**Starfighter (Name Pending)**

**Project Plan**

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**Introduction**

The objectives of the StarFighter project are as follows:

1. Create a complete first-person space piloting video game
   1. Full-featured
   2. Polished
   3. Immersive
   4. Dynamic

Full-featured:

We want StarFighter to have well-rounded, relatively deep gameplay. That means it is much more than just “flying and shooting”. We are limited by time and resources, but we hope to be able to extend the game in several ways beyond that core concept.

Polished:

While we are far from experts, we know a bug or a broken feature when we see one. One of our goals is to make sure StarFighter is as bug-free and smooth-playing as possible within the time and resource constraints.

Immersive:

It is very hard to create a truly immersive experience, and very easy to break that immersion when it is established. Another goal of ours is to make StarFighter feel as real as possible with our limited time and resources.

Dynamic:

A dynamic game is a game that tends to stand the test of time. Dynamic gameplay creates replayability, extending the game beyond its basic functionality. One of our objectives is to give StarFighter as much dynamic content and gameplay as possible, creating a unique experience every time.

**Project Organization**

The development of StarFighter is broken down into priority features displayed in Figure 2.1.

Basic Flying

Basic Combat

“Home” Base System

Financial System

Customizable Ships

AI Pilots

Teams/Allied Squadrons

Factions

War Zone(s)

Modules

Unique Ships

Upgrading

Tuning

Resource Allocation

Engines

Weapons

Hull

Shields

Landing

**Figure 2.1:** Features and their relationships with one another. Red indicates foundational features, blue indicates advanced features, and green indicates stretch features.

Our team consists of only two people, so the division of work should be pretty straightforward. Once we get the base components implemented, we should be able to pretty easily divide the work into “modules” of sorts. The work is currently divided as such:

David:

* Role(s):
  + Scribe
* Feature(s):
  + AI
    - Factions
    - War zone(s)
    - Allied/Enemy Squadrons
  + “Home” Base System
    - Landing

Charlie:

* Role(s):
  + Tech Support
* Feature(s):
  + Customizable Ships
    - Modules
    - Upgrading
  + Financial System

Both:

* Role(s):
  + Developer
* Feature(s):
  + Basic combat
  + Basic flying

**Project Organization**

StarFighter is a particularly risky project for us due to several factors. The breakdown of our risks are as follows:

1. Experience
2. Resources
3. Time
4. Ambition

Experience:

We have relatively significant experience with the C family of programming languages and with video game development, but very little to no experience with the Unreal Engine. This poses a major risk of overall project failure due to our limited time and the initial learning curve. To limit the chance of failure, we have begun working with Unreal Engine tutorials and have broken down our project into several levels of features (foundational, advanced, and stretch). Once the initial learning curve is overcome, we are only limited by time.

Resources:

We are programmers by training, not artists or sound designers. Video games are very asset-heavy, requiring many models, textures, animations, and sounds. There is a significant risk of failing to meet our goals of a polished and immersive game. With low quality models, textures, and sounds, the game appears rough, breaking the user’s immersion. To limit this risk, we have and will continue to devote significant time to acquiring models, textures, and sounds, purchasing them if necessary.

Time:

A pretty straightforward risk is running out of time to accomplish the goals we have set for StarFighter. This threatens every aspect of the project development. To combat this, we will work diligently, consult Dr. Ricks when necessary to avoid lengthy delays, and alter feature assignments as needed.

Ambition:

We have a grand vision for StarFighter and what it could be, but of course we are already limited by the other risks of experience, resources, and time. A major risk to the project is our over-ambitious features. If we spread ourselves too thin or spend too much time on one feature, StarFighter may not be as polished or immersive as we want. To minimize this risk, we will maintain a balance of polishing features and moving on to new features.

**Hardware and Software Resource Requirements**

To develop StarFighter, our hardware and software requirements are as follows:

Hardware:

Relatively powerful PC’s, capable of running Unreal Engine 4 and Visual Studio in tandem.

Software:

Unreal Engine 4

Visual Studio

Blender

**Work Breakdown Structure**

Figure 2.1 above gives a very high-level breakdown of the tasks we need to complete in order to achieve our objectives for StarFighter. Every feature will require design, implementation, and testing/debugging. The order of feature implementation is as follows:

1. Basic Flying
2. Basic Combat
3. Artificial Intelligence (AI)
   1. Factions
   2. War Zone(s)
4. Customizable Ships
   1. Modules
   2. Upgrading
5. Financial System
6. Home Base System
   1. Faction Bases

**Project Schedule**

StarFighter will have three main milestones to achieve our objectives, with an additional 4th if time allows. The three main milestones will cover the foundational and advanced features, with the 4th consisting of any number of stretch features that we can implement. Each milestone is outlined below:

* Milestone 1 (2nd week of October):
  + Basic Flying
* Milestone 2 (1st week of November):
  + Basic Combat
    - Hit Detection
* Milestone 3 (1st week of December):
  + AI
    - Factions
  + Customizable Ships
    - Modules
    - Upgrading
  + Financial System
* Milestone 4 (If time allows, may contain any or all of the following):
  + Home Base System
  + Modular Ships
  + Allied/Enemy Squadrons
  + War Zone(s)

**Monitoring and Reporting Mechanisms**

In order to develop StarFighter, we are going to be using Pivotal Tracker in order to keep track of our tasks. We will be using this tracker over other trackers because it is easy to use and will help keep us on track in order to meet our goals for this project. Github will be used for our version control of this project. We want to use Github, because there is Git integration with the Unreal Engine to help in making commits easier to manage. We will be storing all of our documentation and meeting notes in a Documentation folder on our project’s Github. We normally meet every Tuesday and Thursday after our Topics in Computer Science course at 1:15pm. This allows us to meet with Dr. Ricks if we need to discuss details about our project or to seek assistance.

Our Pivotal Tracker is located at: https://www.pivotaltracker.com/n/projects/1861583

Our Github and Documentation is located at: https://github.com/Cwagner01/StarFighter