



Summer 2019 Intern Outbrief

***Katie Foster
Visualization and Immersive
Technologies Department***

August 15, 2019

Introduction to me

- Olin College of Engineering
 - *Small project-based engineering college in Needham, MA*
 - *Class of 2022*
 - *Major in Engineering with Computing*
 - *Only had one year of school, and no previous internship experience*



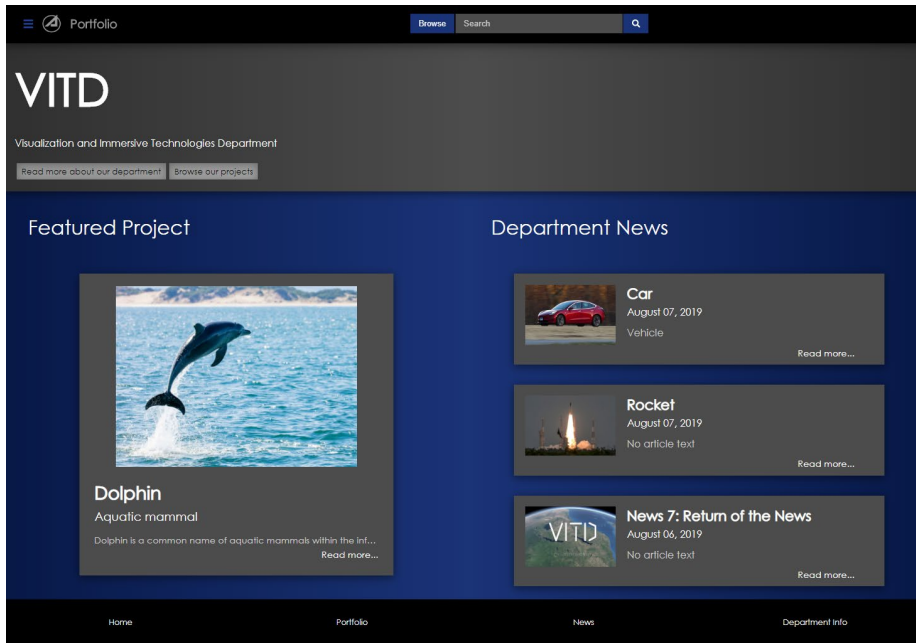
- Clubs and Hobbies:
 - *Rock Climbing*
 - *Fire Spinning*
 - *Theater Tech*
 - *Swimming*



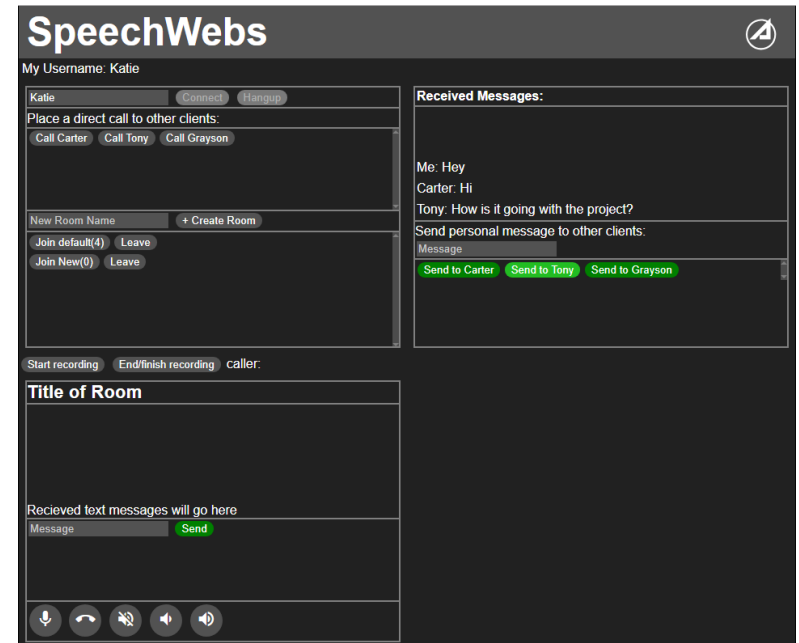
After completing Pier to Pier Swim

Two Projects

I'm going to focus on two major projects



Department Portfolio (Sapphire)

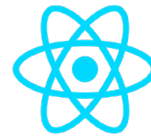


Prairie Cinetic Summer Prototype (SpeechWebs)

Department Portfolio Web App (Sapphire)

