

# Game Design Document

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## **Bullit “ ” Shooter**

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# 1. Overview

## 1.1 The Elevator Pitch / High Concept

Bullit " " Shooter is a 2D side-scrolling space shooter in which the Player controls a spaceship and shoots enemies.

## 1.2 Theme, Setting and Genre

The game takes place in deep space in a distant future when interstellar travel is discovered. It is a bottom-to-top scrolling shooter.

## 1.3 Player Experience Goals

The Player will feel a sense of tension as waves of enemies sprawl from the side of the screen overwhelming those who are not careful.

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## 1.4 View

The game will have a top down 2D perspective.

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## 1.5 Targeted platform(s)

Windows 7 (and later);  
1024x768 minimum resolution expected

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## 1.6 Technical requirement(s)

C++ Visual Redistributable 2017 (Note: this is only for the release version of the game)

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## 2. Gameplay

### 2.1 The First Minute

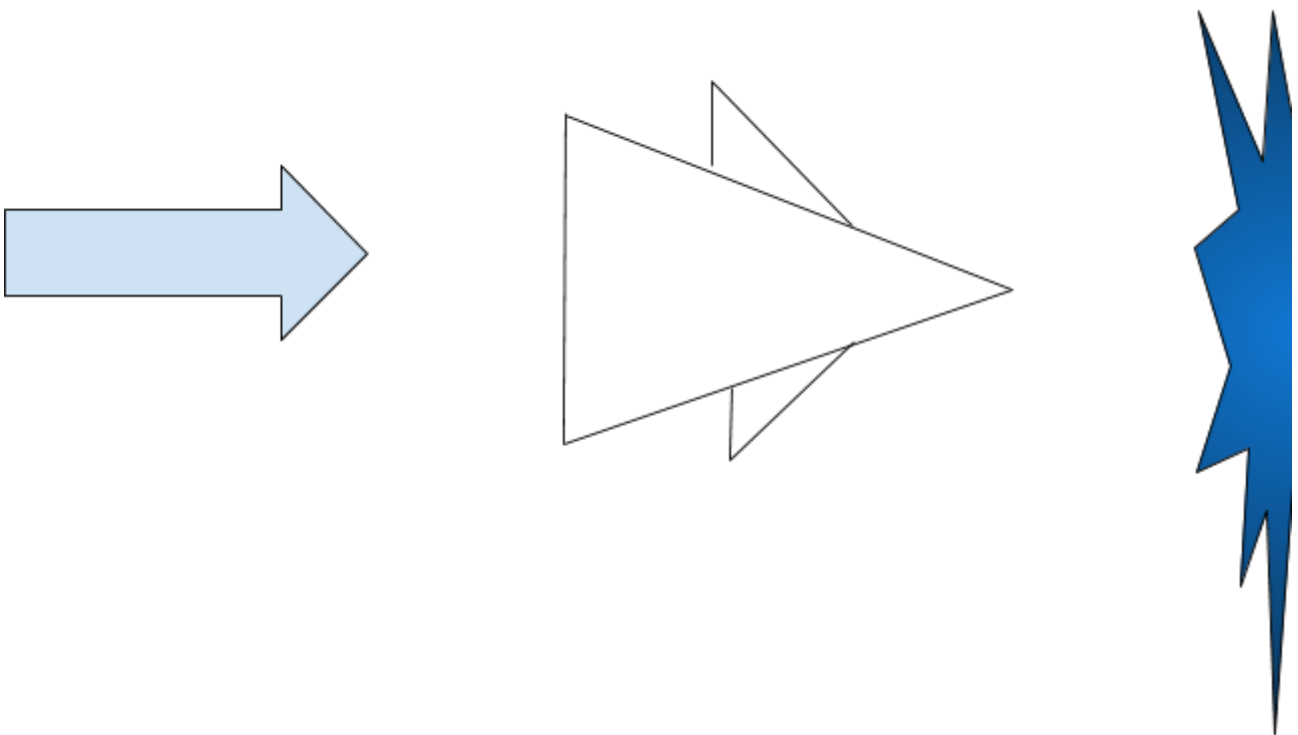
After the title screen the Player is presented with a variety of options, such as *Start Game*. After selecting the option *Start Game*, the Player is presented with a short cutscene. Once the cutscene is over, the Player is brought into the tutorial “level” of the game, the Player ship appears from the left and flies into the camera view and stops. An asteroid appears from the right side of the screen, moving slowly towards the Player. Displaying, above the Player, the icon for Moving up (Keyboard/Controller : Up Arrow key/Analog Stick moving Up). The Player, successfully dodges the asteroid, using the brilliant on-screen instructions. Moments later, the first enemy ship appears, from the right side of the screen, remains stationary, a tip is displayed above the Player, in a small box to prompt the Player to press the fire button (Left Mouse Click / Right Trigger). The Player fires at the enemy and destroying the enemy ship with their projectile. The screen narrows (vertically), and end level transition cutscene plays.

