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BAHCESEHIR UNIVERSITY**

**MOBA INTEGRATED ABILITY DESIGN FOR  
VOIDRUNNER GAME**

**Master's Thesis**

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YETENEK TASARIMI**

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# ABSTRACT

## MOBA INTEGRATED ABILITY DESIGN FOR VOIDRUNNER GAME

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Voidrunner is a three-dimensional shooter game which is also a multiple online battle arena for both personal computer and virtual reality. Personally, I have contributed to the development of Voidrunner as a game developer. In this thesis the game Voidrunner is examined through the both design and development phases. The focus is to analyze the abilities of the fictional battleships in terms of development, yet this process mostly relies on the game design. Therefore, the related theoretical background is explained starting from the genre and player types. Cumulatively game design process as well as the developmental issues are referred. During the development the aim was to create playable characters in comparison and with inspiration from the other games of different genres in the market. By this means, the players were able to play with the characters that they were familiar in function. Hereby, the Voidrunner game is analyzed and confirmed as compatible with player types and in-game characters.

**Keywords:** MOBA Genre, Shooter Genre, Ability Balance, Harmony of Abilities

# ÖZET

## VOIDRUNNER OYUNU İÇİN MOBA ENTEGRE YETENEK TASARIMI

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Voidrunner, hem kişisel bilgisayar hem de sanal gerçeklik için çoklu çevrimiçi savaş alanı olan üç boyutlu bir shooter oyunudur. Şahsen ben bir oyun geliştiricisi olarak Voidrunner'ın gelişimine katkıda buldum. Bu tez çalışmada Voidrunner oyunu hem tasarım hem de geliştirme aşamaları ile incelenmiştir. Odak noktası kurgusal savaşların yeteneklerini gelişim açısından analiz etmektir, ancak bu süreç çoğunlukla oyun tasarımına dayanır. Bu nedenle, ilgili teorik arka plan tür ve oyuncu türlerinden başlayarak açıklanmıştır. Kümülatif olarak oyun tasarım sürecinin yanı sıra gelişimsel konulara da değinilir. Gelişim sırasında amaç, pazardaki farklı türlerdeki diğer oyunlardan esinlenerek ve kıyaslanarak oynanabilir karakterler yaratmaktır. Bu sayede, oyuncular fonksiyonlarına aşina oldukları karakterlerle oynayabiliyorlardı. Böylelikle, Voidrunner oyunu analiz edilir ve oyuncu tipleri ve oyun içi karakterlerle uyumlu olarak onaylanır.

**Anahtar Kelimeler:** MOBA Türü, Shooter Türü, Yetenek Dengesi, Yeteneklerin Uyumu

## TABLE OF CONTENTS

<b>TABLES</b> .....	viii
<b>FIGURES</b> .....	viii
<b>ABBREVIATIONS</b> .....	ix
<b>1. INTRODUCTION</b> .....	1
<b>2. LITERATURE REVIEW</b> .....	3
<b>2.1. GAME MECHANICS</b> .....	3
<b>2.2. GENRE</b> .....	4
<b>2.3. MOBA GENRE</b> .....	6
<b>2.4. PLAYER TYPES BASED ON MOBA</b> .....	7
<b>2.4.1. Carry</b> .....	7
<b>2.4.2. Initiator</b> .....	7
<b>2.4.3. Disabler</b> .....	8
<b>2.4.4. Tank</b> .....	8
<b>2.4.5. Ganker</b> .....	8
<b>2.4.6. Support</b> .....	8
<b>3. THE VOIDRUNNER GAME: CREATING A MOBA GAME FROM A TIME RACER GAME</b> .....	9
<b>3.1. THE VOIDRUNNER GAME: STARTING POINT</b> .....	9
<b>3.2. THE VOIDRUNNER GAME: CHANGING THE GAME INTO A MOBA GAME</b> .....	14
<b>3.3. THE VOIDRUNNER GAME: CREATING THE ABILITY SETS FOR VOIDRUNNER SHIPS BASED ON PLAYER TYPE</b> .....	17
<b>3.4. THE VOIDRUNNER GAME: THE STORY OF THE GAME</b> .....	24
<b>4. THE VOIDRUNNER GAME: INSPECTING THE ABILITIES OF EACH TYPE IN A TECHNICAL WAY AND HARMONY BETWEEN THEM</b> .....	29
<b>4.1. CARRY</b> .....	31
<b>4.1.1. Healing Bullets</b> .....	32
<b>4.1.2. Berserker</b> .....	33
<b>4.1.3. The Harmony Between Berserker and Healing Bullets</b> .....	34
<b>4.2. INITIATOR</b> .....	34

4.2.1. Like Old Times.....	35
4.2.2. Teleporting Missile .....	36
4.2.3. The Harmony Between Like Old Times and Teleporting Missile.....	37
4.3. DISABLER.....	37
4.3.1. Electro Magnetic Pulse (EMP) .....	38
4.3.2. Virus.....	39
4.3.3. The Harmony Between EMP And Virus.....	40
4.4. TANK.....	40
4.4.1. Last Chance Shield .....	41
4.4.2. Think Again.....	42
4.4.3. The Harmony Between Last Chance Shield and Think Again .....	42
4.5. GANKER.....	43
4.5.1. Camouflage.....	43
4.5.2. Stalker Sting.....	44
4.5.3. The Harmony Between Camouflage and Stalker Sting .....	45
4.6. SUPPORT.....	46
4.6.1. Healing Aura .....	47
4.6.2. Anti-EMP .....	48
4.6.3. The Harmony Between Healing Aura and Anti-EMP .....	49
5. INTERVIEW WITH THE EXPERT .....	50
6. CONCLUSION .....	52
APPENDICES .....	60
APPENDIX – A: FIGURE 4.1 BASE SHIP BLUEPRINTS .....	61
APPENDIX – B: FIGURE 4.2 COOLDOWN DURATION BLUEPRINTS.....	62
APPENDIX – C: FIGURE 4.4 HEALING BULLLETS BLUEPRINTS .....	63
APPENDIX – D: FIGURE 4.5 BERSERKER BLUEPRINTS .....	64
APPENDIX – E: FIGURE 4.7 LIKE OLD TIMES BLUEPRINTS.....	65
APPENDIX – F: FIGURE 4.8 TELEPORTING MISSILE BLUEPRINTS .....	66
APPENDIX – G: FIGURE 4.10 EMP BLUEPRINTS.....	67
APPENDIX – H: FIGURE 4.11 VIRUS BLUEPRINTS .....	68
APPENDIX – I: FIGURE 4.13 LAST CHANCE SHIELD BLUEPRINTS .....	69
APPENDIX – J: FIGURE 4.15 CAMOUFLAGE BLUEPRINTS.....	70