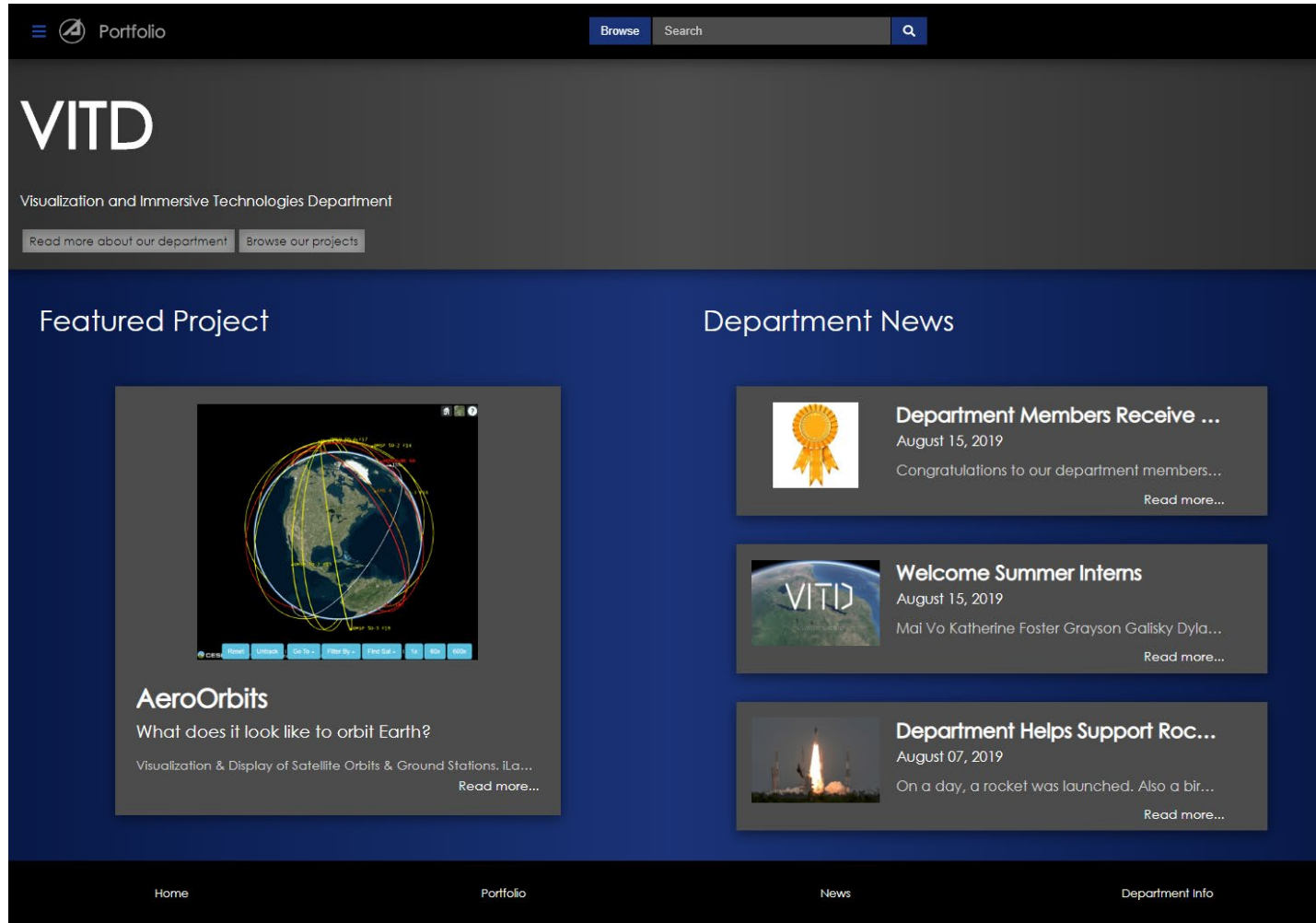
POC: Josh Cohen, Randy Villahermosa

- Problem: The company has no good standard for Department Portfolios or websites
- Framework for making department websites, intended to be used first by VITD, and then be used by other departments
- Tools/Technologies:
 - **React:** Web framework that is useful for building interactive web apps
 - **Redux:** Organizes data in one place for web pages (works with react)
 - **MongoDB:** Database (stores data)
 - **CSS/SCSS:** Used to style webpages
- Based off the code from the Spark Ideas Platform made by Cosima Manughian-Peter



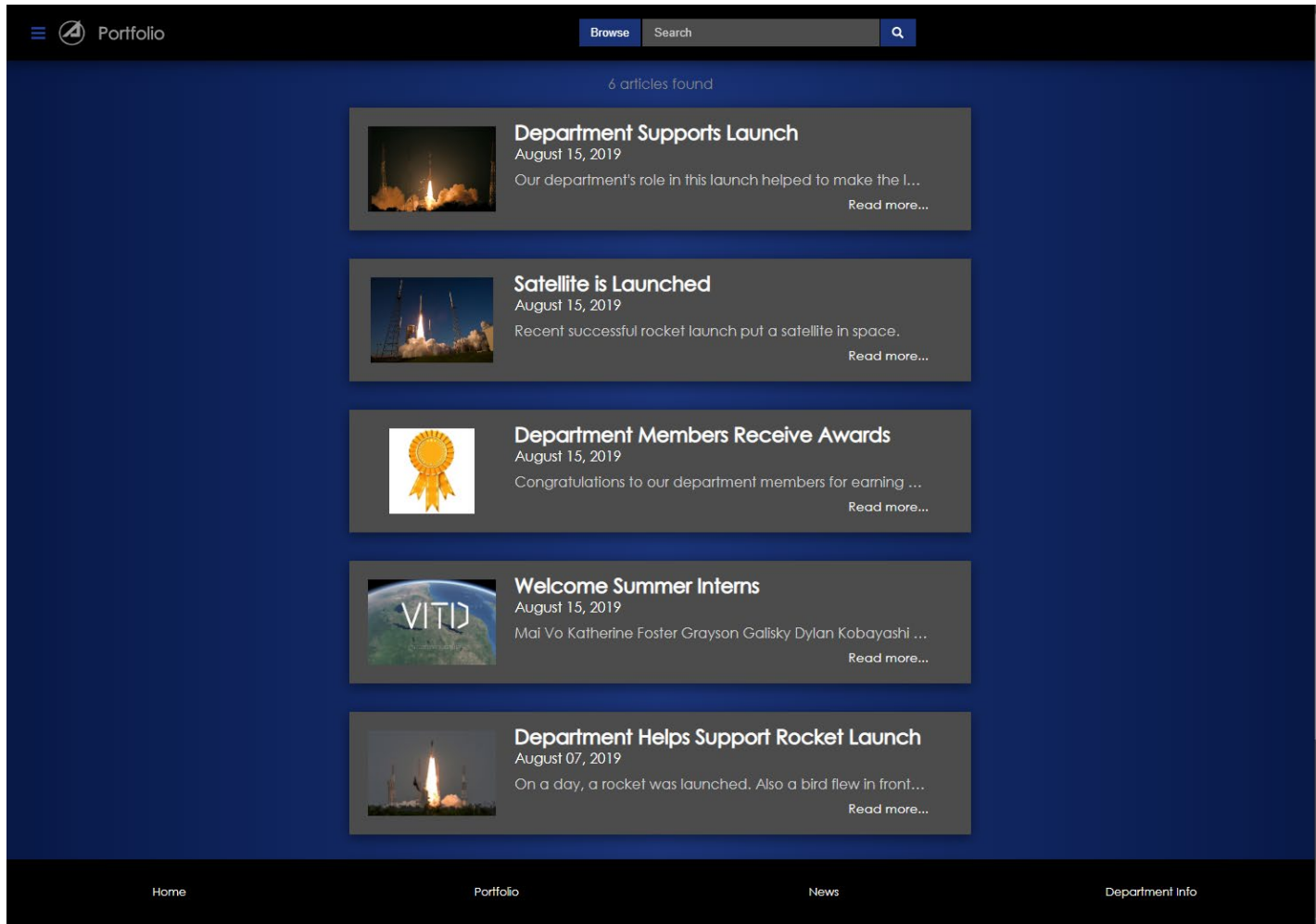
Department Portfolio Web App (Sapphire)