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### 2.2 Game Progression

#### 2.2.1 How do I progress from level to level?

- A cutscene is played of the Player ship entering a wormhole.



#### 2.2.2 How does the game increase in difficulty?

- New/harder enemy AI/types
- More enemies on screen at once

### **2.2.3 What rewards (useful or not) are revealed to keep Player engaged?**

- Powerup dropped from defeating a boss that persists throughout the playthrough.

## **2.3 Level progression**

### **2.3.1 How do I complete each level ?**

- Each level is completed by defeating all the enemies (and Boss).

## **2.4 Objectives/Victory Conditions**

- The objective is to complete all the levels in the game and defeat all the bosses. To do this the Player must complete each subsequent level to get onto the next. The Player loses the game once their shield is brought down to 0. The Player will lose shield when hit by projectiles (The Player will be insta killed if they come in contact with an asteroid or enemy ship).
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## 3 Features

### 3.1 Feature - Firing

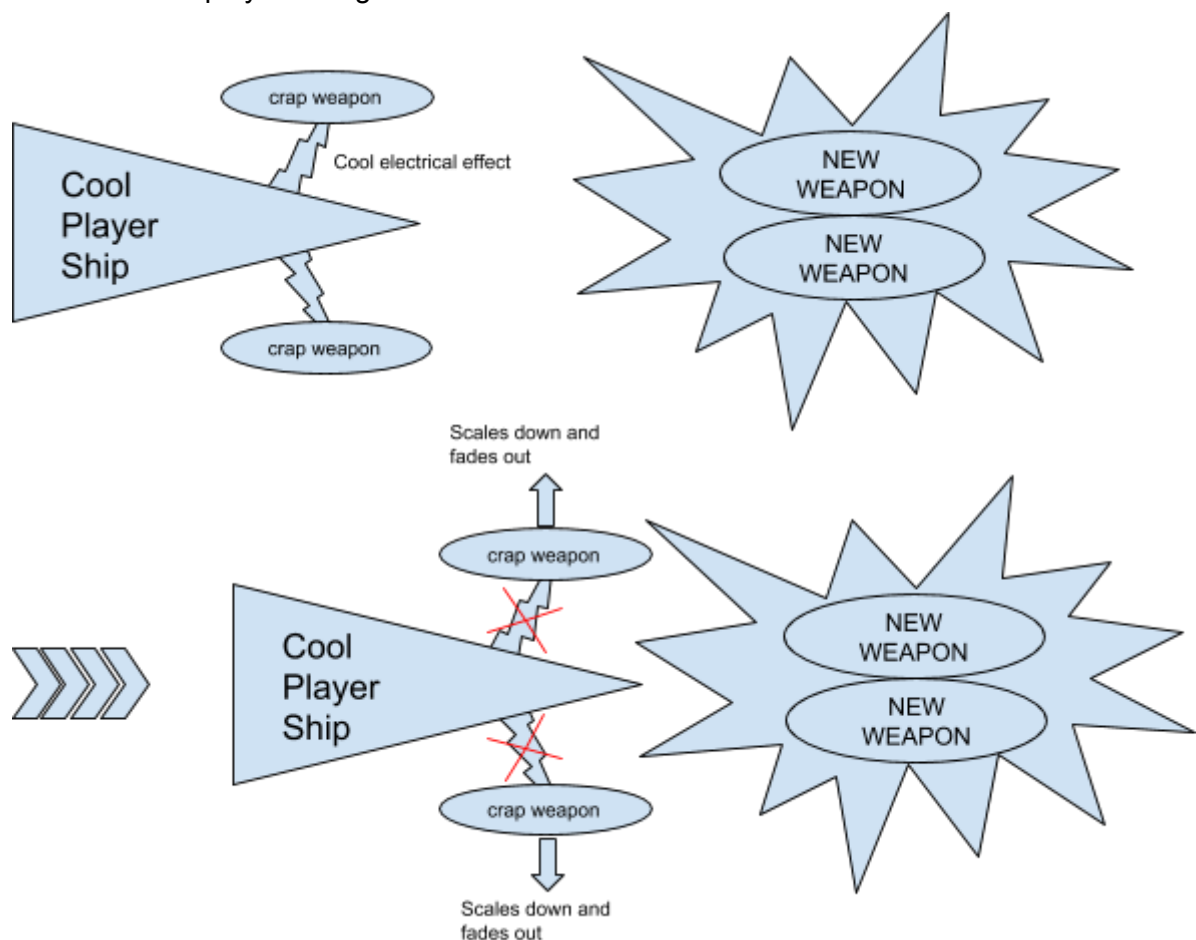
The Player can shoot one basic projectile every 1 s. The laser will move at constant velocity in the direction the Player is facing. The projectile will hit any oncoming asteroids or enemies. If nothing is hit the projectile will disappear when off the screen. The Player may hold down the fire button to shoot continuously.

