, so we delved into their needs and then we brainstormed how we could accomplish those needs

Elizabeth Duarte: Stakeholder

Goals:

1. Share transportation data with passengers
2. Encourage passengers to take advantage of PTF pass program

Patrick Mulvaney: Commuter

Goal:

1. Get where he needs to go as efficiently as possible with PTF pass program

George Shimko: Generous Host

Goal:

1. Provide his family with a good experience by giving them PTF passes

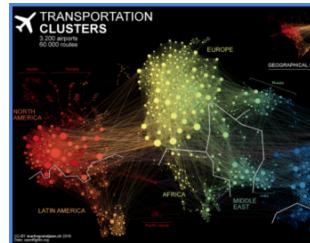
Data needs:

1. Easy-to-find, legible displays
2. Compelling PTF information*
3. Convenient purchase information and process

Inspiration

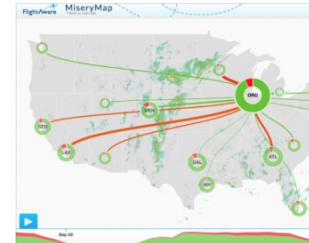
06

We started searching for inspiration on colors, typography, and different ways to present travel information. This turned into a board, in which we shared our thoughts periodically throughout the process and collaborated on turning our inspirations into meaningful ideas for our display.



/design/workplan
Color contrast
designworkplan / Design / Signage and color contrast

This article is an introduction to signage color and You will learn about the contrast ratio for displaying a (colored) background for signs.

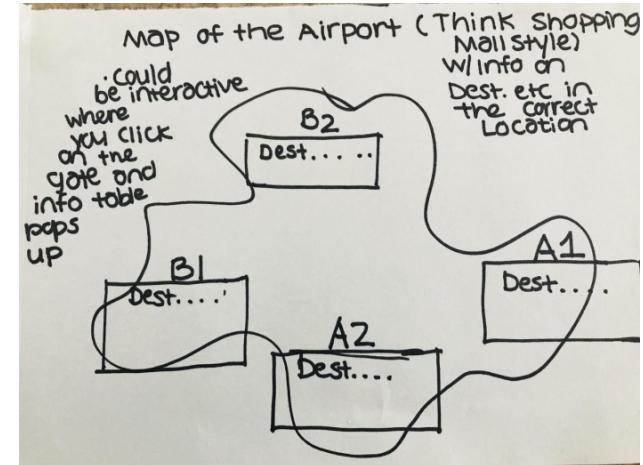
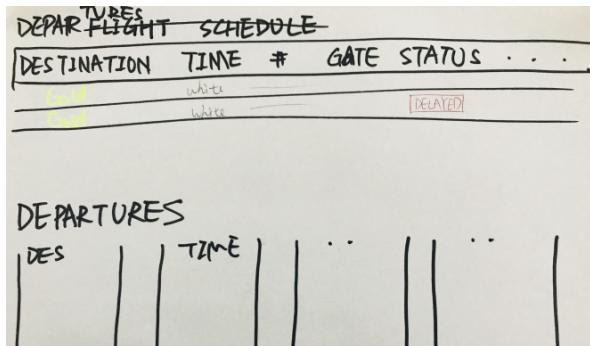
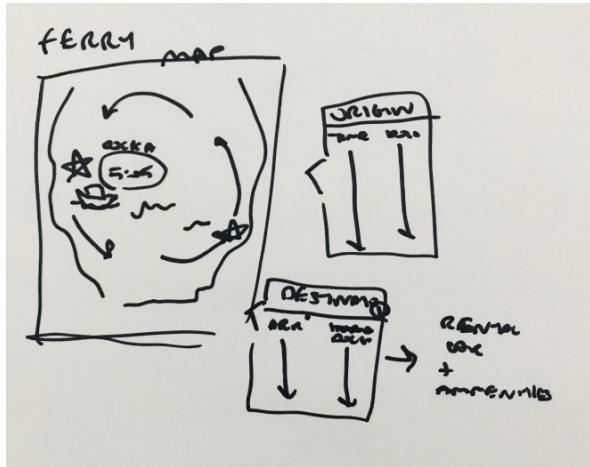


Ideation - Sketches of Information Displays

07

To kick off the ideation process, we opted to conduct a timed sketch session followed by discussion. We set a timer for 15 minutes, started sketching, and then shared our individual ideas. The most important takeaways from our brainstorm were

- 1) potentially using color to signal delays and cancelled flights and
- 2) eliminating the table format and doing something new. We decided to continue adding non-traditional ways of presenting information to our inspiration board.