**APPENDIX – K: FIGURE 4.16 STALKER STING BLUEPRINTS (A)..... 71**  
**APPENDIX – L: FIGURE 4.17 STALKER STING BLUEPRINTS (B) ..... 72**  
**APPENDIX – M: FIGURE 4.19 HEALING AURA BLUEPRINTS..... 73**  
**APPENDIX – N: FIGURE 4.20 ANTI – EMP BLUEPRINTS ..... 74**



## TABLES

Table 2.1: MobyGames' genres glossary .....	6
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## FIGURES

Figure 3.1: Aerodrome of Voidrunners .....	24
Figure 3.2: The Ur war .....	25
Figure 3.3: The temple of the eternal .....	27
Figure 4.1: Base ship blueprints .....	30
Figure 4.2: Cooldown duration blueprints .....	31
Figure 4.3: Inquisitor .....	32
Figure 4.4: Healing bullets blueprints .....	33
Figure 4.5: Berserker blueprints .....	34
Figure 4.6: Void hunter .....	35
Figure 4.7: Like old times blueprints .....	36
Figure 4.8: Teleporting missile blueprints .....	37
Figure 4.9: Predator .....	38
Figure 4.10: EMP blueprints .....	39
Figure 4.11: Virus blueprints .....	40
Figure 4.12: Defiler .....	41
Figure 4.13: Last chance shield blueprints .....	42
Figure 4.14: Stalker .....	43
Figure 4.15: Camouflage blueprints .....	44
Figure 4.16: Stalker sting blueprint (a) .....	45
Figure 4.17: Stalker sting blueprint (b) .....	45
Figure 4.18: Cleric .....	47
Figure 4.19: Healing aura blueprints .....	48
Figure 4.20: Anti-EMP blueprints .....	49
Figure 6.1: Flowchart of VoidRunner .....	56

## ABBREVIATIONS

CTM	:	Capture the Miner
DM	:	Death Match
DOTA	:	Defense of the Ancients
EMP	:	Electro Magnetic Pulse
FPS	:	First Person Shooter
LOL	:	League of Legends
MMORPG	:	Massively Multiplayer Online Role Play Game
MOBA	:	Multiplayer Online Battle Arena
PVE	:	Player vs Environment
TDM	:	Team Death Match
VR	:	Virtual Reality
UE4	:	Unreal Engine 4

## 1. INTRODUCTION

RealityArts Studio is a studio which develops video games. Their first video game was Voidrunner. The game was developed by a team including Kutsal Mustafaoğlu, İsmail Kemal Çiftçioğlu, Bahar Baziki and Mehmet “Jacky” Güven. Unreal Engine 4 software is used for the development of the game. Although the development process of the game was with ups and downs, it was eventually completed as designed.

At the beginning, the game was designed as a single-player speed reflex game. The basic aim of the game was to complete a parkour full of obstacles within the given time. However, this basic play type was not enough for a game which has a great background story. Therefore, extra features and modes added to the game by the team according to the game story. After development of the game has started, players who had seen the game from “Steam” have thrown so many ideas about the game. They wanted these ideas of them to be integrated into the development process of the game. Ideas coming from players were taking the basic idea of the game and changing it to another genre. When those ideas have been discussed by the team, it was realized that there were couple games very close to these ideas and these games were very successful. These games were, Counter-Strike, Battlefield series and Call of Duty series.

After considering player suggestions, the team decided to change game design from single-player speed reflex game to multiplayer shooter type game. After basics of these type of game controls and rules were created, the team decided to add extra features which will create difference from these types of games. After some redesigning meetings it is decided to add some MOBA genre mechanics and rules to the game. The mechanics and rules that was mentioned her were created by us adding extra abilities for the different types of battleships of the game. Thus, people who were following the team from Steam community started to get excited about game and the team gained speed to make game reach to players who were helping with their ideas and waiting the game’s release date impatiently.

As one of the team members, I have worked on the abilities of the ships mostly, but I have developed a PVE system too. The abilities that I worked on were creating the MOBA genre mechanics and fun of the game. While I was trying to pick the correct abilities from an ability pool which was full of abilities that were designed by me, I took the League of Legends games' the most played champions' most liked abilities as sample. By doing this, I was aiming to make all our ships playable with enjoy. After 7 months of intense work we finalized the game and released it on Steam.



## 2. LITERATURE REVIEW

### 2.1. GAME MECHANICS

The game interactivity is provided by game mechanics. The interaction ability differs video games from other media types (Elson et al. 2014). All games are consisting of mechanics that make them playable. For instance, dice rolling is game mechanic in backgammon. According to game designer Richard Rouse (2010) “Game Mechanics are the guts of a design document”. Rouse took a pragmatic approach, different from the definitions of other game designers. Most game designers described “what the players are able to do in the game-world, how they do it, and how that leads to a compelling game experience.” (Rouse 2010)

Additionally, Cook (2005) described game mechanics as rule-based system/simulations that facilitate and encourage a user to explore and learn the properties of their possibility space through the use of feedback mechanisms. This definition is valuable as it incorporates the notion of feedback into the understanding of mechanics. But it is insufficient to explain how we can define a mechanic or a set of mechanics, or how mechanics are based on rule system. Games are a combination of many game elements. In an interactive level this combination is called gameplay (Rollings & Adams 2003). Gameplay is what a can player does and how the player’s actions are reacted by the other entities in the game (Fabricatore 2007).

Also, Sickart (2008) said that “I define game mechanics, using concepts from object-oriented programming, as methods invoked by agents, designed for interaction with the game state.”

In accordance with that information; game mechanics, within the rules of the game, can be described as the place where the game takes place, the characters in the game, platforms, puzzles and even the actions the players interact with the game itself. As a result of these actions, the game gives the players some feedback. For example, if we use jumping mechanics incorrectly or incompletely in Super Mario game, the player will

die by falling down or catching the enemy. According to these feedbacks, the player reorganizes his actions to meet the goal of the game, or he tries to accomplish his goal in the game by combining these actions and discovering new mechanics. The creativeness of the game mechanics is a key factor for success into player satisfaction (Lindley & Sennersten 2008).

## **2.2. GENRE**

The contemporary world is a classified era that we put everything into at least one category of its kind. French word “genre” indicates kinds and sorts yet theoretically genre is not easy to define. Genre is a term commonly used in media theories, literary theories and recently in linguistics and game studies. Historically going far back, literature had basic classification as poetry and drama and their subdivisions. Northrop Frye (1957) compiled and revealed the universal genres to be used in literature. However, starting from the twentieth century media generates much more specific genres that for example some films does not even have a name (Fowler 1989). The genre stereotypes are mainly on the basis of constitution of specific conventions of themes and settings or style.

