



Island Rush V3

Final Report

Texas A&M University
CSCE 606: Software Engineering

Summary of Implementation:

Our main customer represents the Military and Strategic Studies department in the Air Force Academy. They are primarily focused on developing their core class (MSS 251) which currently utilizes Island Rush Version 2. The customer had Version 3 created in the beginning of 2019 and had us continue to work on it throughout this semester. At the start of our undertaking of this project we were given documentation on the expected final product, as well as an already started codebase.

The stakeholders (faculty members teaching MSS 251), have advised us that at the end of our development we will be handing off the project to a new team of contractors. Over the course of this semester, we prioritized developing the main features of the game needed to make it “playable” in the most basic sense. In order to give the contractors a good foothold once they take over, we also focused on constructing an updated wiki for documentation in addition to fixing major bugs identified within the existing codebase.

Team Roles:

- **Project Owner:** Spencer Adolph
- **Scrum Master:** Minhwan Oh
- **Frontend Developers:**
 - Barret Pickett
 - Shipeng Yang
 - Bozhao Zhang
- **Backend Developers:**
 - Jonathan Weishuhn
 - David Huarng

Scrum Iterations & User Stories:

Iteration 1					
No.	Story	Pts.	Description	Status	Owner
1	Create new sections for unit classification	1	<ul style="list-style-type: none">● Currently, there is only one section which include every unit. We'd like to seperate 3 sections such as air, land, ocean section.	Done	Minhwan Bozhao Shipeng
2	Refuel Air Pieces	1	<ul style="list-style-type: none">● As an Air Commander Player● So that I can best understand refueling and utilizing game resources / strategy● I want to transfer fuel from tanker pieces to other aircraft pieces	Done	Spencer
3	Minimize popups to view board	1	<ul style="list-style-type: none">● Minimize popups (battle, refuel, containers*) to the left side of the board to a tab underneath the other menus. This enables a person to see the board where the event is taking place, and this event should highlight the position.	Done	Spencer Barret

4	Add a game	1	<ul style="list-style-type: none"> As a Course Director So that my faculty members have their own games to play I want to add a game to the Island Rush Database 	Done	Spencer
5	Put the documentation values into the constant files	Chore	<ul style="list-style-type: none"> See google docs (Shows the values added to the constants file of our project) 	Done	Spencer Jonathan
6	Modify Course Director Page	Chore	<ul style="list-style-type: none"> Current course director page has lots of information, but text size is big. Need to resize for UI. 	Done	Minhwan
7	Changing passwords / setting team passwords	2	<ul style="list-style-type: none"> CourseDirector should have the ability to change passwords for a game (adminpass, and each team pass) 	Done	Minhwan
8	Images for capabilities and dice combinations	1	<ul style="list-style-type: none"> As a player So that I can visually tell what game asset is being used I want to have distinct images for capabilities/dice combinations 	Done	Barret Bozhao
9	News Alerts	1	<ul style="list-style-type: none"> Feature: News Alerts As a teacher So that I control which team has an advantage in the game I want to add & modify news alerts that negatively or positively affect gameplay 	Done	Spencer

Iteration 2

No.	Story	Pts.	Description	Status	Owner
10	Fuel and Movement Rules	1	<ul style="list-style-type: none"> Constraints on how pieces move based on how many moves they have left, how much fuel they have left (handling when fuel reaches 0) Also preventing plans that exceed moves 	Done	Jonathan David
11	Inventory split into controller sections	1	<ul style="list-style-type: none"> sections (for pieces) into air, land, sea, special 	Done	Shipeng
12	minimize functionality to other popups	1	<ul style="list-style-type: none"> Add Minimize Toggle functionality to the other popups (and anything else that needs to be minimized)... 	Done	Spencer Barret
13	Capabilities (Warfare Options)	2	<ul style="list-style-type: none"> Non-piece purchasables (effects on gameplay) Satellite scans, cyber attacks,etc 	Done	Spencer
14	Rods from God (capability)	2	<ul style="list-style-type: none"> rods from god capability from the documentation 	Done	Spencer