Pictured: Breaking away from the traditional table format of travel displays, these sketches explore the idea of emphasizing the regional geography and colors to signal important information to travelers.

Ideation - Color Palette

08

Based on the color experimentation we did in class and the bright colors represented by the tropical San Juan Islands, we decided to go with a bright green underlaid with different hues of blue to represent the island life. Bold red and yellow were used to represent flight status. Finally, white text was used to pop against the blue backgrounds.



**TRAVELING
AROUND THE
SAN JUAN
ISLANDS**



Ideation - Typeface

00

With the typeface selection for this project, there were a few main considerations that guided us in this decision:

- Ease of legibility
- Copy or text length
- Font family size and weights

We knew our users would need to access information without deciphering an elaborate script, so keeping it simple became key. However, we also wanted to choose something a little different from the standard set of popular sans serif fonts to showcase the uniqueness of the San Juan Islands and those that visit them.

In our final iteration, we used Proxima Nova--it provided the degree of weight and size flexibility we needed while proving to be easy to scan for users interested in quickly consuming information.

Realigned equestrian fez

Realigned equestrian fez

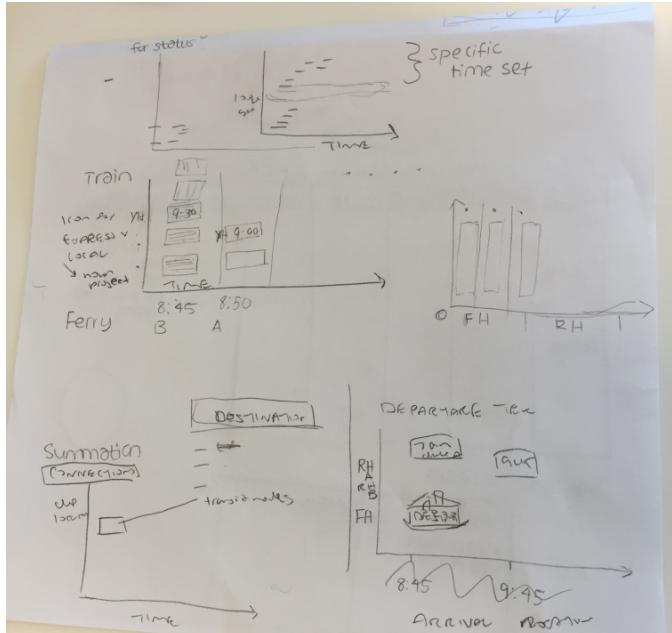
Realigned equestrian fez

Major Inspiration

10

During the ideation phase, we came across an image that really shifted our gears from the ideation phase to the first iteration of our display screen. The following is a display screen from the Vienna International Airport.

We felt the need for more feedback through the usage of colors and headings, but liked the clean and simple format of the display screen.