Home Page



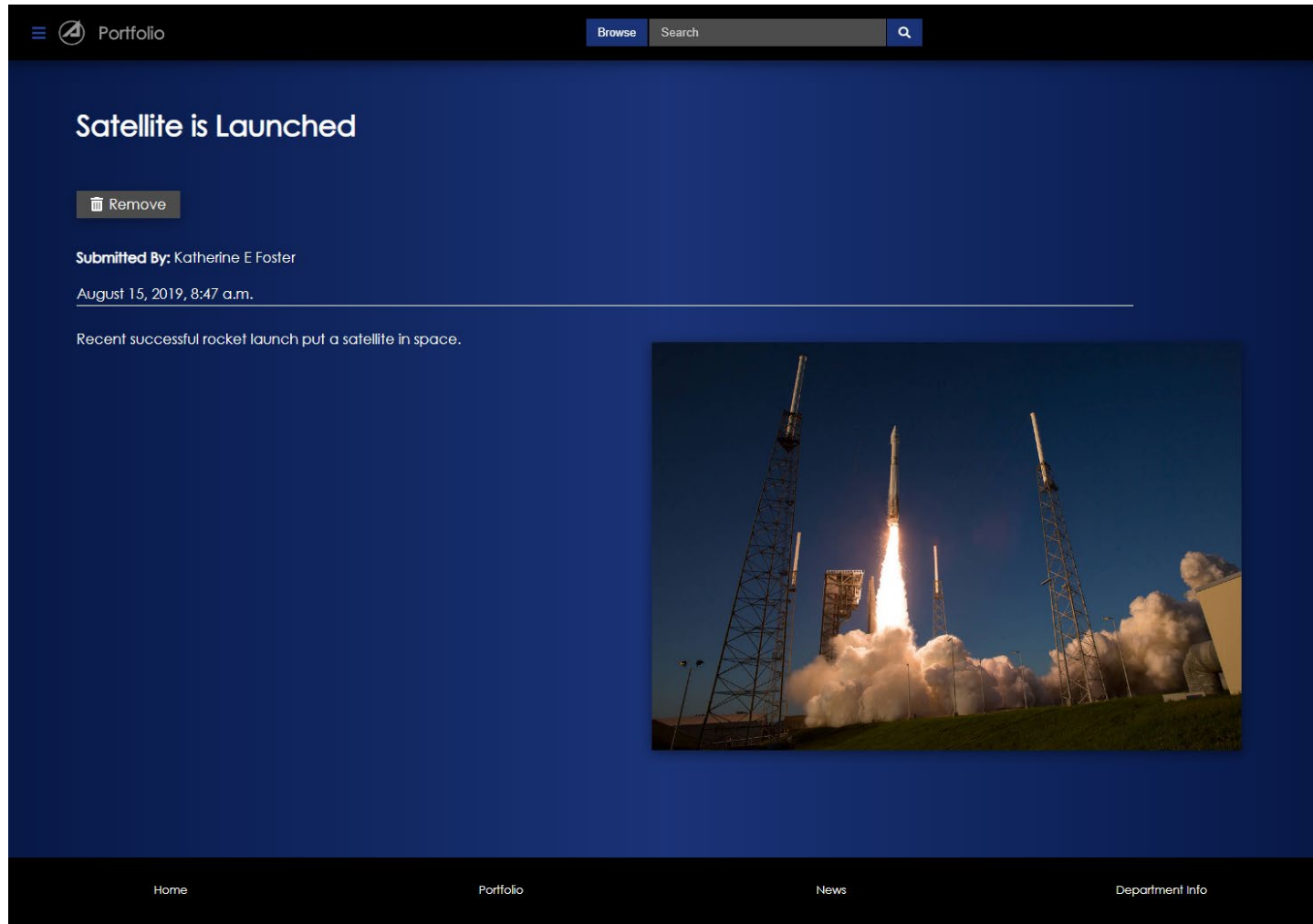
Department Portfolio Web App (Sapphire)

News



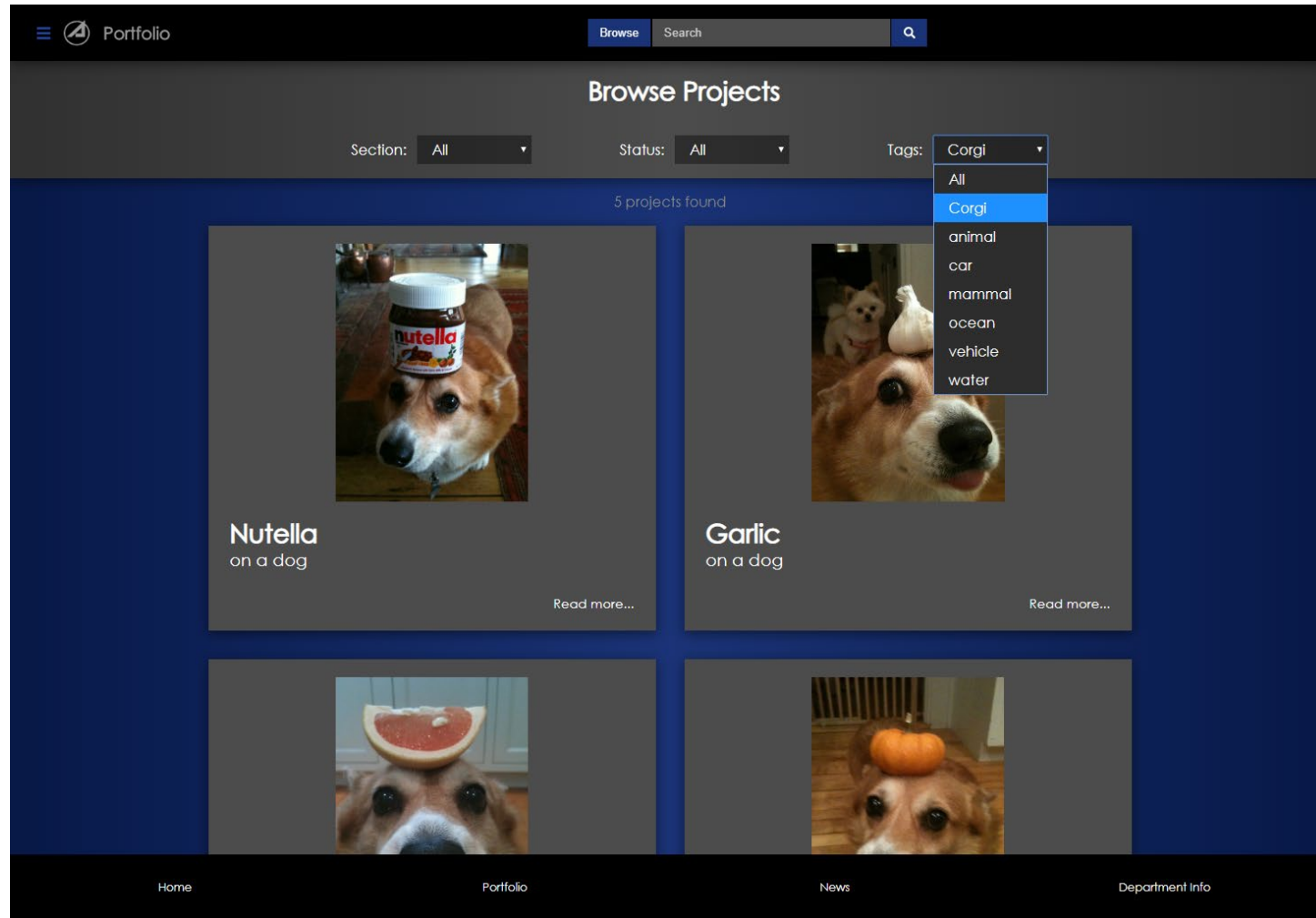
Department Portfolio Web App (Sapphire)