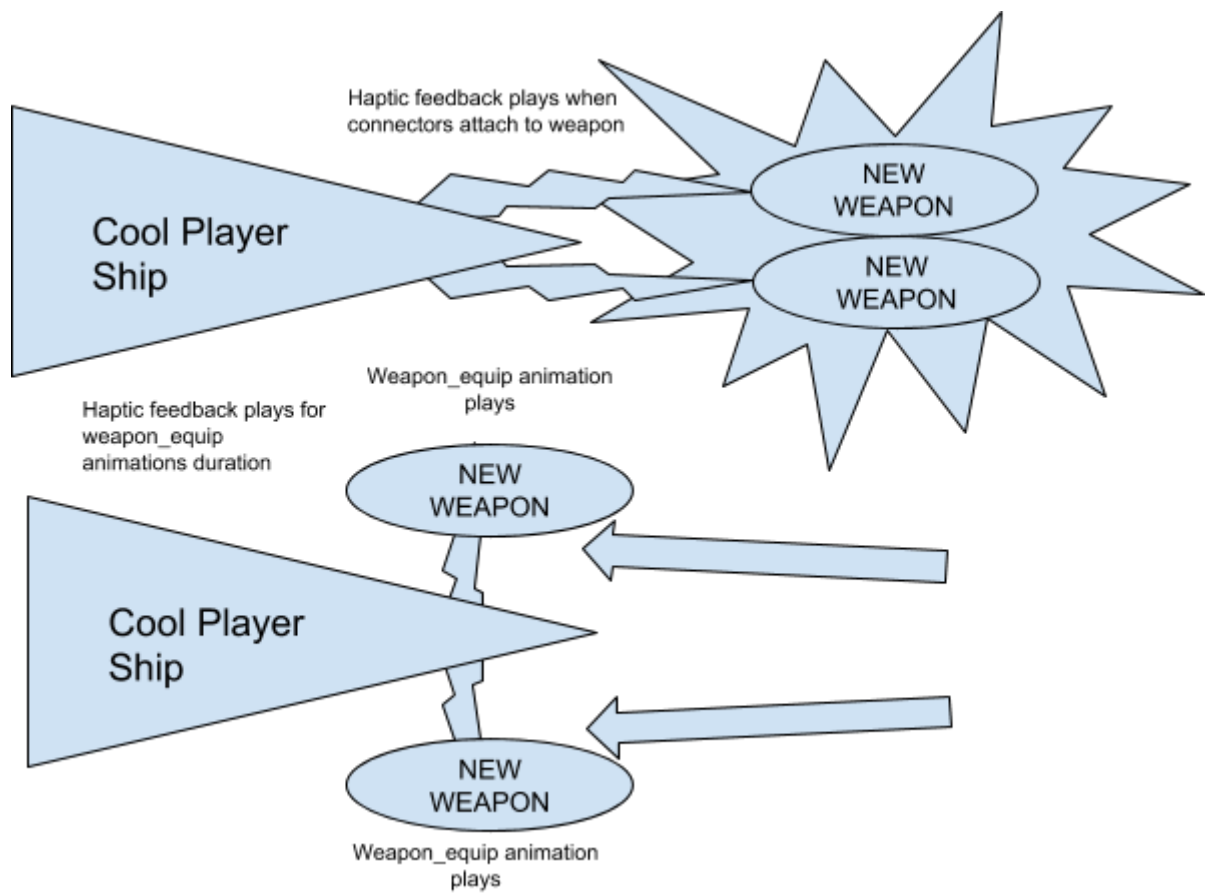
Depending on the weapon the laser will travel faster or slower as well as different shot patterns.

When a player shoots, a haptic feedback is provided by means of a controller









### UPGRADING

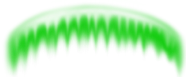


When a player acquires a new weapon, an animation will play of the new weapon being deployed on the ship, the new weapon will then float beside the player while they move. Sounds will be played along with the animation.

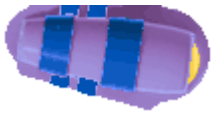
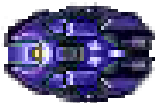










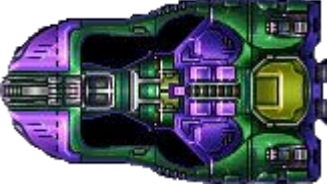




BULLET LIST					
N#	LOOKS	DAMAGE	VELOCITY	FIRE RATE	SPECIAL PROPERTIES
1	 Standard	1 shield drain	4 units/s	2/s	none
2	 Empowered	3 shield drain	3 units/s	2/s	Shoots 3 projectiles 1 in middle and 2 at a 5 degree offset.
3	 DeathOrb	4 shield drain	1 units/s	2/s	Can pass through enemies
4	 FireBlast	2 shield drain	6 units/s	4/s	none
5	 HolySphere	3 shield drain	6 units/s	2/s	Gets bigger as it travels until it reaches 3x its size, then fades away after 1 seconds
6	 MagmaShot	10 shield drain	2 units/s	1/s	Explodes in AOE causing 4 shield drain to enemies in radius of 4 units
7	 NapalmSphere	5 shield drain	3 units/s	2/s	Causes a small fire ball to stay for 3 seconds in the place of impact that does 2 shield drain to enemies that enter
8	 CometShot	4 shield drain	4 units/s	3/s	Enemies hit by this are knocked back by 3 units