Video games have been an emerging interactive medium in recent decades. The conventional video game genres are based on Bolter & Grusin’s (1999) statements on logic of remediation as the prior media types are reshaped. Clearwater (2011) stated that:

*“It quickly becomes clear that genre is used and deployed in a variety of ways by different groups of individuals and that the methods of categorization might vary. When considering popular media like film, genre classification has long been recognized as an important guide that both fans and producers use to guide consumption and gauge popularity (and profitability).”*

According to Wolf (2002), video game genre study is considered to be significantly different from literature or film genre due to the direct and active participation of the viewer. At the same time Arsenault (2009) said that “If the idea of genre evolution is second nature to most that have written on the topic, the idea of genre itself is even more deeply seated.”

Cook (2005) defends that, whether or not it is justified to use the term genre is a question that no one cares about. In this case, about the games; the way we use it to speak in kind does not have a common basis in film and literature. According to Apperley (2006) "This understanding of genre conceives it as flexible, dynamic, and integrated with the technology of video games." After Cook (2005) explanation about what video game genres are, he advocates the use of the genre term historical use in the game industry leaves us no choice. Examining video game genre tags with a brief review of several generic taxonomies will reveal different ways of organizing them according to multiple criteria.

According to Mark Wolf (2001) again, some video games are similar to the classification of some movies. For example, *Outlaw* (1978) is a western, *Space Invaders* (1978) is science fiction and *Combat* (1977) is a war game. The classification made by the iconography ignores the fundamental differences and similarities in the player experience. *Outlaw* and *Combat* are two games that are very similar to the Atari 2600 with very similar combat mechanics and character maneuvers and are only graphically similar.

Video game technologies are always in a constant change and the notions are also changing. Crawford (1982) claims "the state of computer game design is changing quickly. We would therefore expect the taxonomy presented [in this book] to become obsolete or inadequate in a short time." A consensus is yet to be achieved but the recent literature suggests that the video game genres are generally accepted by their interaction mechanics rather than narrative or audiovisual distinction (Adams 2009).

**Table 2.1: MobyGames' genres glossary**

Basic Genres	Action, Adventure, Educational, Racing / Driving, Role-Playing (RPG), Simulation, Sports, Strategy
Perspectives and Viewpoints	1st-Person, 3rd-Person, Isometric, Platform, Side-Scrolling, Top-Down, Sports
Sports Themes	Baseball, Basketball, Bike / Bicycling, Bowling, Boxing, Cricket, etc. (29 total)
Non-Sports Themes	Adult, Anime/Manga, Arcade, BattleMech, Board / Party Game, Cards, Casino, Chess, Comics, Cyberpunk / Dark Sci- Fi, Detective / Mystery, Fighting, Flight, Game Show, Helicopter, Historical Battle (specific/exact), Horror, Interactive Fiction, etc. (42 total)
Educational Categories	Ecology / Nature, Foreign Language, Geography, Graphics / Art, Health / Nutrition, etc. (14 total)
Other Attributes	Add-on, Coin-Op Conversion, Compilation / Shovelware, Editor / Constructor Set, Emulator, Licensed Title

Source: <http://www.mobygames.com/glossary/genres/>

### **2.3. MOBA GENRE**

If I need to briefly mention the MOBA style; is a sub-genre of real-time strategy type, which stands for “Multiplayer-Online-Battle-Arena”. As Yang et al. (2014) says that “MOBA games are typically played with two teams of five players. Each of these players fills a specific role on their team.”. According to Yang P., MOBA often has two types of combat mechanics. One is the battle against powerless creatures called “Creep” or “Minion”, controlled by the computer and acting symmetrically on both sides, and the other is the battle against the champions used by the opposing team's players. The battle against minions is called “Farming”. The battle against other players is called

“Ganking”. These two battles can be fought at the same time. The function of both is basically to improve the character of the player. So, killing a petite and an opponent gives the killer experience points and in-game money. The player's character can also improve his skills by leveling up with incoming experience points and can buy items that will improve his character by spending his in-game money. In short, the player gives both battles to strengthen and destroy the opponent. However, there is a huge difference between farming and ganking. This is a lot of experience points and in-game money from ganking compared to farming. Since this is the case, the team that wants to dominate the game must ganking at every opportunity.

## **2.4. PLAYER TYPES BASED ON MOBA**

In the previous session, I have briefly mentioned that the characters in the MOBA-style games are unique player types. These are Carry, Initiator, Disabler, Tank and Ganker. In this section those five player types will be explained one by one according to Yang, P. et al. (2014) and Ng, P. et al (2015).

### **2.4.1. Carry**

This player type, called Carry, plays a carrying role for the team. At every opportunity he finds, he attacks the opponent and tries to do the greatest possible damage. But especially in the first phase of the match, he needs to be protected because he is as fragile as he is strong. In short, if the opposing team does not crush this type of character in the first place, then this character begins to inflict enormous damage on the opponent and crush the opposing team.

### **2.4.2. Initiator**

The initiator character, as the name suggests, is the character that is used to start team battles. In doing so, he damages the field or prevents the opponent from being positioned as they wish in battle.

### **2.4.3. Disabler**

This restrictive character prevents the opposing team during the battle and ensures that they cannot do what they want in battle and cannot use their abilities.

### **2.4.4. Tank**

Tank type characters can cover a lot of damage. In this way, they increase the chances of their teammates to live in battle.

### **2.4.5. Ganker**

The Ganker type character can also be considered an assassin. It is a type of character that is capable of killing one character at a time. They are fragile but do great damage in a short period of time and have the ability to camouflage themselves or get themselves out of battle fast and their role is flexible enough to cover the team's needs (Nuangjumnong 2016).

### **2.4.6. Support**

According to Eggert (2015), there is one more role in MOBA games and it is support type. There are different ways to help other players for a support player. They can even sacrifice themselves for helping a friend. Three types of support players are defined. And all of them have different strategies in the game. First of them is babysitter support which supports one of his teammates and usually it is a carry type. In contrast, the second one is roaming supports which are very active in the map and they visit all of their teammates in case of emergency and sometimes they are playing the ganker role with their support heroes. However, they give the greatest share for their teammates whom they went to help. Last one is farming supports. They are taking their share from experiences and golds but their way of spending their money is different from others.

They spend their money for buying support items which is used for helping the other players in the team.

### **3. THE VOIDRUNNER GAME: CREATING A MOBA GAME FROM A TIME RACER GAME**

In this chapter, I am aiming to tell you about how we change the game from a single player time race and chase game to a MOBA game, the skill-sets and their harmony within the ships and the story of the game. First, I will explain how this game idea started, then, how the game idea evolved, after that, I will tell you about how I added the skill-sets in the game and how I created harmony among them and finally I will explain how we finalize the game with additional features which did not published in steam yet.