Individual News Story View



Department Portfolio Web App (Sapphire)


Portfolio




Department Portfolio Web App (Sapphire)

Individual Project View




 Portfolio

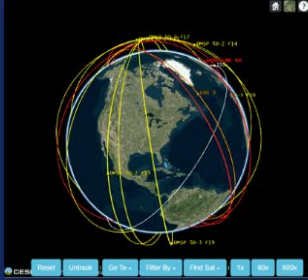
[Browse](#)



AeroOrbits

What does it look like to orbit Earth?
 Remove

Visualization & Display of Satellite Orbits & Ground Stations. iLab's AeroOrbits tool is a fully interactive web and touch application that displays the orbits of all non sensitive AFSPC satellites, Aerospace's AeroCube fleet, plus some additional public satellites such as the International Space Station. This application is adaptable and built for touch displays, and scales dynamically based off the device, from your corporate smartphone, to your desktop or television. The user is able to filter by constellation, owner, orbit type, or select individual satellites. A user can click on any satellite to view a detailed description, as well as to follow that Satellite along its daily orbit. A unique element of this tool is the ability to dynamically switch from an Orbital Visualization tool, to moving into ground street views, automatically leveraging imagery from a multitude of sources including NASA, USGS, Google, Microsoft, and more. The tool currently uses publicly available data, however an internal use only version will be developed next. This tool was iLab-sponsored and developed by a cross-organizational ETG team.



Category Tags

[Space](#) [Mobile](#)

Project Status

Active

Section

AVMD

Submitted

August 15, 2019, 8:04 a.m.

Submitted By

Katherine E Foster

[Home](#) [Portfolio](#) [News](#) [Department Info](#)



Department Portfolio Web App (Sapphire)
















About the Department

The screenshot displays the VITD Department Portfolio Web App (Sapphire) interface. At the top, there is a navigation bar with a menu icon, the word 'Portfolio', a 'Browse' button, a search bar, and a magnifying glass icon. The main content area has a dark blue background. The 'VITD' logo is prominently displayed in white. Below the logo, a paragraph describes the team as multidisciplinary, creative, and technical, passionate about innovation and technology. The 'Meet the Team' section follows, featuring a grid of 12 team members, each with a circular profile picture, name, and title. The footer contains four navigation links: Home, Portfolio, News, and Department Info.

VITD

We are a multidisciplinary team made of up creative and technical staff. We share the same passion for Innovation and technology. This passion drives us to take on challenging problems and solving them using our combined knowledge and skill set.

Meet the Team


 Andy King VITD, Department Director	 Josh Cohen AVMD, Section Manager	 Nelson Tong ACIV, Section Manager
 Jennifer Lee ITAD, Section Manager	 Charles Yuan AVMD, ENGRG SPECIALIST	 Jack Lam AVMD, MEMBER-TECH STF
 Tanner Stevens AVMD, MEMBER-TECH STF	 Katherine Foster AVMD, TECHNICAL INTERN II	 Graham Johnson AVMD, MEMBR-TCH STF SR
 Cosima Manughian-Peter AVMD, MEMBER-TECH STF	 Mai Vo VITD, TECHNICAL INTERN II	 Grayson Galisky VITD, TECHNICAL INTERN III
 Dylan Kobayashi VITD, MTS DOCTORAL INTERN	 Bryce Anglin ACIV, MEMBR-TCH STF SR	 Caroline Jones ACIV, MEMBER-TECH STF

Home Portfolio News Department Info

Department Portfolio Web App (Sapphire)



Admin Management Page







 Portfolio



Browse Search

Current Admins



 Katherine E Foster - 32038 

 Cosima Manughian-Peter - 31787 

 Graham A Johnson - 30597 

 Joshua R Cohen - 27516 

Add an Admin

 Carter J Andrews 

Dylan

Dylan Dickstein - 30847

Dylan Thomas - 31355

Dylan Kobayashi - 32104


Submit →

Home Portfolio News Department Info

Department Portfolio Web App (Sapphire)


Submit News



 Portfolio

Browse

Search



Headline

Title of News Story

Article Text

This is a couple paragraphs about the piece of news.

Featured Image

Drag & drop, or [Browse](#), a featured image

0.5GB Limit

Submitted By: Katherine E Foster

Submit

Home

Portfolio

News

Department Info

Department Portfolio Web App (Sapphire)

Submit Project



Portfolio

Browse

Search

Title

ex: The Avengers Initiative

Tagline

One line summary of project

Description

A couple paragraphs about the project

Additional Documents

Drag & drop, or [Browse](#), additional documents
0.5GB Limit

Featured Image

Drag & drop, or [Browse](#), a featured image
0.5GB Limit

Project Status

Status

Add category tags

+ Add tag

Section

ex: AVMD

Customer

ex: SHIELD

Project Lead

ex: Nick Fury

Contact Information

Email Address

Phone Number

Submitted By: Katherine E Foster

Submit

Home

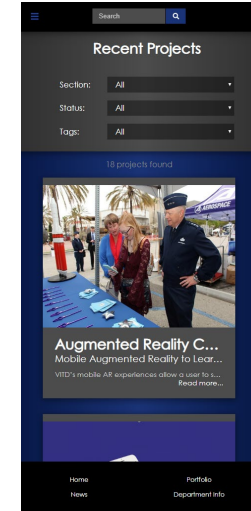
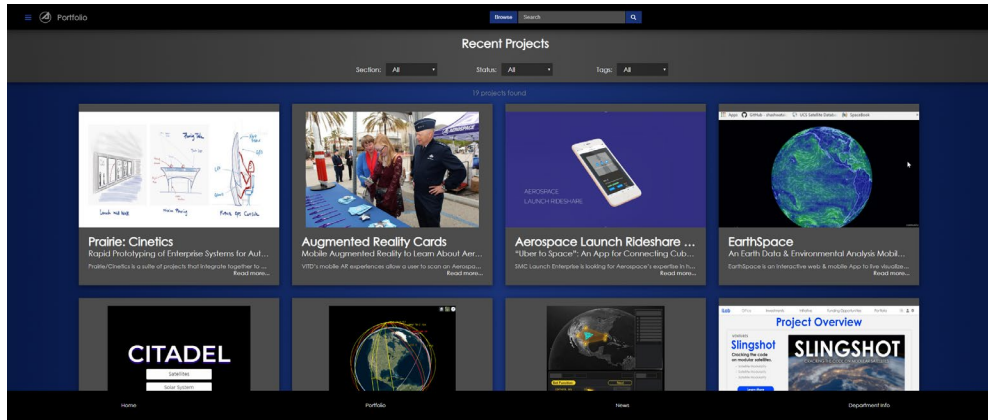
Portfolio