<b>9</b>	 NullWave	4 shield drain	3 units/s	1/s	Will block incoming enemy projectiles
<b>10</b>	 StaticSphere	9 shield drain	2 units/s	1/s	Pulses a circle of radius 4 units that will do 3 shield damage per pulse to all enemies hit.
<b>11</b>	 Pyroblast	20 shield drain	1 units/s	0.2/s	Explodes in a 10 unit radius causing 10 shield damage to all hit.

WEAPON LIST		
Looks	Name	Bullet N#
	Basic Blaster	1
	Blaster 3.0	2
	Death Cannon	3
	Sprayer	4
	Holy Barrel	5
	Le Pizza Sling	6
	Noxious blitz	7

	The Bully Gun	8
	Protochipslicer	9
	Static Fling	10
	The Nuker	11

### 3.2 Feature - Moving

The ship can be moved by the Player. The ship does not rotate therefore it will remain facing the right side of the screen. The Player may not move the ship off the screen. The ship will ease into a constant max velocity but will slow down over time if no input is present.

### 3.3 Feature - Health System

The ship will have a shield represented by the HUD as a bar, under the hood, this shield will have 100 shield points (sp).

Shield gets ignored in the occurrence of the ship colliding with a asteroid or enemy ship.

### 3.4 Feature - Enemy AI

In the game, a minimum of 3 enemies is being targeted for development. Each enemy needs to have a following behaviour:

1. Melee Enemy that fights at close quarters:
    - a. Moves towards player
    - b. When within approx. 200 pixels away the enemy stops moving
    - c. Begins to wind up for a attack, enemy keeps aiming at player, however enemy has limited turn rate (speed of turning is limited).
    - d. After 1.2 seconds the enemy dashes in a straight line in the direction the enemy is facing at the end of it's wind up (may or may not be facing player).
    - e. Repeat.
-

## 4 Game World

### 4.1 Game geography

- The Player will start off within the Earth's atmosphere as they leave the alien raided earth in search of a powerful artifact, as it is the only way to save the planet from being taken over. The Player is the last hope for humanity. The ship can travel through different galaxies and star systems by way of Wormhole Travel however this requires a great amount of energy which can be gathered from powerful aliens. Each time the player gains the energy needed they will enter a wormhole and travel to the next locations. Those will include areas such as systems full of solar flares, freezing nebulas and powerful static storms as well as certain alien colonies.

### 4.2 Game World Elements

#### Enemy Types

Pyre units		
A chaotic fire praising alien species known for raiding planets leaving nothing but a smoldering rock behind. This is the species that is manipulated by Tasnoss into leading an organised attack on Earth.		
Name	Description	Strength(1-10)
Pyre Scout	Small lightweight ship, high mobility. Lack shields reliably fast unit. Weapon: <ul style="list-style-type: none"><li>- Tries to ram player</li></ul>	1/10
Pyre Light Frigate	Small ship, average mobility. Has a small shield. Weapon: <ul style="list-style-type: none"><li>- Fires weak projectiles towards player.</li></ul>	3/10
Pyre Flag Ship	<b>BOSS</b> strong ship that fires multiple projectiles and has a lot of shields. Weapons: <ul style="list-style-type: none"><li>- Lob asteroid set on fire.</li></ul>	5/10

Uki units		
This is a race of nomadic space pirates, they do not have a home but they assault cargo ships and any ships with valuables. They are led by a mothership called "Uruk" known for their "explosive" nature.		
Uki scavenger	A fast moving ship with fast firing rate but deals low damage. Has a very weak shield. Weapons: <ul style="list-style-type: none"><li>- Small laser</li></ul>	3/10

Uki defender	Slow moving high health unit, used to protect the scouts by shielding them. Weapon - Shield (small hemisphere that blocks lasers)	3/10
Uruk	<b>BOSS</b> Pirate leader, big mothership with a large amount of defenses. Weapons: - Energy shield - Rapid fire (very fast shooting lasers) - Bomb lob	6/10

Entiquan wildlife		
Entiquan system contains no civilized species but only creatures that roam and hunt. They can survive the cold and poisonous conditions of Entiquan.		
Polido	A spore-like enemy that is used to cold conditions of space, they spew poisonous fumes at everything living in sight. Poison damages shields over time. Weapons: - Venom cloud	3/10
Glome	A rare species in this system, it is a cell-like creature that devours matter to get bigger. Only way to defeat it is to run from it until it is too small to fight. Weapons: - none	5/10
Mi-hass	A plant like creature that has started as a polido but has grown to enormous sizes effectively becoming the largest and most fearsome living creature of this system. Weapons: - Noxious fumes - Vine grab	8/10