#### **3.1. THE VOIDRUNNER GAME: STARTING POINT**

The starting point of the Voidrunner game in the original creators' whose names are İsmail Kemal Çiftçioğlu and Bahar Baziki, minds was turning through a mechanic. Being chased and, of course, escaping like crazy. Just like the character "Dastan" in Prince of Persia: Warrior Within escaped from the creature named "Dahaka", an evil dark character of Persian mythology. In that game, too many times, you were chased by a creature with very gas music, and you were trying to pass through platforms where you had to show a lot of reflexes while running. But, of course, that was not the direct one in their minds. Rather, he tries to escape from tons of enemy bullets on the front ship while the warrior spaceships in his films such as Star Wars and Star Trek are chasing each other and will use his environment while passing through the narrow buildings of the cities he is flying in. they had to try to complete the task. I could see that this mechanic encounters my longing for mechanics almost the same thing. Which excited me with more. According to this idea, we would be the pilot of a warship or we would be the warship itself directly. The game would not turn over either character either way. This would make the game a non-commercial type. There wasn't a chase game on the market

at that time in a lot of different realms. According to this idea, the game would be a reflex and a game against time. And so, we could walk around a lot of different realms.

The Voidrunner game was designed to bring interaction to the chasing scenes that we are familiar from the movies, Star Wars, Star Trek, etc. The gameplay is based on the chasing mechanics during flight such as you have to avoid obstacles while enemy drones chasing you in different realms, at the same time, you have to move as fast as you can. since the obstacles or the drones are not your mere enemies. Because the only enemy of yours were not the obstacles or the drones which are trying to kill you before you reach the portal in that realms that you were flew in. At the same time, the time was after you within this realm. Because the portal, you trying to reach, is being protected by a void wall. We, as the team behind the game Voidrunner, wanted to create a game which provides the excitement similar to the escape scenes from the movies. Flight games in general have lost their old popularity but are now on the rise again with games like Star Citizen, Elite: Dangerous. But Voidrunner is not a space creation. It can pass through space, between high-tech city skyscrapers or between ancient city stone walls. It is all about to play a game, just like the follow-up scenes in the Returning Death Hall corridor at the end of Jedi. Let's escape from narrow places when necessary, fight in a large land.

There are too many games that have similar mechanics with the others. For example, Counter-Strike and Call of Duty has nearly the same mechanics. God of War series and Devil May Cry series are using nearly the same fighting mechanics. There are tons of games like I mentioned, and they are using nearly the same mechanics and has similar play types. Yes, we play and love these kinds of games. We will always continue to love and play. But, unless different types of games are produced, games are starting to resemble one after another. Only the characters and the story differ. When this happens, the taste of the player will always remain the same. Again, he will start playing weakly, kill monsters or opponents, gradually strengthen and finish when he becomes unstoppable. They are very fun for playing actually but we could not see the mechanics that we want to see in the games. Because either people didn't like this mechanics as much as we did, or nobody knew how fun this kind of mechanics could be. After that kind of a feeling, we started to think that we could put this kind of mechanics to a game

and we started to create a basic reflex-avoiding game. But it was not a good idea to make just a reflex avoiding game. This game should include other kinds of mechanics too like in Star Wars movies' "X-Wings or "The Fighters" shooting and maneuver abilities. We started to develop the game like ones we imagined. We thought that we should develop a game which would be different from others. As a company, we started to develop the game as we planned. There were different mode ideas. It's because we wanted as many people as possible to play this game. We thought that a game that has come up with different ideas will have different modes and will affect people more and increase their desire to play the game. I will explain the modes we have thought about and developed below.

These mode ideas were:

*Story Mode:* First of all, this mode is thought to be composed of 21 sections. Players playing this mode would learn the whole story of the game Voidrunner from start to end. What is Void? Who are the Voidrunners? What is the purpose of the Voidrunners? They would have found answers to all these questions. However, they would both learn the main mechanics of the game and learn what all the warships were in the game, what are their abilities and their stories. Along with this, they would have flown through numerous maps and tasted all the graphics. But we didn't think it was necessary to play this mode. Because everyone might not want to learn the story. In short, the person who chose this mode would be able to play and know more about the game, and of course he would recognize and adopt the warships in the game.

*Free Flight Mode:* When we look at the free flight mode, we've designed this mode for people who just want to play the game for graphics and maps. Players playing this mode could freely navigate the maps as much as they wanted. They would be able to practice flight with any warship they want. The difference from other modes was that there would be no time restrictions, enemy or chase pressure in this mode. Perhaps some of the players would prefer to open their music calmly and walk around in different realms freely.

*Ghost Race Mode:* This game mode is a common mode, especially in racing games. In this mode, the player competes against time and tries to complete the race as soon as possible, and when he plays this mode again, he sees a transparent twin of his character or race car on the same track. This ghost racer does the same moves the player has made in the previous race on this map. In short, this is the player's own performance in the previous race. The player is trying to beat his previous record by trying to beat this ghost.

In this mode, we wanted to allow players to develop their ability and maneuvers to fly with the warship they have chosen in the most efficient and fast way on the map they want, with the idea that “Your biggest opponent is yourself!”.

*Acrobatic-reflex mode:* This game mode is the first developed mode in the emergence of Voidrunner. Because in this mode, the player would really have to demonstrate his skills of dodging the enemies that followed and skillfully directing the battleship while fleeing. Just like the fast and exciting chase scenes in Star Wars movies. Special maps were designed for this mode. The maps you need to make the right decisions at the right moments. As if that wasn't enough, the player had to control the ship he used to succeed in this mode. Because the speed and size of each ship were slightly different. This was another feature that made this mode fun. In this mode, if a player capable of directing the battleship successfully, would know he had mastered that battleship.

*Escape the guardians of Void:* With this mode, we planned a different type of game. According to this plan, there would be three enemy drones that would try to kill the player on this map. The player would either dodge these enemies and go to the portal or try to kill them by fighting. But what we wanted was for the player to escape from these drones. It wasn't impossible to kill them but trying to get through them would be more fun and easier. Already while escaping from these enemies, the player could damage the enemies by using the environmental characteristics of his location. In short, these enemies would be dying when the players who play this mode were thinking and making moves while fleeing these enemies. Of course, these environmental factors did not only harm the enemy. We wanted the player to be very careful when playing this game mode.

*Stand and Fight:* In this game mode, the player would kill the enemy drones in waves and try to survive. There were places where the player could hide on the map and altars where he could renew the values of life and shield. We tried to create a completely simulated combat training. The excitement and pleasure of the game increased with the increasing number of drones in each new wave.

*VoidrunnerVR:* It was the virtual reality version we were thinking of doing in addition to the game. We haven't made much change for this mode. Stand and Fight mode was adapted to virtual reality. But we tried so hard that the player wouldn't be disturbed while playing the game and we made a change in the game's mini-map system. With this change, the player would be able to see the enemy drones around him on his console in the form of a three-dimensional hologram, giving the player the feeling that he was actually using a real battleship. We also planned to make the controls from the basic "W, A, S, D" keys, using the control devices of the virtual reality device that we intend to use.