News

Department Info

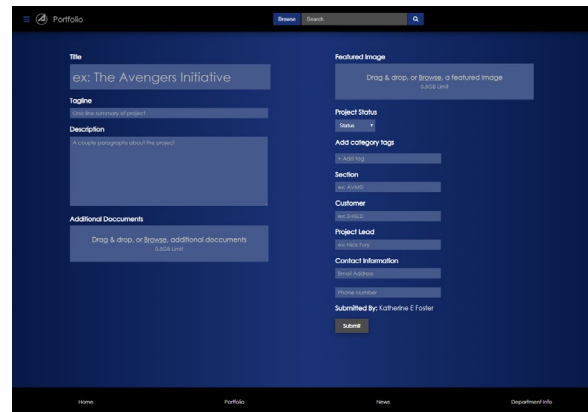
Department Portfolio Web App (Sapphire)

Responsive Layout

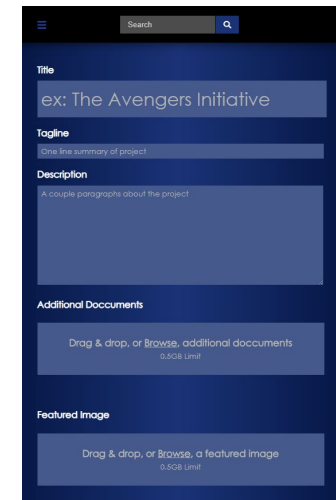


Narrow windows

Really wide window (across 2 monitors)



Normal size window
(one monitor)





Department Portfolio Web App (Sapphire)

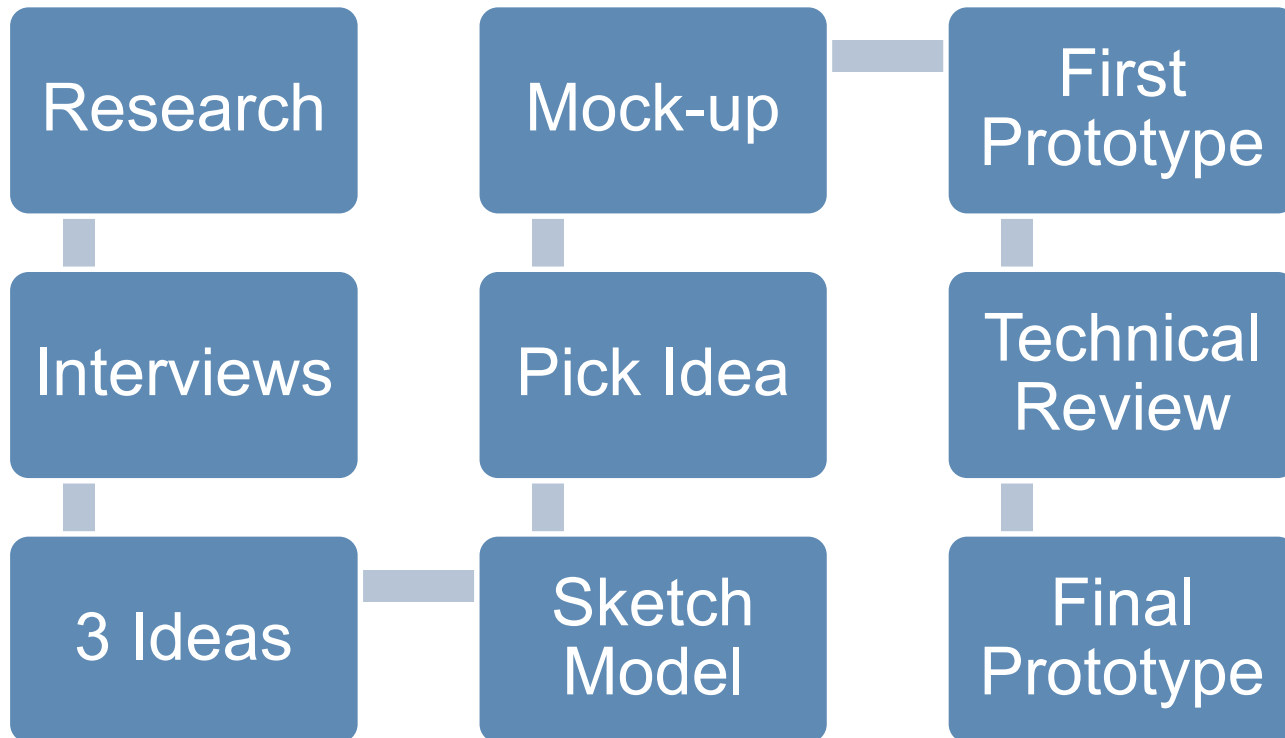
What I learned + Impact

- Technologies I learned
 - *React*
 - *Redux*
 - *MongoDB (And about databases in general, I was completely new to them)*
 - *CSS/SCSS*
- Learned how to design a good user interface
- **Impact:** My work will be used to build future department websites/portfolios for different departments throughout Aerospace



Prairie Cinetics Summer Prototype

- POC: Josh Cohen, Randy Villahermosa
- Worked with four other interns
- Guided by Josh Cohen, Alonzo Lopez, Will Vasquez, and Graham Johnson