Tyr units		
A cultured alien species of high intellect with octopus-like face, being highly cultured, they speak through the emission of "bubble popping noises". This species tend to be very territorial are don't take kindly to any " <i>uncultured</i> " races.		
Tyr Corvette	Small lightweight ship, medium mobility. Has a average shield. Weapons: - Melee range claws - Tentacle that grabs player and pull them closer	7/10
Tyr Cruiser	Medium ship, low mobility. Has a large shield. Weapons: - Melee range claws (dangerous)	8/10

	<ul style="list-style-type: none"> <li>- Tentacle that grabs player and pull them closer</li> </ul>	
Tyr Capital Ship	<b>BOSS</b> flying fortress so large it is often mistaken for a large space station. Extremely large ship, no mobility. Has extremely large shield (possibly largest in the game) Weapons: <ul style="list-style-type: none"> <li>- Tentacle slap</li> <li>- Laser Cannon</li> </ul>	9/10

Tasnoss Empire		
The Tasnoss empire are the most benevolent beings in the universe. They use and manipulate races in the galaxy to do their bidding, all those who oppose them get decimated. They are the tyrants that need to be stopped at all costs. They wield immensely powerful particle weapons.		
Tasnoss stealth fighter	Small fast ship used for scouting but is deceptively strong. This unit can go invisible. Weapons: <ul style="list-style-type: none"> <li>- Light beam</li> <li>- Invisibility cloak</li> </ul>	5/10
Tasnoss assault fighter	A rather large ship that possesses great power, has 2 huge cannons. Weapons: <ul style="list-style-type: none"> <li>- Light cannon</li> <li>- Fire laser cannon</li> </ul>	7/10
Tasnoss World Ship	The central base for the Tasnoss empire. Extremely heavy loaded with highest of defences. Weapons: <ul style="list-style-type: none"> <li>- Quantum Gatling gun</li> <li>- Void crystal beam</li> <li>- Supernova bombs</li> </ul>	10/10

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## 5 Levels

### 5.1 Level description

#### - Level 1 - Earth

A cutscene that introduces player to the story plays, it will be pictures with overlay text explaining the story, intro fades and player is brought to the tutorial level which explains the game controls. The player does not get anything from this simple level as it will just introduce them to the game. Here the player will encounter the Pyre race and will have to fight their way out.

#### - Level 2 - Epsilon Eridani



A solar system full of asteroids. Player is presented with dialogue that reveals the main hazards of the system (asteroids) the main objective is to get through the level without getting hit by asteroids, no enemies are present in this system.

- **Level 3 - Zuloun**

An entirely new galaxy ruled by an empire called the Zen, they are a peaceful folk and will not fight, however there are space pirates called Uki in this galaxy, they will want the players wormhole cannon. The player will have to fight and survive until the cannon recharges.

- **Level 4 - Entiquan Park**

Aside from having relatively unintelligent wildlife that can survive in vacuum, this system also features acidic clouds and asteroids that will eat through the player shield significantly faster than most attacks. It is advised to avoid them at all costs.

- **Level 5 - Sintundi**

This galaxy is ruled by Tyr, an intellectual race who are extremely territorial and protect all their secrets and technologies and will attack any intruders on sight. They have really powerful weapons and no creature has ever made it out alive from their system.