15	Remote Sensing (capability)	2	<ul style="list-style-type: none"> remote sensing capability (see documentation). Reveals enemy pieces in a selected area. 	Done	Spencer
16	Insurgency (capability)	2	<ul style="list-style-type: none"> lever social media propaganda has caused an uprising in a single hex region. In the violence, the enemy team has a 1/3 chance of losing each unit in selected hex in an attempt to maintain control of that hex. Cost: 20 Duration: Instant 	Done	Spencer
17	Biological Weapons (capability)	2	<ul style="list-style-type: none"> Concentrated bio/chemical weapon that will destroy all units in selected hex (does not include aircraft (that are taken off)). Note tile remains toxic for duration of effect, any ground units that enter hex within duration will be immediately destroyed regardless of team. Note: Humanitarian assistance is restricted for the duration of this effect. Cost: 25 Duration: 3 full turns (9 rounds) 	Done	Spencer
Iteration 3					
No.	Story	Pts.	Description	Status	Owner
18	Raise Morale (capability)	2	<ul style="list-style-type: none"> COCOM selects a functional commander to invest money into that component's deployment MWR programs. Each unit in that component will receive +1 moves for that turn. It can be used as soon as it's given from the COCOM. Cost: 50 Duration: 1 Full turn (3 rounds) 	Done	Spencer
19	Communications Interruption	2	<ul style="list-style-type: none"> All transmitted communications within enemy network are rendered useless for the duration of its use. Functional commander is unable to communicate with their troops and as a result troops in a 2 hex radius are unable to move for the duration of the capability. Cost: 30 Duration: 1 Full Turn (3 rounds) 	Done	Spencer
20	Island Capturing (and getting points from islands)	2	<ul style="list-style-type: none"> When ground units are on a capture point, and they are the only team there, they 'capture' the island and now 'own' it. Need to keep track of these ownerships. These ownerships translate into giving points. Need to display these ownerships. Possibly add 'win' condition when enemy captures main island of other team 	Done	Shipeng Spencer
21	Update login	2	<ul style="list-style-type: none"> change buttons into checkboxes for commander status 	Done	Bozhao Spencer

22	Golden Eye	2	<ul style="list-style-type: none"> Satellite based EMP strike that affects all units in a selected area (radius 2 hex). In selected area: all air units are instantly destroyed and all other units are immobilized for 4 full turns. Cost: 90 Duration: For aircraft: instant, for all other units: 4 full turns (12 rounds) 	Done	Spencer
23	Piece rules	1	<ul style="list-style-type: none"> tanks can't go on water submarines can't go on land 	Done	Jonathan Spencer
24	Space Area UI for Left Side Bar	2	<ul style="list-style-type: none"> V2, there are only ocean and land area. Customer wants to add space area. This likely ties into Capabilities story, as these space effects come from using those 'items' or 'capabilities' 	Done	Minhwan
Iteration 4					
No.	Story	Pts.	Description	Status	Owner
25	Remote Sensing Effect Change	2	<ul style="list-style-type: none"> Current remote sensing effect is not well visible. Needs to change for user convenience 	Done	Minhwan
26	Commander Type Rules	1	<ul style="list-style-type: none"> Each commander has certain abilities, need to restrict who can do what (air commander planning air pieces...etc) Possibly use more constants for this 	Done	Jonathan Spencer
27	Updates to all clients / sockets	Chore	<ul style="list-style-type: none"> Currently much of backend only sends updates back to the requester, when updates should go to the whole team. Things like purchase and refund. 	Done	Spencer
28	Containers	3	<ul style="list-style-type: none"> controls / rules / UI / functions for getting pieces into and out of container pieces (fighter on a carrier, SOF team in a C130, tank on a transport) 	Done	Spencer
29	Github Wiki	3	<ul style="list-style-type: none"> better describe and explain how the game works 	Done	Jonathan David Shipeng