Prairie Cinetics Summer Prototype

June 10 – July 2



Research

Background Info

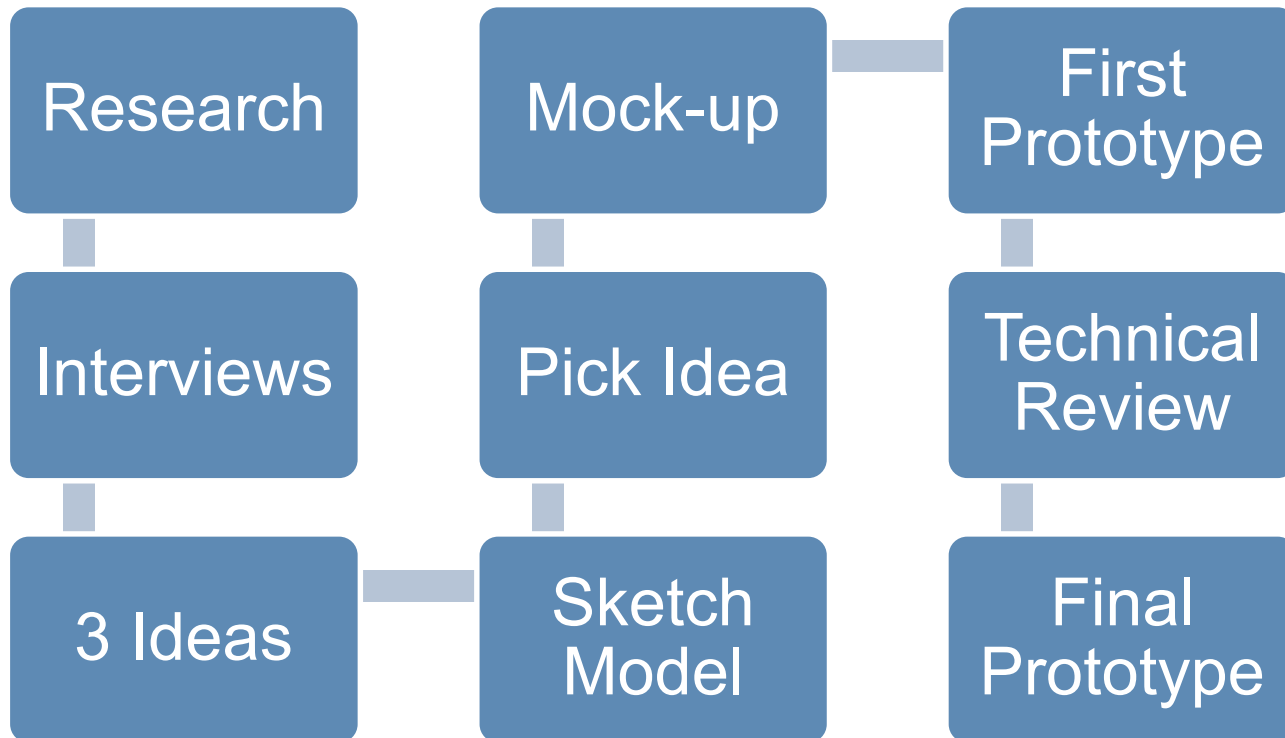
- *Looked for inspiration from different places, including futuristic movies*

Interviews

We did 20 interviews

- *Robert Maltese (STARS Director)*
- *Randy Kendall (VP Launch Program Operations)*
- *USAF Officers Captain Charles Bolen and Captain Hannah Best*
- *And a lot of people who work in STARS or Satellite Ops*
- *Received a lot of useful information*

Prairie Cinetics Summer Prototype





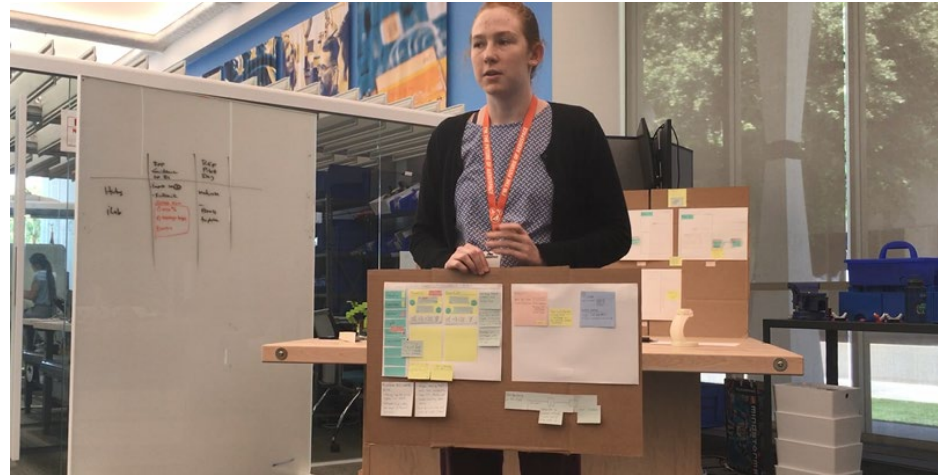
Prairie Cinetics Summer Prototype

July 3 – July 11

3 Ideas

1. Screensharing collaboration software
2. Chair with built-in screens
3. Communication and transcription software to replace Voicenet in STARS

Sketch
Model



Presentation of communication software sketch model
(Mini Shark Tank)

All channels

Focus channels



Search channels

Alert



Anomalies

Propulsion

Weather

Flight

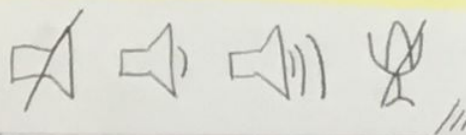
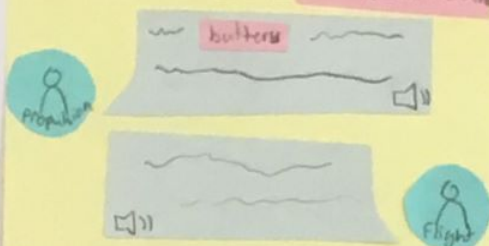
Sensors

Cape Canaveral

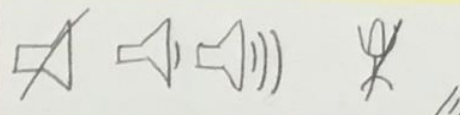
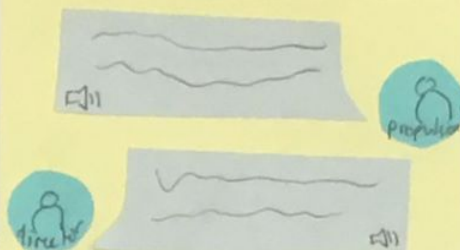
drag and drop
from all channels
to my channels

Anomalies

Alert: "butterfly"
has been mentioned



Propulsion

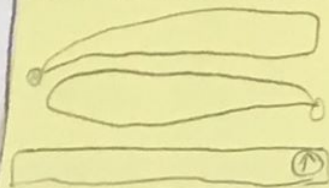


can drag around
windows and
change size

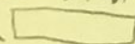
click on volume
button on speech
bubble to play back
audio of speech message
(in case it is mis-transcribed)