As I mentioned above, as a company, RealityArts Studio, we tried to create different game with many different modes. In this era, it is time for companies to gather their courage and put forward experimental games. Fortunately, there are people like "Kojima" who is the creator/designer of Death Stranding, which is a game that the player can carry important cargos from one place to another. While carrying the cargo, the player should think strategic way about placing the cargo in his inventory, the route he will pass through and devices he will be using in this long journey. So, as RealityArts Studio we had similar courage to try something new, but sometimes things do not go the way we want. Since, we put the game on Steam Green-Light program, it turned green-lit in a short amount of time like three days. People, who gave vote to make it green lit, told their ideas through comments and we decided to put these ideas in the game. The new feature ideas followed by.

We've been taking a lot of consideration into the directives our potential players have made through Steam. As a result, they would buy and play the game, and we wanted to give them a play of their choice. However, the way of the game began to change. Players commented that they wanted to fight against each other. They wanted a game where they

could fight online and chase each other, and maybe set each other up. We, as the company decided to hold meetings on such comments and bring a multiplayer battle mode into the game. We knew that the decision we made here would take the game to a different dimension, but things started to exceed those we thought. Because I didn't want it to be Counter-Strike if the players wanted this kind of multiplayer game, not just a game where we hit each other with weapons, but in the League of Legends or Overwatch style, where battleships could add difference and variety to the game using their skill trees. I threw the idea that we can bring to the point. When they heard this idea, they asked me to build skill sets for one or two battleships. For each of the two battleships, I should develop two skills at most. I started to work for this idea of mine.

### **3.2. THE VOIDRUNNER GAME: CHANGING THE GAME INTO A MOBA GAME**

Voidrunner was a start-up project. Our office was located in an incubation center called StartersHUB. The angel there was funded by investors and of course the project had to make money. That's why we paid great attention to the ideas of our potential players. We read all the comments one by one, and we could try to decide to add which of the features the players wanted for the game, which ones we could not.

After a while, the players began to over-express their desire to form teams in Voidrunner and fight each other. There came such comments like “It would be great if you bring a multiplayer feature into the game.” “It would be fun if we fought against each other.” So we started thinking. A huge audience wanted the game to be multiplayer, and we had examples like Counter-Strike, League of Legends (LOL), Defense of the Ancients2 (DotA2) and Overwatch. The masses of these games are very wide and continuously played. I was already a very old DotA and a tough League of Legends player. Based on these comments we read on Steam, we decided to make the game playable on the Internet, and we needed a teammate who understood the Network business. After finding our teammate, online work of the game started.

As we work on the game's development, we got a feeling that we are missing something and finally realized what it was. Because the warships we steered in the game were very technological tools. The game took place in many different universes, and it was not just throwing bullets, missiles, bombs, and wandering around the map in an unlimited way. We should have done something more special. The game was very simple, and the players' expectations were very high. I was starting to think about it. I would always have a movie open in the background while working on my computer. I would listen even if I didn't watch. At that time, I was interested in the movies called "Predator" and "Alien". Predator and Alien are my favorite characters and movies. At the same time, the characters that I like to play in League of Legends are inspired by the characters of the "Predator and Alien" films. When this was the case, the idea of bringing different features to the warships in the game of Voidrunner came to my mind.

The different features of the warships we made in the game: speed, life values, shield values, projectile damage, missiles and extra weapons. Counter-Strike also has different weapons, bombs, vests and helmets. As each hand starts, the player selects the appropriate weapons, bombs and protection equipment and enters the battlefield. That's how Voidrunner would play. What I love is that the characters in the game have their own characteristics. Just like in League of Legends. In League of Legends, the character has his own story and 5 different abilities. Why didn't our warships have their own abilities? When this happened, a lot of diversity would come into play. Different combos and game styles would emerge. Above all, warships would be more than a vehicle.

According to the talents we created, these ships would have characteristic features in the game. The players would then feel these warships close to their player type, and when they wanted to play a warship, they would also take into account the capabilities of the ship other than speed and firepower. I also thought that these abilities would allow the player to turn to ships that match his player profile and play the game with greater pleasure. The game was evolving from a single-player state into a multi-player network with a combination of the shooter type and the battle arena type. In short, the game shifted to the SHOOTER / MOBA hybrid style. Because the addition of the League of

Legends breeze that I was thinking of adding to the Counter-Strike atmosphere that our potential players had added to the game, a hybrid type would have emerged.

When I presented my MOBA idea to the team, they liked the idea and asked me to create four different skills to set an example. So, I started to work out 4 skills, two for a battleship. In particular, it was not difficult to decide on the first two skills. Because the first was my favorite talent, the invisibility / camouflage talent, and the second talent had to be compatible with that talent. Because I didn't want to create random abilities. I think that all the abilities of a character must be compatible. Because only in this way, that character has a certain characteristic. According to this idea, I prepared a talent similar to the shoulder cannon of "Predator", which is also my favorite film character, in support of the talents I wrote. I need to briefly mention these two abilities; The camouflage ability, from the moment it was used, hid the battleship in a second that we could only notice when it moved. In addition, the ability to increase the speed of the warship by up to thirty percent from the moment it was used. When we look at the camouflage capabilities made in other games, we also notice this acceleration detail. When I was writing talents, I wrote based on characters from various movies and talents within the game League of Legends. In view of this information, any attack or damage during the camouflage ability had to disrupt the camouflage. I added a feature like this. But the second talent I wrote was supposed to be compatible with camouflage. This is how I set up this harmony. Using this ability, he temporarily rendered all other weapons of the battleship unusable and granted a disposable laser cannon. The attack with this laser cannon did not disturb the camouflage and caused a huge amount of damage to the opponent if hit. At the same time, during this attack, our camouflage capability was intact. As for the other two of our battleships, this ship had the characteristics of the tank type. He would stand firm in battle and distract those who made a mistake of hitting him, giving him the opportunity to carry or do business with the ganker. Of course, I have made sure that the capabilities I will create for this ship are compatible. I wanted the players to say, "This warship was designed specifically for this, when he used the skills of the warships. I wanted to make the players feel that there was an engineering behind the warships. As for the capabilities of this ship. His first ability was to create a power shield when used. This shield absorbed a certain amount of damage and then

disappeared, but when it was destroyed, it absorbed the damage as a damage within a certain diameter. The more the opposing team hit with this skill open, the more damage it would eventually get. This ship was dealing damage alone, as field damage. If we examine the other ability; when skill was used, he converted damage over a certain second to health points. In short, if the player ignored this ability to attack this ship's last hit, he would heal the ship instead of destroying it. This ship made it very clear that he was there to avoid dying and protecting his teammates.