Screenshots & Explanations

1. Index page & Admin page

Add a Game

Section
Teacher Last Name
Admin Password
Admin Password Confirm

Update Admin Password

Game Id
Admin Password

Game Password Update

Team1 Password
Team2 Password

- It can create new game

- Preventing duplicated game
- It can change admin and game's password

Player Login

Section:

Teacher Last Name:

Team:

- ☒ Vestland Commander
- ☐ Zuun Commander

Controller Type:

- ☒ COCOM
- ☒ JFACC
- ☒ JFLCC
- ☒ JFMCC
- ☒ JFSOCC

Team Password:

- Change buttons into checkboxes for commander status

2. Create new sections for separating units (Updated)



- Previously, units were in one section, so for improving UI, we created new sections, and separate into each section
- Created section for capabilities and special weapon items



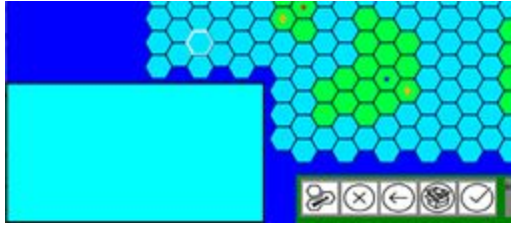
- Created new menu for space area

3. Refuel Air Pieces



- Now, tanker can refuel air unit's fuel

4. Minimize popup windows



- Previously, popup windows were too big to interfere map. We decided to reduce popup window size optimally

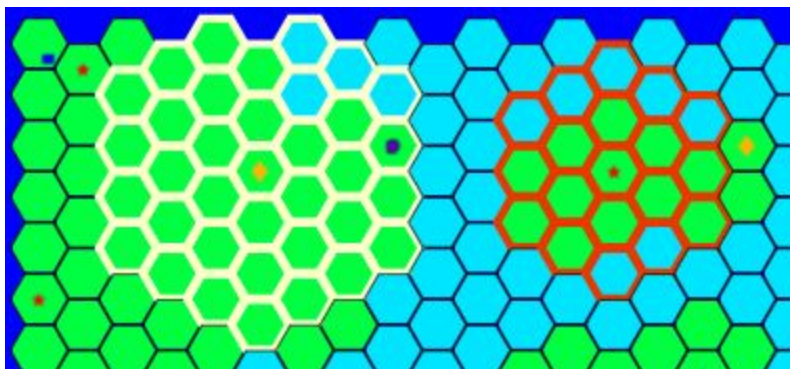
5. News Alerts



- As a teacher so that I control which team has an advantage in the game
- I want to add & modify news alerts that negatively or positively affect gameplay

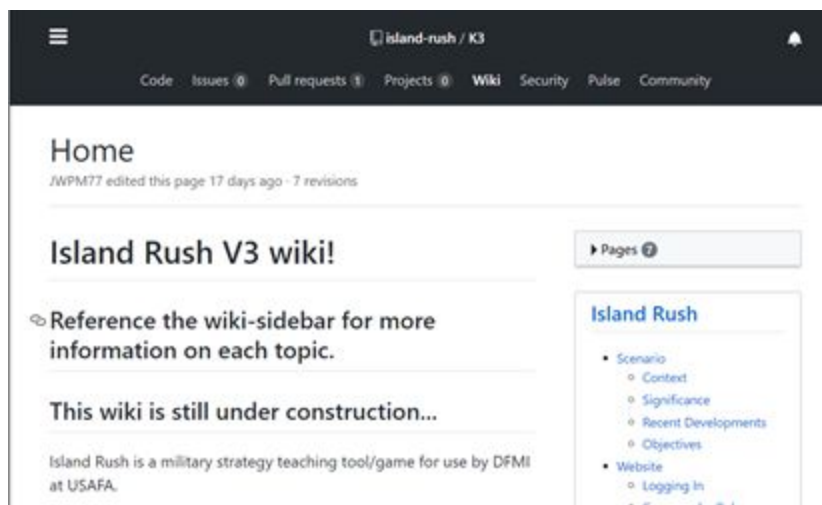
6. Rods from God, Remote Sensing, Biological Weapons, Insurgency (capability)