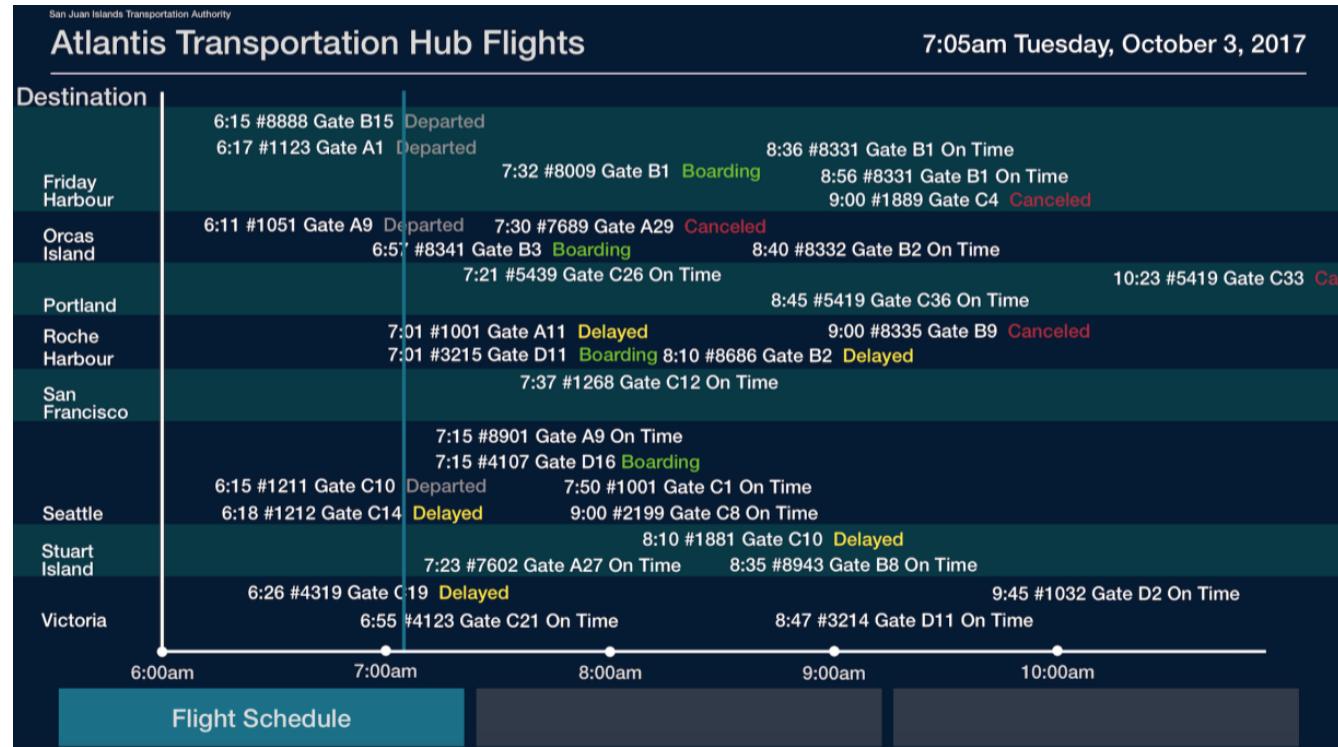


Iteration - Version 1

1.1

In our first digital iteration, we oriented the axes by destination and departure times, since we felt those were the two most important elements based on the data and our stakeholder's needs. We added a vertical bar that would move through the screen with the progression of time.

At the bottom of the screen, there are different tabs for different forms of transportation, in order to meet the needs of users that are attempting to use multiple forms of transportation.



Iteration - Crit I: Better PTF Pass Connection, Easier Read

12

The main feedback we used for our next iteration was:

- Moving the times to the top part of the screen.
- Making the screen more legible - information overload.
- Creating a more meaningful display on each screen to ensure that the user understands PTF Pass usage/connections between modes of transportation.
- Uneven Display - There are areas with too much information and other areas with too much white space.

Ferry
expecting duration checkboxes - start - end time
label axis
stronger correlation
going up?
use white space
same line
what happen → 10 am?
Destination should be more clear

Flights
Elizabeth?
Use PTF Passes
Too much white (Seattle)
Combine 3, → reasonable itinerary
Dots to flights
happier color scheme?
time on top