When I showed the skills, I mentioned in the above paragraph, it became clear that my teammates liked this idea very much and they gave me the task of designing new abilities for each ship, writing the code and balancing them. As I mentioned before, these abilities would characterize the ship that the player wanted to play and make him play with the ship that was his way. When we look at LOL, we see 147 champions and the number of these champions is increasing day by day. Looking at our game, we only have 12 ships. We wouldn't have much talent. But I wanted all the talents to be loved and used. No ship would be played because it was unpopular or lacking power. So, I had to select and balance them carefully when creating talents.

### **3.3. THE VOIDRUNNER GAME: CREATING THE ABILITY SETS FOR VOIDRUNNER SHIPS BASED ON PLAYER TYPE**

When we look at meta-lol.com and leagueofgraphs.com based on LOL, we see that not every champion has the same playing ratio. I didn't want any of our ships to be unplayed. Accordingly, I wanted to create the skills I would create based on the abilities of the characters being played. I did it that way. When designing the abilities, I want to be in the game, I have also inspired some of the characters played in LOL. After designing the ability instead of copying the same ability directly, it was a decision that I thought would make sense to give that talent a breeze of the talent that a character in LOL used. In the following paragraphs I will explain these skills and which of the champions I am quoting from LOL.

Our 1st battleship is Redeemer. This is a carry type ship, so its firing rate and damage is high, but its health and shield are low as well. It has two abilities like the other battleships. One of its abilities is “Rainmaker Missiles”. Second one is “Area Damage”. Rainmaker Missiles is an ability that the player can use it to throw a missile which can spawn then more mini-missiles when it exploded. The mini-missiles deliver devastating damage to the opponents who are surrounded by. So, it is a very powerful ability to destroy opponent battleships. Area Damage ability, when it is used, it gives a sudden area damage. Opponents who are inside that area will be hurt. If we inspect LOL champions closely, we will see some of the abilities looks and works similar with these abilities. For example, the champion Graves has an ability like Rainmaker Missiles. The ability name is Collateral Damage and it is Graves’ ultimate ability. Not the same but very similar. The Area Damage ability that I created has an equivalent too in LOL. The champion Rengar has an ability named “Battle Roar” and this ability works nearly same with my “Area Damage” ability.

2nd battleship is Avenger. This battleship is a disabler type. The first of its abilities is “Frost Bullets” and the second one’s name is “Damage Amplifier”. Frost bullets ability: when it is activated, changes the bullets that is thrown by this battleship to frozen ammunition and the opponent who got hit by this ammunition will be slowed for a short duration. This ability’s equivalent in LOL is “Frost Shot” ability of champion Ashe. The other ability of Redeemer is “Damage Amplifier”, this ability will provide extra damage to Redeemer. The equivalent of our ability in LOL is Vayne’s ultimate ability named “Final Hour”.

3rd battleship is Energizer. Energizer is an initiator type with its mines that lied by it and electricity that leap enemy to enemy. Its first ability is “Lightning Arc”. When this ability activated, an electric arc will leap between opponent ships who are close to Energizer and deal continuous damage to them. Second ability of the ship is “Void Mine”. Energizer lays mines to the void and creates an ambush environment to the opponent. If any opponent hit that mines, will take great damage. Even it lives through this damage, it could not survive the battle which will happen seconds later. These abilities have equivalent in LOL, too. These are, Ahri’s “Fox Fire” and Teemo’s

“Noxious Trap”. These four-skills work nearly the same. Of course, they have differences. Because, they are unique abilities that I created but they have similarities with a popular game’s popular abilities.

4th battleship is Cleric. Cleric is a support type battleship. It supports its teammate with its abilities. First ability of Cleric is “Healing Effect” which heals the teammate within its range. Thanks to this ability, the teammate who is under that ability effect, gains health points in time and survives longer in the battles. The second ability of this ship is “Anti-EMP”. The name tells everything about this ability. If there is a battleship who got hit by EMP skill will get rid of the effects of EMP and gain its control again if it is within this ability’s radius. These two skills’ equivalent in LOL are Janna’s “Monsoon” ability as “Healing Effect” and Olaf’s “Ragnarok” ability as “Anti-EMP”. Monsoon ability of champion Janna also heals her teammate and pushes the opponents around them. Ragnarok ability of champion Olaf erases all debuffs on Olaf and makes him invincible against the debuff effects for a short duration.

5th battleship is Defiler. Defiler is a tank type of battleship and it is designed to be successful at its primary role. Defiler’s first ability is “Last Chance Shield”. This ability is made for giving Defiler a second chance in the battle while it is protecting its teammates. If Defiler’s health points drop to a certain point and next attack will be death for this battleship, its Last Chance Shield activates by itself to protect this ship. And this shield has one more attribute besides giving protection. That shield can absorb the damage taken and then blast and returns the absorbed damage to the opponent who are within the blast radius as area damage. If we inspect the second ability of Defiler. We will see one more survival ability. This ability called “Think Again” is basically a healing ability but it works a little different. While this ability is active, the damage taken by Defiler will be converted into the health points. So, more attack on this ability will make Defiler healthier. For show equivalents of these two abilities in LOL we can inspect Blitzcrank’s “Mana Barrier” and Kindred’s “Lamb’s Respite”. These two abilities in LOL would show us an example about my unique created abilities.

6th battleship is Inquisitor. Inquisitor is a carry type battleship. And it shows a carry’s all attributes in its body and abilities. Its first ability is “Healing Bullets”. While this ability

is active, Inquisitor can both give damage to its opponents and heals itself if its ammunition is successfully hitting its enemies. The second ability of Inquisitor is “Berserker”. This ability is a passive ability. It means, the player cannot use it by his own will. Inquisitor’s firing rate is scaled by its health points. If its health is low, it will fire faster, and if its health is high, it will fire slower. We can think that it will be angry if we hurt it so much. Equivalent of these two abilities in LOL are, Aatrox’s “Deathbringer Stance” and Jax’s “Relentless Assault”. These abilities are not the same with the abilities in Voidrunner, but they have a similar type of work pattern as I said before.

7th battleship is Void Hunter. This battleship is a ganker type. Void Hunter is carrying the attributes of a ganker. Its damage is very high, but health and shield are low. At the same time, its speed and maneuver abilities are high. Let’s look its abilities closely. Its first ability is “Like Old Times”. When the player activates this ability, Void Hunter remembers its current location, health and shield values and starts the timer. After some time or the player activates the ability again, Void Hunter returns the time when the player used this ability the first time. This means that this battleship returns to the place and time where the values of life and shield are full. Second ability of Void Hunter is “Teleporting Missile”. By using this ability, this battleship hurls a slow-going missile in a direction and if the player uses this ability one more time in a small amount of time and if this missile is not destroyed, Void Hunter teleports itself to the last location of this missile and damages a small area when it arrives. If we inspect the LOL champions and abilities, we will see again two of the abilities of the game will cover my abilities. First one is Ekko’s “Chronobreak” ability. If we inspect that ability closer, we will see its usage is different but working mechanism is nearly the same. Because in LOL, Ekko’s ability is always active and if the player wants to use it, he will use it one time and it will break the time. The other ability is Katarina’s two abilities at the same time. The abilities names are “Bouncing Blades” and “Shunpo”. Katarina throws one of her blades by using “Bouncing Blades” and after that when she uses “Shunpo” she will teleport to the blade’s location that she threw before and deals some damage within a small area.