- Rods from god : The capability from the documentation
- Remote Sensing : The capability from the documentation
- Biological Weapons : The capability from the documentation
- Insurgency : The capability from the documentation
- Golden Eye: The capability from the documentation
- Communication Interruption : The capability from the documentation
- Raise Morale: The capability from the documentation

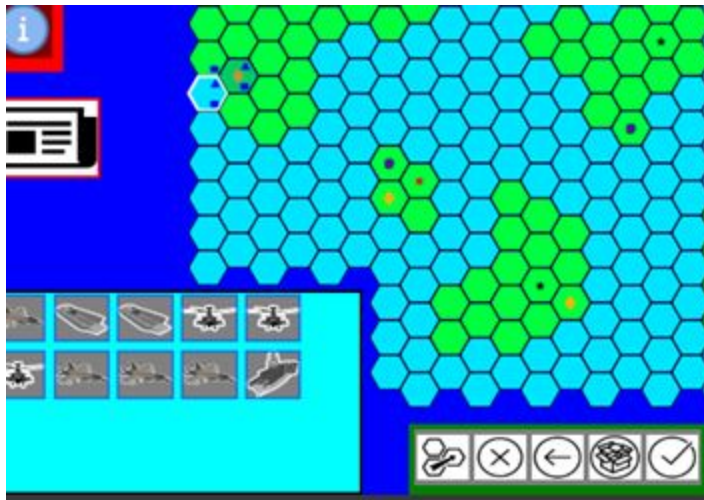


7. Island Rush V3 Wiki

- For future users and developers, we are working on v3 wiki below url
- <https://github.com/island-rush/K3/wiki>



8. Following game rule



- Controls / rules / UI / functions for getting pieces into and out of container pieces (fighter on a carrier, SOF team in a C130, tank on a transport)
- Each commander has certain abilities, need to restrict who can do what (air commander planning air pieces...etc)
- Tanks can't go on water
- Submarines can't go on land

Legacy Code Ramp Up

This project was a continuation of a new development for a new version of the game. Only one group was knowledgeable about the previous code, so there was some effort to get up to speed on the project with regards to what languages and frameworks the project was written in, how the code was organized, and how future development of the code should be implemented.

Most of the process consisted of Spencer giving walkthroughs of the code and explaining how the different components of the code work. There was also individual effort from each team member to read through the code and get familiar with it. Through our slack channel we were able to post any questions we had.

During our later iterations, we focused on cleaning up the structure of the code and making it more readable for future development.

Customer Meetings

- Many emails were exchanged with the customer to give updates and ask for feedback, including creating videos of the features for the customer to view and distribute.

10/18/19 - 1:00 PM

- Group phone call to the Air Force Academy in Colorado.
- First meeting to get team and customer on the same page:
 - What has been done so far
 - What features should we prioritize

11/21/19 - Most of the day

- Product Owner traveled to the Air Force Academy in Colorado.
- Cleared up ambiguities in the provided documentation.
- Clarified our understanding of implementation.

BDD/TDD process

Our project did not incorporate coded tests because the massive, legacy code-base did not include tests. The amount of effort to create tests for existing code was discovered to be too great. We did, however, manually test each other's work before merging into the master branch. This process worked well for us, and lead to a pretty stable version.

Configuration Management Approach

Each team member had a fork of the main repository, where we worked on our own branches. We we completed our work, we made a pull request for the main repository and then it was merged into the master branch.

VSCode was used as our primary editor, along with several extensions that go with it. These extensions kept track of TODO comments, changes in git, as well as code formatting. Another huge helper were the chrome extensions. Both React and Redux have chrome developer tools that assist when developing on the frontend, saving time and resources.

Demos & Important Links:

Customer was not available for an interview due to their location being in Colorado.

Demo: <https://vimeo.com/378664697>

Pivotal: <https://www.pivotaltracker.com/n/projects/2400557>

Github: <https://github.com/island-rush/K3>