Iteration - Version 2

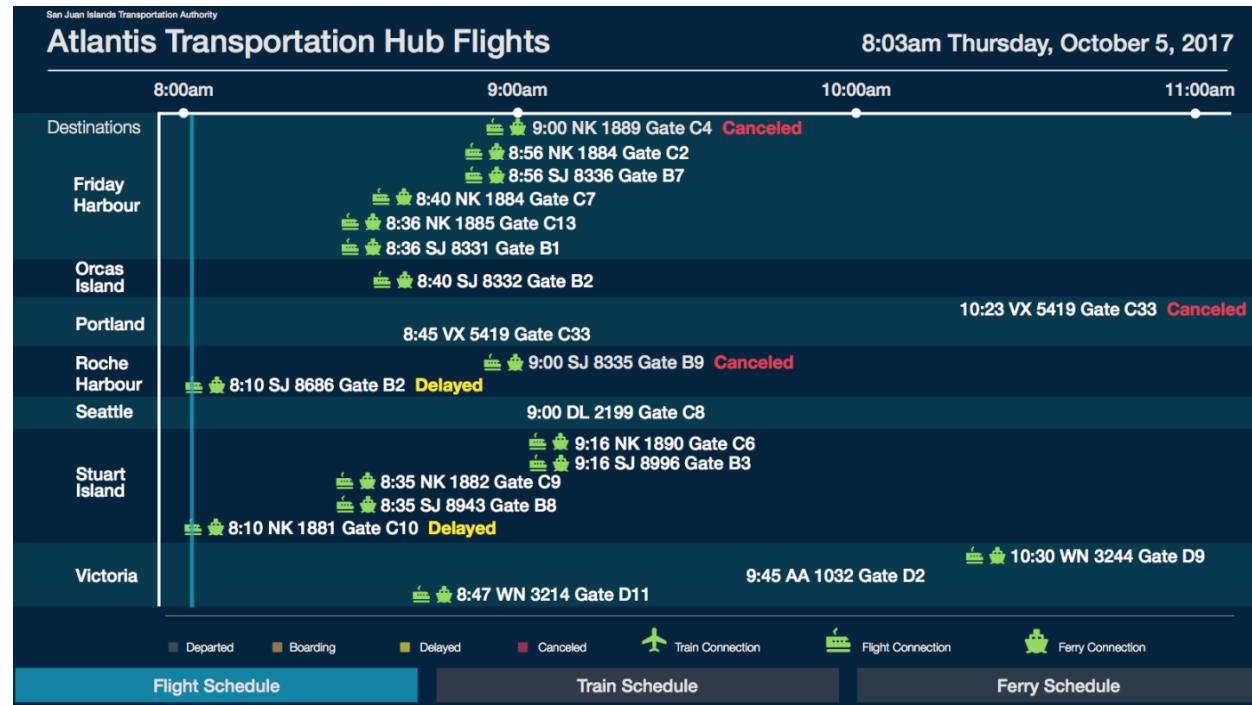
1.1

To develop our design further, we shifted the time axis to the top and added icons to represent the available connections.

A key at the bottom to help this iteration is included to help travelers digest the information.

Additionally, we brightened the colors used to represent status to draw out the status messaging.

We also show the elasticity of the the grid, since the grid is adjustable to the number of flights (Friday Harbour).



Iteration - Crit II: Readable Legend

15

We received feedback that our legend was difficult to read and key features for status were unnecessary - since users have prior knowledge of what red, yellow, and green stand for.

A comment was made about it being difficult to identify flights based on the times for the x-axis.

Another student mentioned that the vertical time bar is hard to identify against the dark background.

There was a general consensus that the color scheme was a bit dull.



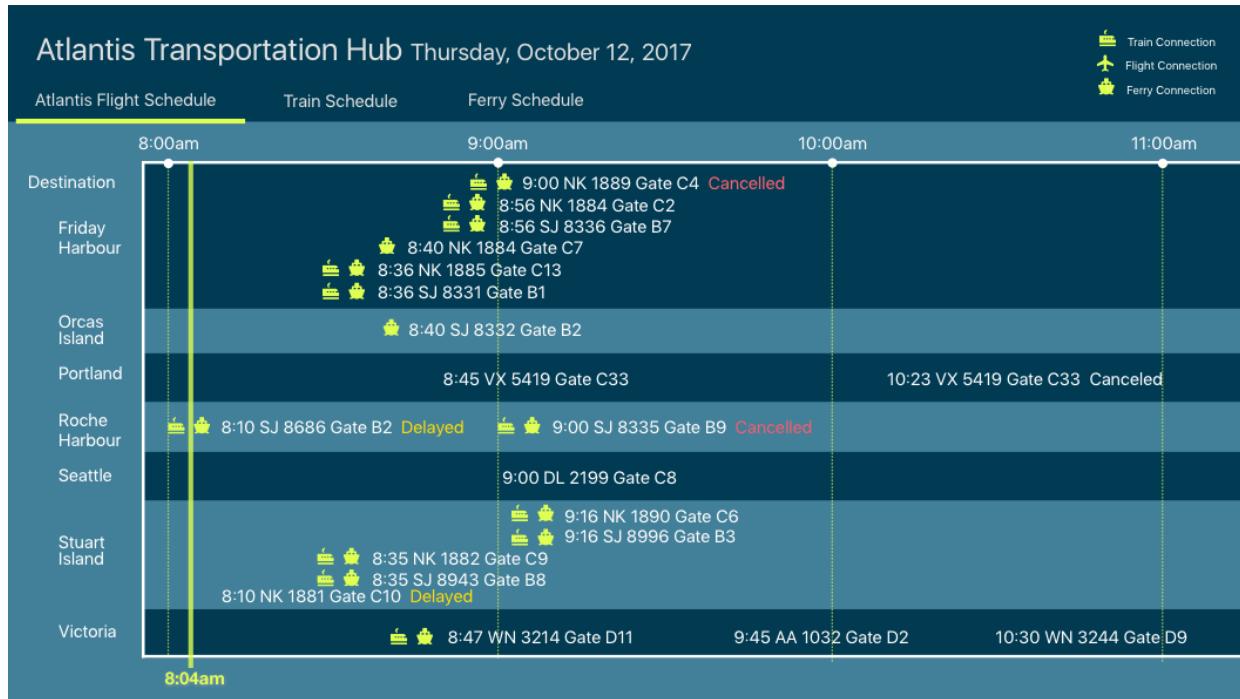
Our team taking in ideas from round 2 of critiques

Iteration - Version 3

16

We moved the tabs for each mode of transportation to the top, in order to ensure that it's one of the first things that travelers see. We also did the same for the legend. The tabs and key are crucial to how travelers use the PTF Pass.