- **Level 6 - Tasnoss Empire**

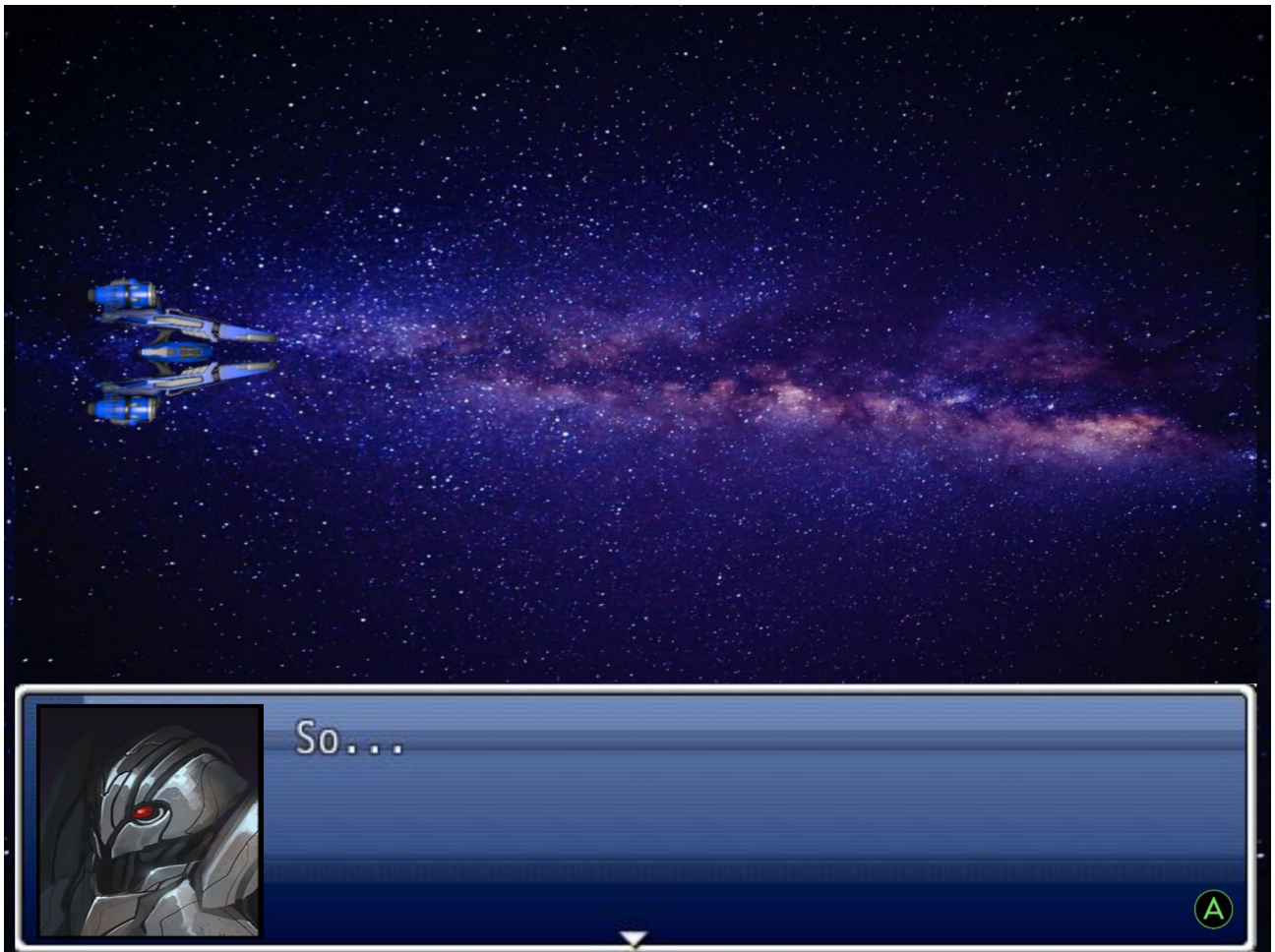
This is the most dangerous and hostile location in the universe, the Tasnoss empire is an all powerful almost a god-like species that thrives on expanding their influences by forcing people to bow to them or die. This is the final location for the player where they will face off the emperor of Tasnoss.