8th battleship is Stalker. The Stalker is a ganker type. And it is my favorite battleship. Its abilities are “Cloak” and “Stalker Sting”. Stalker’s first ability is “Cloak” when its activated Stalker goes into stealth mode by applying camouflage to itself. It cannot be fully invisible but if the opponents who wants to see it should be careful because if you look closely, you can see its moving. There are advantages and disadvantages of this ability. Advantages are; when you use it, you can go stealth and it will give you extra speed while you are invisible. Disadvantages of that ability are, if you are under attack and getting hit continuously, this situation will break the cloak you have so you should be more careful when you decided to use it, and also while this ability is active, you cannot attack because this will also break this ability and you will be visible again. However, I created the second ability for this kind of situations. The second ability of Stalker is “Stalker Sting”. That ability will help you to stay camouflaged after you attack someone. It is a laser cannon with one shot opportunity in few minutes. But this ability has a huge damage. With the “Cloak” ability the player can stay still, and no one will notice him so he can take a steady aim with “Stalker Sting” and shot his prey. After that, he can run or perhaps he will jump direct into the battle from his camouflage. If we inspect LOL champions. We will see Rengar’s “Thrill of the Hunt” ability is close to this camouflage ability which is created by me. And, Caitlyn’s “Ace in the Hole” ability can show the same performance with the “Stalker Sting” ability.

9th battleship is Predator. Predator is a disabler type battleship. If this ship is attacking with its abilities, the ones who got hit by, will stay helpless or confused. Because, the first ability of Predator is “EMP”. This ability can create a sudden area that disables the battleships’ engines, controls and weapons within the range of this ability. That opponent who got hit by this ability will drag unconsciously in the void and will be easy prey for its opponents for a small amount of time. The second ability of this battleship is “Virus”. This ability will change the ammunition type of Predator to a virus which has a decreased damage but can change the controls of the battleship who got hit by. The opponent ship under the effects of that “Virus” ability will lose control of his ship and again he will be easy prey for his enemies. These kinds of abilities are game changer abilities in MOBA genre. If we look LOL closely, we will see Sona’s “Crescendo” ability seems very close effects on her opponents. Also, Sona’s opponents who got hit

by “Crescendo” will be stunned and wait for their death. The look for the second ability “Virus”, I couldn’t find an equivalent ability for this ability in LOL. This is unique ability of Voidrunner’s world. I think, because of the different control type of LOL, this kind of confusion ability cannot be applied to the game. It makes the “Virus” ability too unique.

10th battleship is Graviton. Graviton is an Initiator type. This battleship is a suicide bomber let’s say. The first ability of Graviton is “Graviton Bomb”. With this ability, the player can send a slow-going bomb into the void and when it explodes, it will create a black hole. This black hole will drag the opponents who are within the area of it to itself. If the opponents are close to its center, this suction effect will be more powerful, and this situation will make it more difficult for the opponents to escape. If the opponents are close edge of the area, they can find a chance to escape. It means, the teammates of Graviton have a very big target to hit if all their opponents got caught by this ability. The second ability of Graviton is “Kamikaze”. When the player uses this ability, Graviton will shrink and double its speed. This makes it difficult to hit that battleship. At the same time, Graviton cannot use its weapons or abilities and its health and shield values drops to 1. This makes this battleship fragile and unprotected. However, the main purpose of this ability is not to run from battle. Under the effects of this ability, if Graviton hits anywhere, it explodes and deal a huge amount of damage in a huge diameter. The equivalent abilities in LOL are Orianna’s “Command: Shockwave” and Kog’maw’s “Icathian Surprise”. Orianna’s “Command: Shockwave” can create a pulse which can pull the enemies within the range to its center and deals a great damage to them. Kog’maw’s “Icathian Surprise”, transforms Kog’maw’s dead body to a bomb and it explodes in a couple seconds. If any opponent who is in range of the blast radius, will get a great damage.

11th battleship is Altar. Altar is a supportive-tank type battleship. The first ability of Altar is “Shield Aura”. While this ability is activated, Altar provides shield regeneration for its teammates for a short duration. If the opponent fight Altar and teammates who are under the effect of the “Shield Aura” could be defeated because of this regeneration of the shield. The second ability of Altar is “Reflection”. When the “Reflection” is

activated, except the ability damages, the damage to Altar will be returned to the attacker back but this returning damage will not be the same that Altar took. This will be a reduced damage. . This ability will provide Altar to self-destruct its enemies who are attacking him. If we inspect LOL closely, we will see the equivalent of the Altar's abilities. Shen's "Stand United" ability is similar to Altar's "Shield Aura". With this ability, Shen protects one of his teammates with a shield and teleports himself to his teammates location for helping him. The second one is Rammus's "Spiked Shell". This ability works the same way with "Reflection". Takes the incoming damage and returns it to its owner.

12th battleship is Vengeance. Vengeance is an initiator type battleship. Vengeance's first ability is "Damage Aura". When this ability is activated, Vengeance provides extra weapon damage to battleships which are within the radius. The second ability of this battleship is "Lightning Tornado". This ability will create a tornado made by lightning. So, if the opponent battleships stay close to this tornado, will take damage during they stay in that ability's reach. This battleship's abilities are not very complicated or unique. Because, I created these abilities for people who are not very talented for this genre. If we inspect LOL for which champions in the game have the equivalent abilities with Vengeance, we will see that Nocturne's duskbringer ability seems to work same with "Damage Aura" but this ability is increasing only its owners damage. Not everybody in its radius. The second ability "Lightning Tornado" seems very similar to Kennen's "Slicing Maelstrom". These both abilities work same. Both are damaging the enemy within their radius and the player does not have to be very talented to use these abilities.

These all 12 battleships' abilities were chosen from a pool of uniquely designed abilities. These are similar abilities with LOL, but we taught that this would increase the playability of the game and battleships. Because LOL is very successful game about MOBA genre.

### 3.4. THE VOIDRUNNER GAME: THE STORY OF THE GAME

There is the Void. Borderless, limitless; nothing and everything; forever and never. An inter-dimensional purgatory that feeds from universe's itself. Sucks whole star systems and civilizations to its chaotic space. It's called the Void. A never-ending nightmare that no one can escape.

Throughout the ages, lots of great interstellar civilizations got trapped in the Void. They all tried to escape. Alas, no one found any leads to salvation. Then, they started to settle. They tried to learn how to survive in that abnormal form that they call life.