We added dotted vertical lines to divide up the space and make it easier for travelers to quickly navigate the screen. We used bright green to brighten up the screen.



Iteration - Crit 3: Minor Changes and Controls

17

We presented our pitch and display screen demo to the class and received this particular feedback:

- Controls were a part of this version. Our stakeholders wanted to see how the information moves with a change in time. More specifically, how do both the vertical bar and screen move with changes in time?
- A fellow consultant provided feedback that the train icon was difficult to identify and looked like a cake.
- We also received feedback that the colors for delayed and cancelled didn't pop during the presentation as they did in our Image Files.



Solution

10

Our final version of plane, train, and ferry screens.

Atlantis Transportation Hub		Thursday, October 12, 2017			
Atlantis Flight Schedule		Train Schedule		Ferry Schedule	
Destination		8:00am	9:00am	10:00am	11:00am
Friday Harbour			9:00 NK 1889 Gate C4 Cancelled		
			8:56 NK 1884 Gate C2  		
			8:56 SJ 8336 Gate B7  		
			8:40 NK 1884 Gate C7 		
			8:36 NK 1885 Gate C13  		
			8:36 SJ 8331 Gate B1  		
Orcas Island			8:40 SJ 8332 Gate B2 		
Portland			8:45 VX 5419 Gate C33		10:23 VX 5419 Gate C33
Roche Harbour		8:10 SJ 8686 Gate B2 Delayed  	9:00 SJ 8335 Gate B9 Cancelled		
Seattle			9:00 DL 2199 Gate C8		
Stuart Island			9:16 NK 1890 Gate C6  	9:16 SJ 8996 Gate B3  	
			8:35 NK 1882 Gate C9  		
			8:35 SJ 8943 Gate B8  		
Victoria		8:10 NK 1881 Gate C10 Delayed	8:47 WN 3214 Gate D11  	9:45 AA 1032 Gate D2	10:30 WN 3244 Gate D9
		8:04am			

tWave

We branded our final version as tWave - because of the cascading information and to suit the theme surrounding the tropical San Juan Islands.

Features to accomplish stakeholder needs

For Elizabeth:

Highly Readable Display - We eliminated the table, maintained a purposeful color scheme, and eliminated any excess information that wasn't necessary for the screen

	A	B	C	D	E	F
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

For George:

Having a centralized base for the San Juan Islands - We created Atlanta Transportation Hub as our Base, which you can see in the top left corner in order to make connections easier.

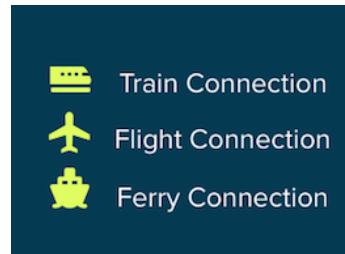
For All Three:

Making the PTF Pass more Visible - We developed symbols to represent the connections between modes of transportation for the PTF Pass Program and to ensure fastest connections (Patrick).