## 6 Interface

### 6.1 Controls

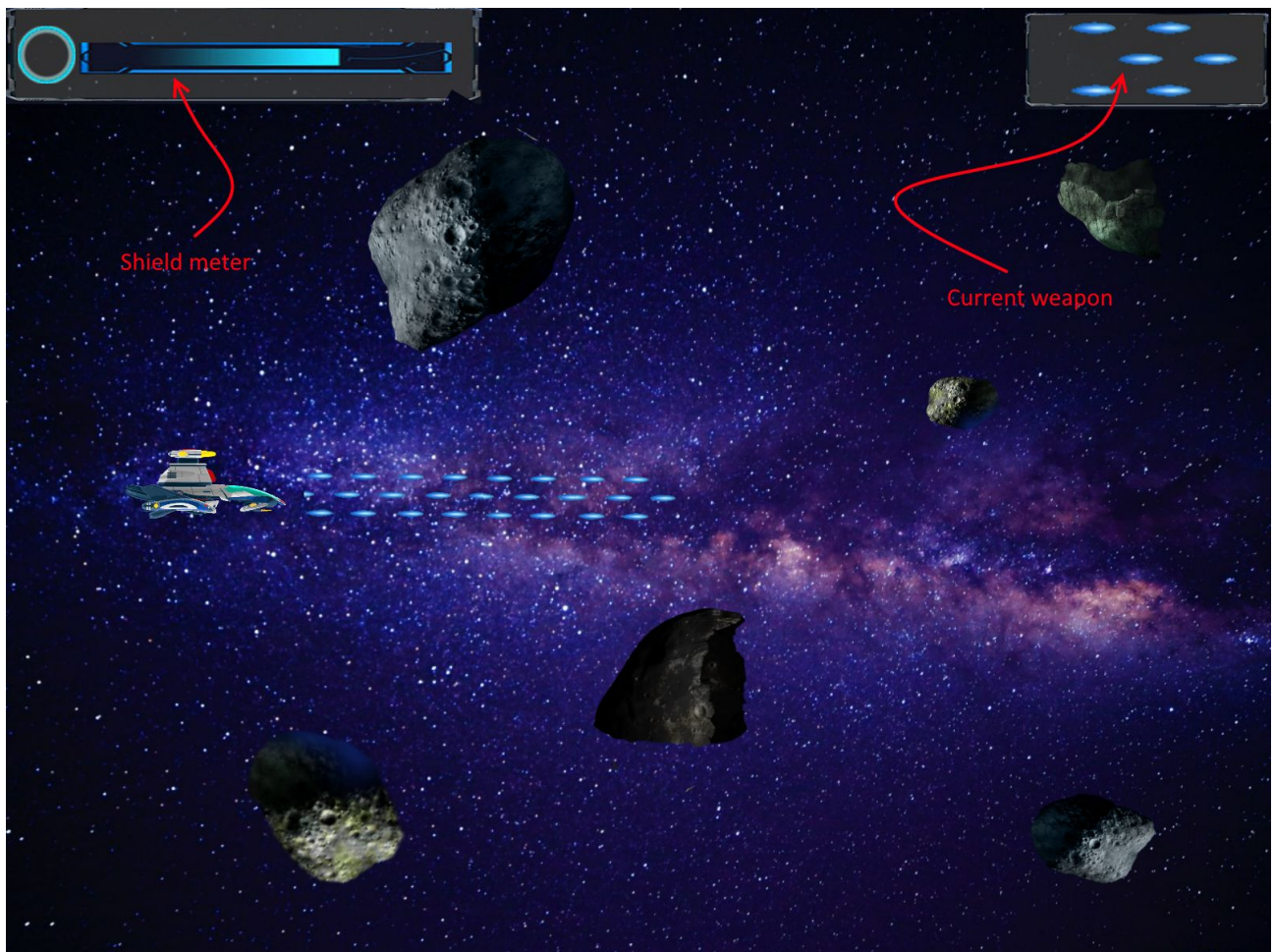


## 6.2 In game overlays & dialogs



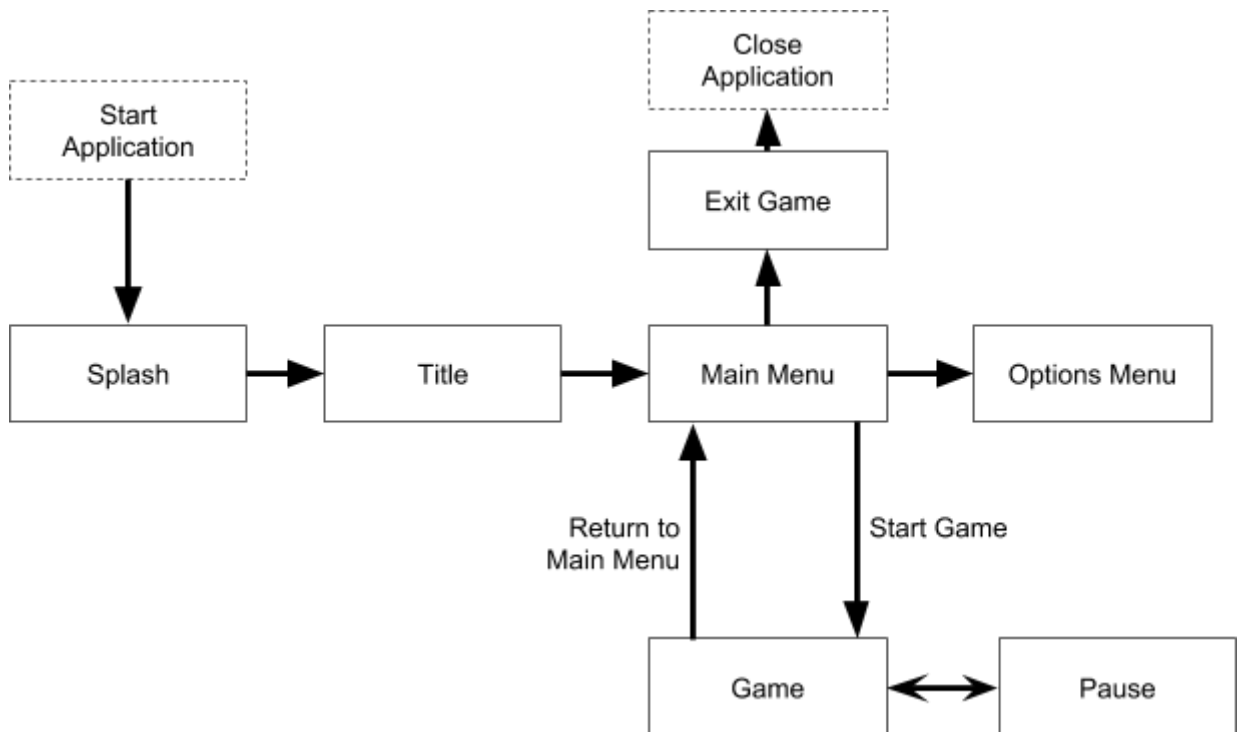
The overlay in this game will include dialogue boxes such as demonstrated in the image above. This can be skipped using the 'A' button. The dialogue will give the player a sense of atmosphere and give some lore to every level.