Flashes or
changes color
when your mic
is on

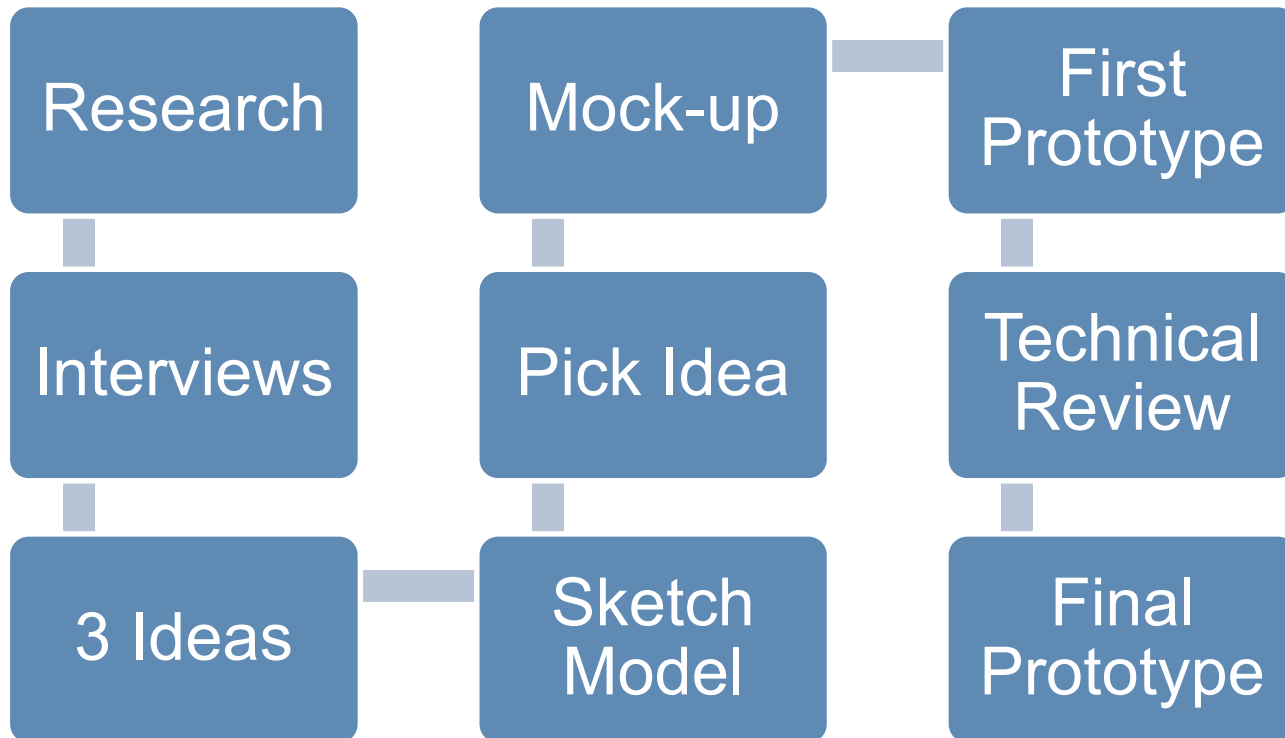
Conversation with Name



+ New conversation
with a



Prairie Cinetics Summer Prototype





Prairie Cinetics Summer Prototype

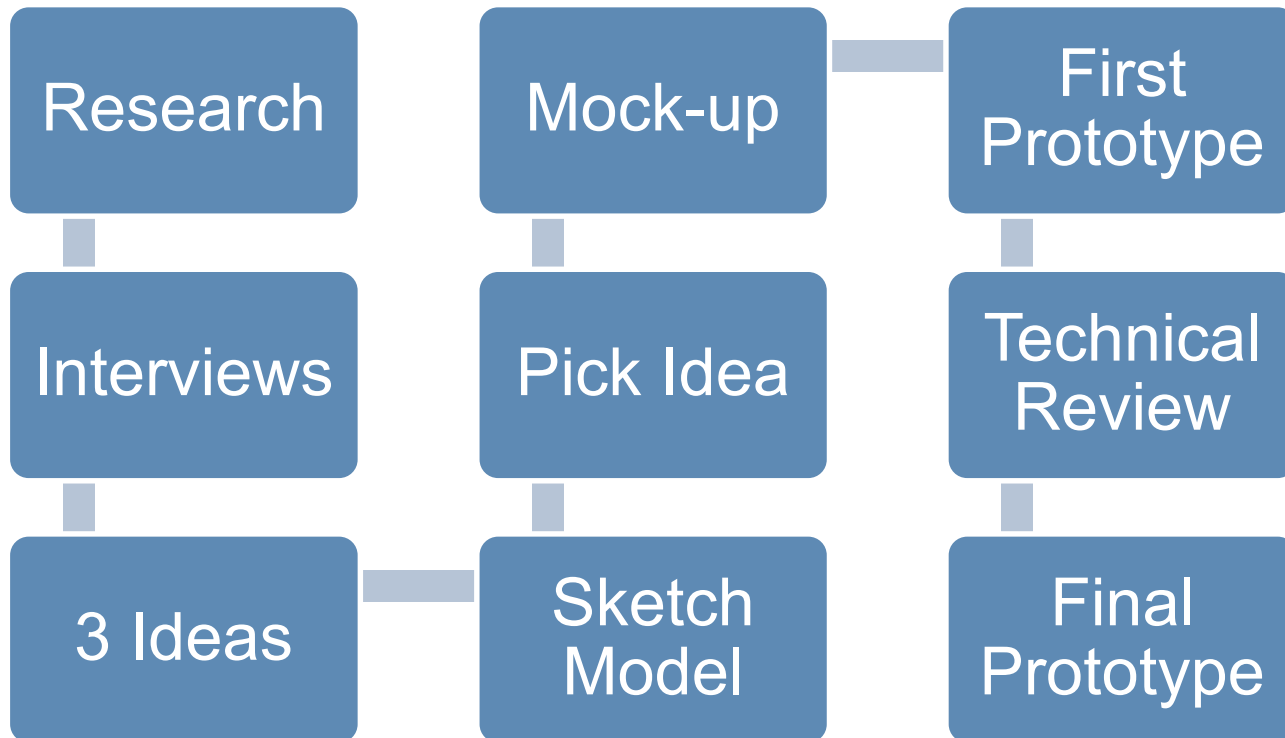
July 12 – July 18

Pick
Idea

Mock-up

- Made some charts ranking the ideas in different categories, discussed pros and cons of each idea
- Picked communications software idea, but with haptic feedback added in from the chair idea
- The communications software idea was the winner in part because of all the feedback we got in the interviews about the shortcomings of VoiceNets
- Made a piece of software with the core functionality of the idea: transmitting voice over a network to multiple users