Atlantis Transportation Hub

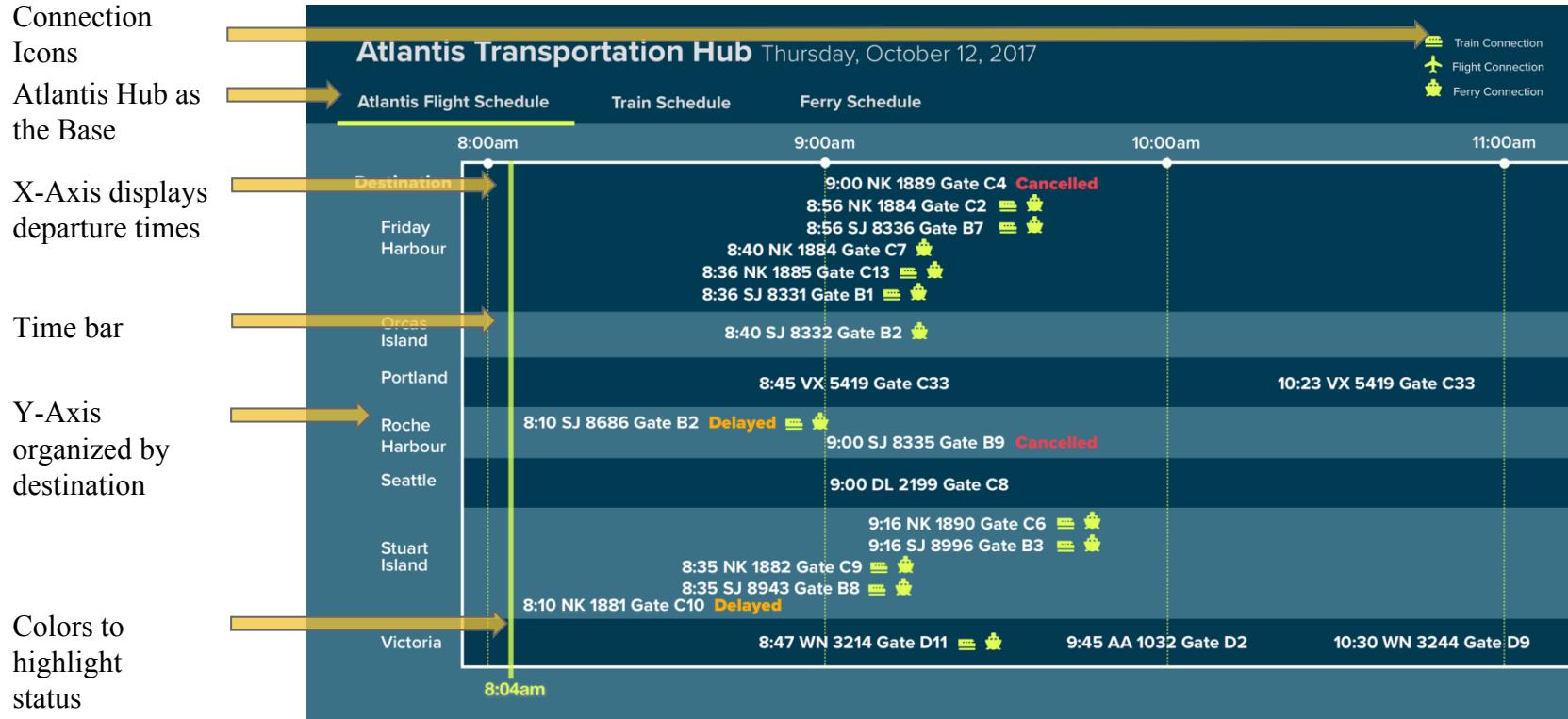
Thursday, October 12, 2017

[Atlantis Flight Schedule](#) [Train Schedule](#) [Ferry Schedule](#)