## 6.3 HUD



The UI will inform the player of 2 things, the current shield state and the currently equipped weapon. The shield meter being on the top left of the screen while the weapon being on the right, both are placed over a slightly transparent background to make sure there is visibility when the player flies to that location of the screen.

## 6.4 Screenflow



## 6.5 Control system

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## 7 AI

### 7.1 Opponent AI

Depending on the type of AI different behaviour will be defined. This means we will have to create an AI that simply flies towards the player finding their way toward him while avoiding obstacles such as asteroids. Another type of AI will have to decide what position on the screen to go to in order to shoot the player while keeping a relatively safe distance and having the ability to dodge incoming player projectiles. The bosses will have a separate AI that will have a certain set of abilities that they will use.

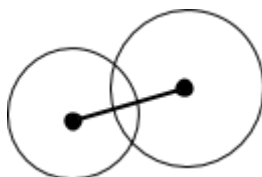
### 7.2 Support AI

#### 7.2.1 Player Movement

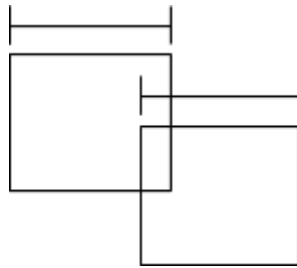
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#### 7.2.2 Collisions

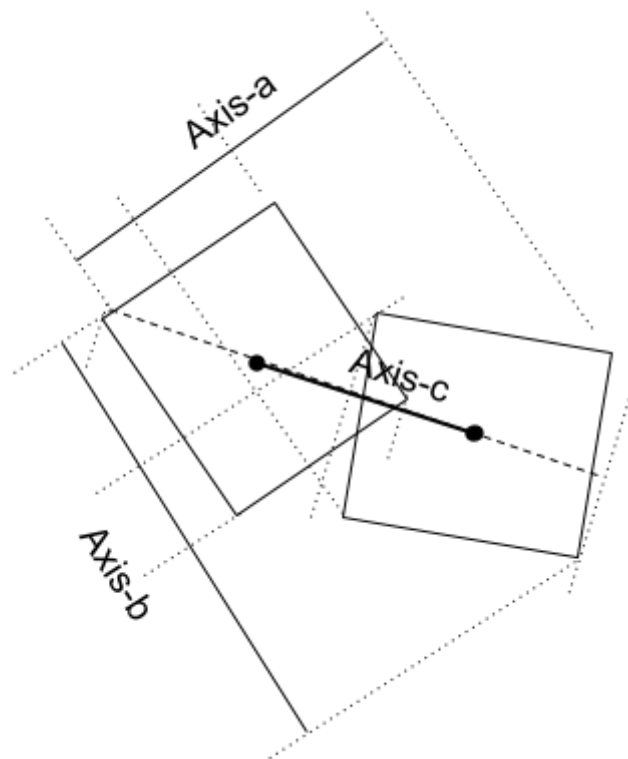
- Circle-to-Circle Collisions
  - Take the distance squared between the center of both circles and compare it to the sum of circle's radius squared.



- Rectangle-to-Rectangle Collisions
  - take top-left point of one square and check if it's outside the other square adding the width and height for each respective side.



- AABB-AABB Collisions (Using Separating Axis Theorem)
  - Find the projection vectors min and max for each axis (a,b,c), for both rectangles, if each range (min - max) of both rectangles lies within each other, then the rectangles are colliding.



## 8 Game Art & Audio

### 8.1 Audio

#### 8.1.1 Background music

Menu - [Tronicles](#)

Level 1 - [Inner Sun](#)

Level 2 - [Future Club](#)

Level 3 - [One](#)

Level 4 - [Lift Off](#)

Level 5 - [The World Within](#)

Level 6 - [Digital Fortress](#)

#### 8.1.2 Audio effects

[Miscellaneous](#)

#### 8.1.3 Dialog

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### 8.2 Art assets

#### 8.2.1 Characters / animation frames

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#### 8.2.2 Items (in game & icons)

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#### 8.2.3 Level backgrounds/maps/environment textures

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#### 8.2.4 Visual effects

##### [8.2.4.1 Explosions](#)

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##### [8.2.4.2 Particles](#)

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#### 8.2.5 HUD graphics

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## 8.2.6 Controls screen/menu/dialog backgrounds/borders/typenames

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### 8.3 Color Palette

Using color palette (Credits to Paletton):

URL: <http://paletton.com/#uid=646110ktjoik9uYprsEwcjSG1eG>