Prairie Cinetics Summer Prototype





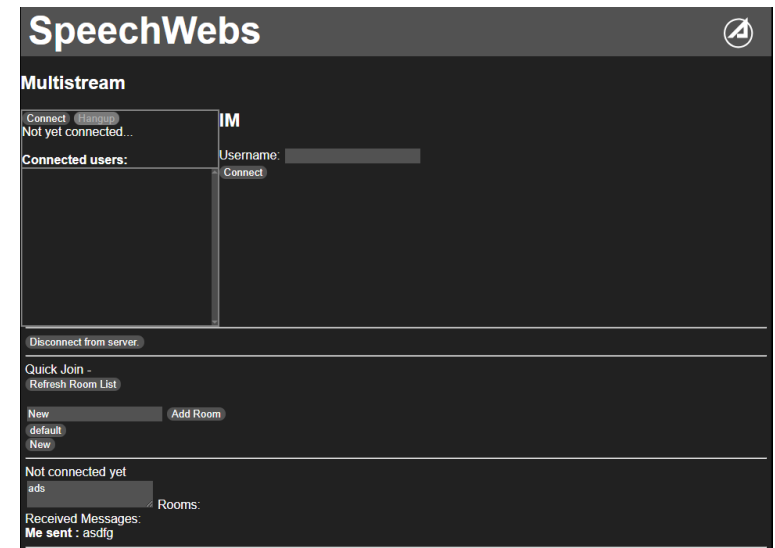
Prairie Cinetics Summer Prototype

July 19 – August 1

First
Prototype

- Used WebRTC (Real Time Communication) specifically EasyRTC (toolkit for WebRTC apps)
- Could make calls and send text messages, but not integrated
- No chatrooms

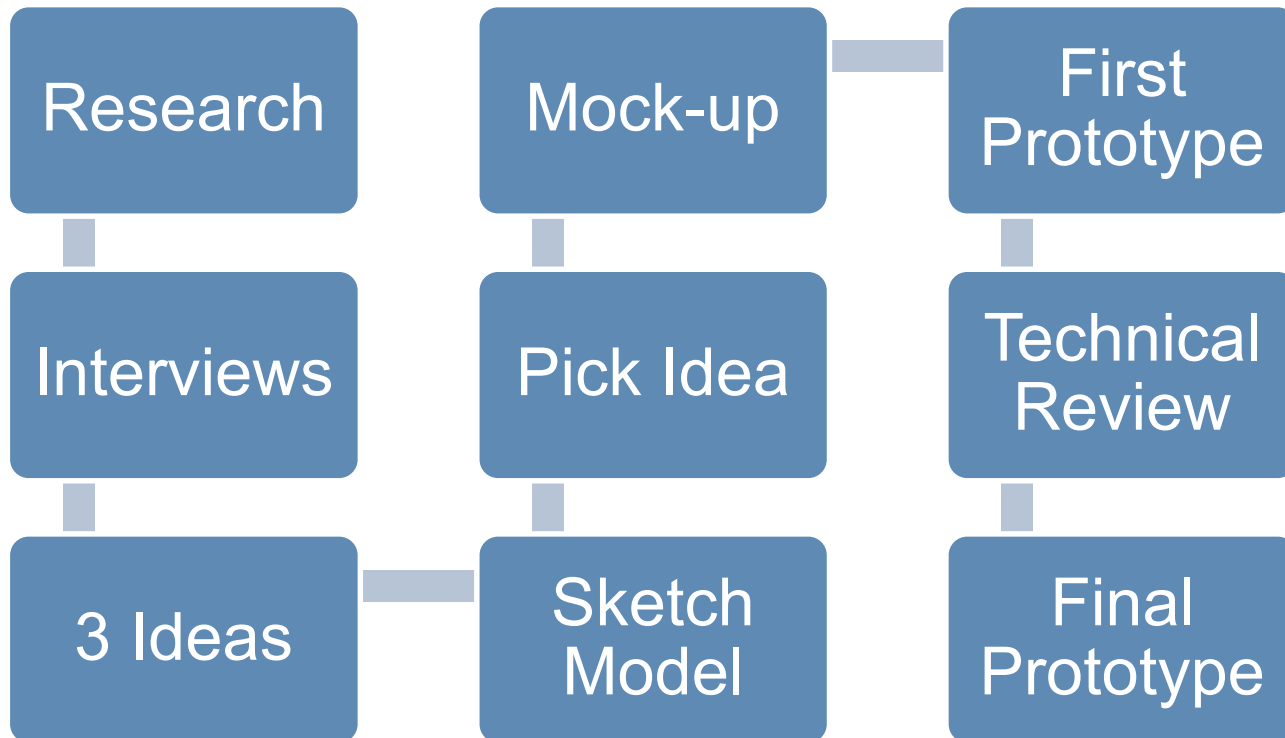
easyRTC



Technical
Review

- Let reviewers interact with the prototype and discuss areas of improvement

Prairie Cinetics Summer Prototype





Prairie Cinetics Summer Prototype

August 5 – August 14

Final Prototype

Functionality:

- Call other users
- Create multi-person calls (channels)
- Send text messages to other users individually or in channels
- Deep speech transcription functional but not integrated

SpeechWeb

My Username: Katie

Katie

Place a direct call to other clients:

New Room Name

caller:

Title of Room

Recieved text messages will go here

Message

Received Messages:

Me: Hey
Carter: Hi
Tony: How is it going with the project?

Send personal message to other clients:

Message



Prairie Cinetics Summer Prototype

What I Learned

- The process of going from having absolutely no idea what we are going to build, to having a working prototype
 - *Especially identifying user needs and using them to design an application*
- How to work in teams: consider everyone else's perspectives and how to best use the talents of everyone in the group
- I learned a lot about the company's role in launches and satellite operations by getting to talk to so many people
- Implementing and modifying code from the EasyRTC demos
- More experience with just plain Javascript and HTML (did not use React because EasyRTC did not use React, and the app was simple enough)
- Debugging



Prairie Cinetics Summer Prototype

Impact

- Most of our interviews were voice recorded, and we took notes on all of them, which could be referenced by people in the future designing for future ops
- Our project will be continued after we leave and incorporated into Prairie Future Operations Ventures Line

Experience



- I liked most of my experience here, especially
 - *Working on multiple projects at once*
 - *The culture both within VITD and the whole company*
 - *Intern events*
 - *Lots of opportunities to give feedback*
 - *Getting to talk to people from all over the company*
- *Areas of Improvement*
 - *EZ time for hourly employees (access to a guide or better training would be nice)*
 - *It took almost a week to get my laptop at the beginning of my internship*



Future Plans

- Continue to explore a wide variety of applications of software engineering
 - ✓ *Web design and programming (got experience with that this summer)*
 - *Autonomous vehicles*
 - *Machine Learning/Artificial Intelligence*
 - *Bioinformatics*
 - *And many more depending on what I learn along the way*
- If I return, I would be interested in experiencing some different kinds of projects
Aerospace supports in the Space Enterprise in addition to the kind of work I did this summer

Acknowledgements



Cosi Manughian-Peter
Graham Johnson
Josh Cohen
Andy King

Summer Prototype Team:

Tony Terrasa
Jack Randmaa
Carter Andrews
Grayson Galisky

Other VITD Interns

Mai Vo
Dylan Kobayashi