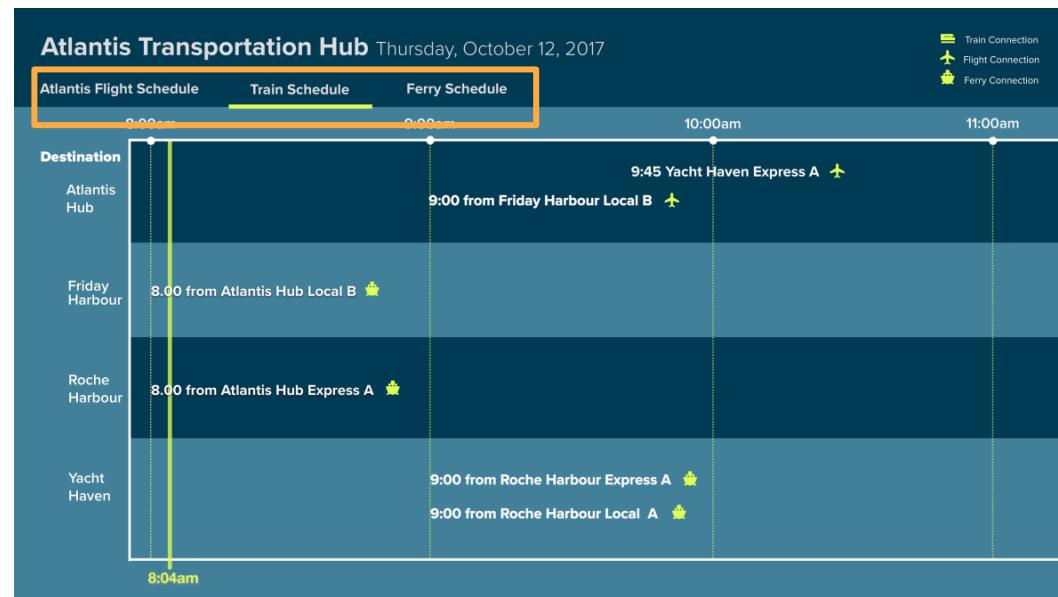
Solution - Visual Element

20



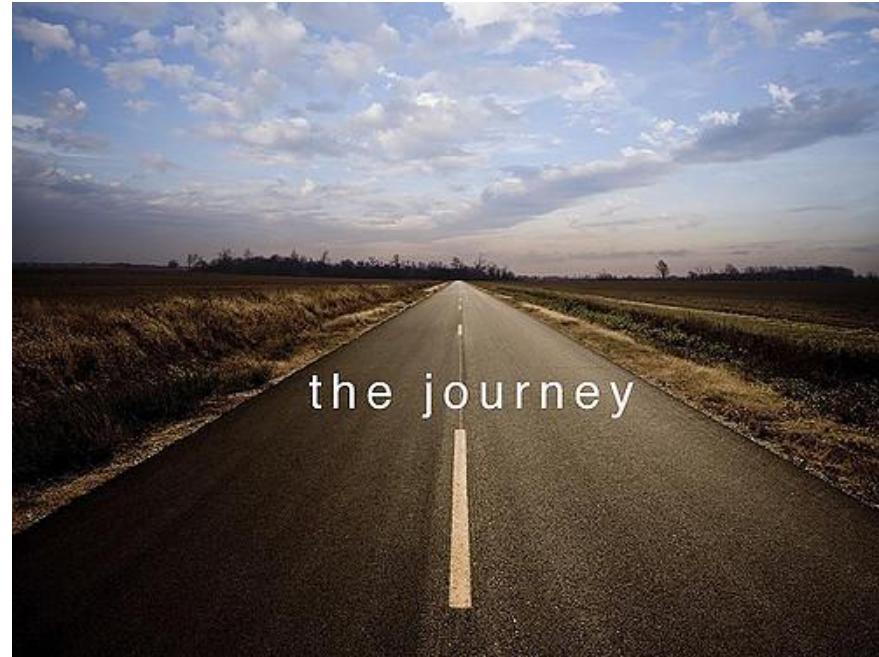
Communicating types of information

In our design, we leverage a pattern of tabs that borrow from material design to convey that there's additional information available. Users will likely have some familiarity with this pattern, speeding their ability to consume the information displayed. The tabs are carefully placed and styled to be discoverable but not obtrusive. The indicator bar below the tab section title offers a degree of feedforward and the state change provides feedback as the screens shift from one mode of transportation to the next.



Pacing the data display using context

Within the tab pattern, we've opted to automatically transition between tab sections or modes of transportation. Travel by plane, train, and ferry are not equivalent either in terms of price, time, or overall experience of the San Juan Islands. While destination is paramount, the journey itself plays a key role in the decision factors of both key personas.



Communicating information over time

A key component of our design is the shape and structure of the departure information itself, which we've built to consider the progression of time. For anyone traveling, time is a core variable to the experience. We've featured a moving time indicator and label to keep users aware of the current time and how that relates to upcoming departures. The placement of the line and more active color indicates movement and supports users as they navigate the San Juan islands.



Adding energy to reduce friction

In the context of an information display in a busy transit hub, animation can and should be used to reduce the cognitive load of users and make content digestion as effortless as possible.

For our project, we deliberately selected a familiar pattern to communicate motion between screen states and shifts in transportation status. The user's eye is intended to be drawn to updates so that they can be informed in real time.

Our key users, Patrick and George, both need this type of animation to promote quick use of the display (either for themselves or visitors) and indication that an alternative route is needed.



Using user movement to adapt the display

How might a user of a transit hub display choose to interact with it? Would Patrick or George or even Elizabeth want to touch it?

We asked ourselves these questions as we thought through how to optimize the experience of consuming vital information in a public place, likely with many other people standing nearby. We developed a concept that does not require touching screen, but instead slows down as users get closer, using distance to change speed.



Conclusion

26

Our work on this project gave us a new appreciation for the power color and typography can hold in transforming data into a compelling story. Together we were able to incorporate more sketching, group ideation, and problem solving than in our previous class work, which help us move our end-solution forward. Additionally, we were able to learn new software tools like Sketch, Principle, and After Effects. Working with motion was a challenging, yet fun exercise that allowed us to expand our final design.

Given more time, we'd love to develop the color palette and typography more to explore if there are more impactful solutions.

Simran, Ying, and Sarah

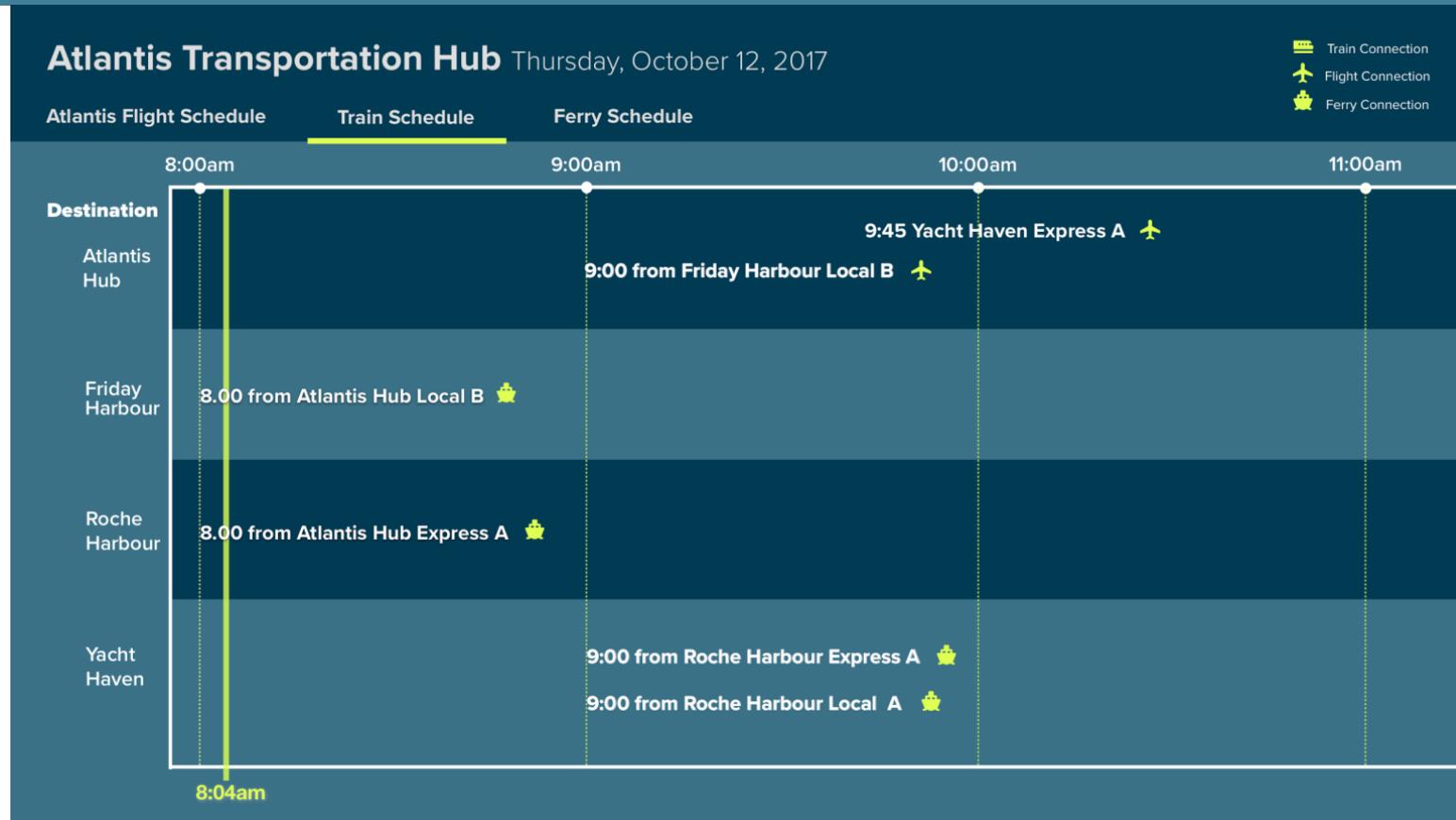
Appendix - Final Train Schedule

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8:04am

-  Train Connection
-  Flight Connection
-  Ferry Connection

Appendix - Final Plane Schedule



Appendix - Final Ferry Schedule