Because their existing technology didn't work, they mastered the science of the Void in time. People started to harvest Void Matter which can only be gathered very rare from *Kharas* rocks. With Void Matter; they built new vehicles, new buildings and everything that they can build their life into. And when they completely lost their hope of escaping from the Void, society began to rise.

**Figure 3.1: Aerodrome of Voidrunners**

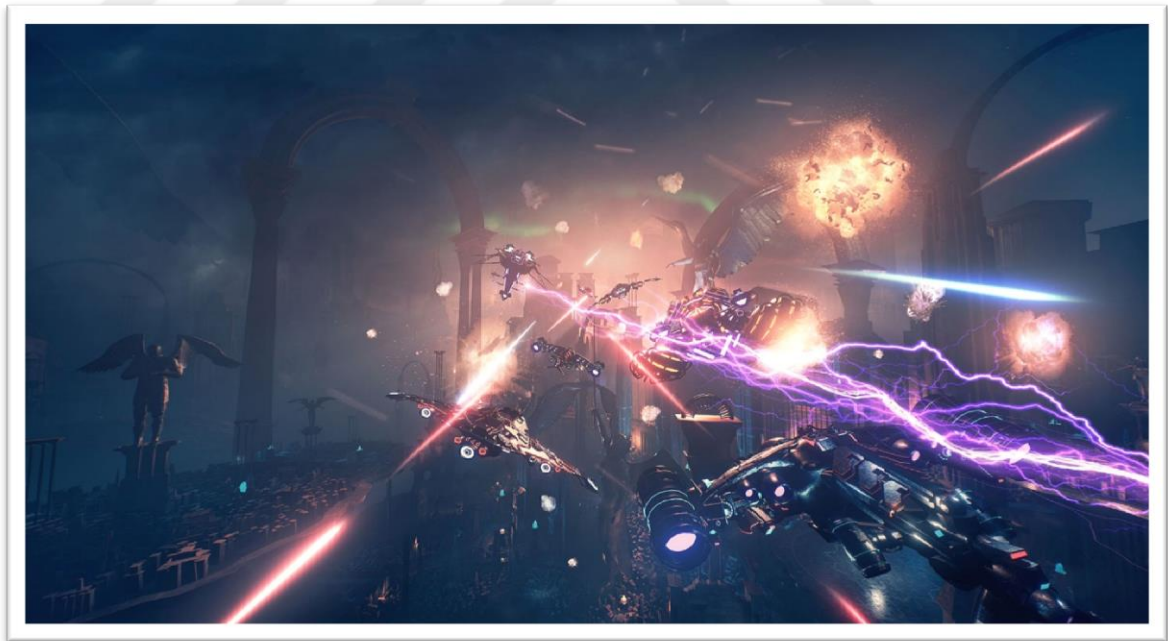


Some dwellings stopped to rise when they became mere towns, but many rose to become great city states. Those city states became empires. With thousands of unique species that the Void possesses, the cultural differences between many cities and dwellings were very distinguishable -for example- to a human being.

Because the Void Matter is rare and therefore very valuable, wars started after a mere time of peace. A great war later was called “The First Expansion” rose and killed most of the sentient life in the Void. Millions of life forms were killed and burnt during the war, making the Void more nightmarish and lifeless.

The First Expansion War was supposed to give the ultimate victor to be the supreme ruler of the Void, the great Empire. Instead, empires and governments fell. The whole Void gone to chaos and societies began to collapse.

**Figure 3.2: The Ur war**



Then, to unite every race and bring order to the Void, a new civilization called **Ur** that was captured by the Void during the last days of the First Expansion War, planned to rule the whole dimension. Because they were sucked by the Void at the very last

moment, they were still strong but unable to do anything because the Void technologies was very alien to them.

Then, the remnants of the Nara-Shah Empire, one of the strongest competitors in the First Expansion War helped the Ur to become familiar with the Void ships and weapons. Their aim was to use Ur to rebuild their defeated Empire.

Ur somehow managed to use their own technology with the energies of the Void and they created a super weapon, an antimatter slicer that eradicates all life, matter, space and time in a targeted area. Their first target was, of course their helper, the remnants of the Nara-Shah Empire.

And then a new war has emerged. Some say this “The Second Expansion War”, some say “The Ur War”. All societies tried to become allies against the Ur. For the first time since the foundation of the societies, all civilizations made peace and rallied to war together.

The war was very fierce, long and devastating. Most of the civilizations and races were completely wiped out by the Ur, like they didn’t exist before. In the end, the Ur was defeated, its super weapon was destroyed, and its people were being slaughtered completely. But the damage was done. The super weapon of Ur had damaged the architecture of the Void and the whole space became more unstable.

**Figure 3.3: The temple of the eternal**



Now only a handful of races survived the Ur War, but they managed to rebuild their dwellings and of course, societies. But the Void is now a more distorted and dangerous place. A place that opens portals to infinity in completely random places and times; like a serial killer, traps everyone and everything to their horrible deaths and give all the fear with its distorted skies and vistas.

Void Matter is also damaged during the war. Now the core energies that can be gathered from the *Kharas* rocks are degraded and it's far more valuable. So, what's left of the people of the Void created a new society from the ashes of the old.

The age of Empires and great rulers has gone. Now the Void is a place of scattered towns and cities. There are three distinctive roles in the community.

a. Miners are the elite group who can extract the Void Matter and harness the Void energy from the *Kharas* rocks. Extracting and harnessing is an extremely tough job, so they are the elite in the society. Even the lowest smuggler doesn't kill a miner. He kidnaps him instead.

b. Dwellers are the citizens which forms the community of the Void society. Common people, children, elders alike are in this group. They manufacture ships, other vehicles, construct buildings and create everything that people use in their daily life. They are basically the “people of the Void”.

c. Voidrunners are the nomad fighter society that constantly attacks and gathers Void Matter from other dwellings and cities. They live by their mothership and they are always in motion. They move great distances by traveling through the Voidspace.

Voidspace was found by the Ur and it's the equivalent of Hyperspace in the Void. It's a technique to bend space & time for transport. It's like a pocket-dimension under the Void's main architecture. Like a sewer canal. Although one can never escape from the Void using Voidspace, it can be used to gather great distances in the epic vistas of the Void landscape. Voidrunner clans retreat to Voidspace after a raid and lots of times different Voidrunner clans fight during navigating through the Voidspace.

Voidrunners sometimes be paid to guard a specific city or become paid attackers of a specific group. There are thousands of Voidrunner clans, and they are all unique. Every Voidrunner clan has its own manifest, rules and style. Some looks like a tribe and some are under strict military chain of command. Every Voidrunner clan shape itself according to their race, culture or belief that they give themselves into.

Their alignment is also changed radically. There are no absolute good or evil in the Void. Therefore no one can be trusted. Everyone must guard their back. The Void is harsh, so it's denizens.

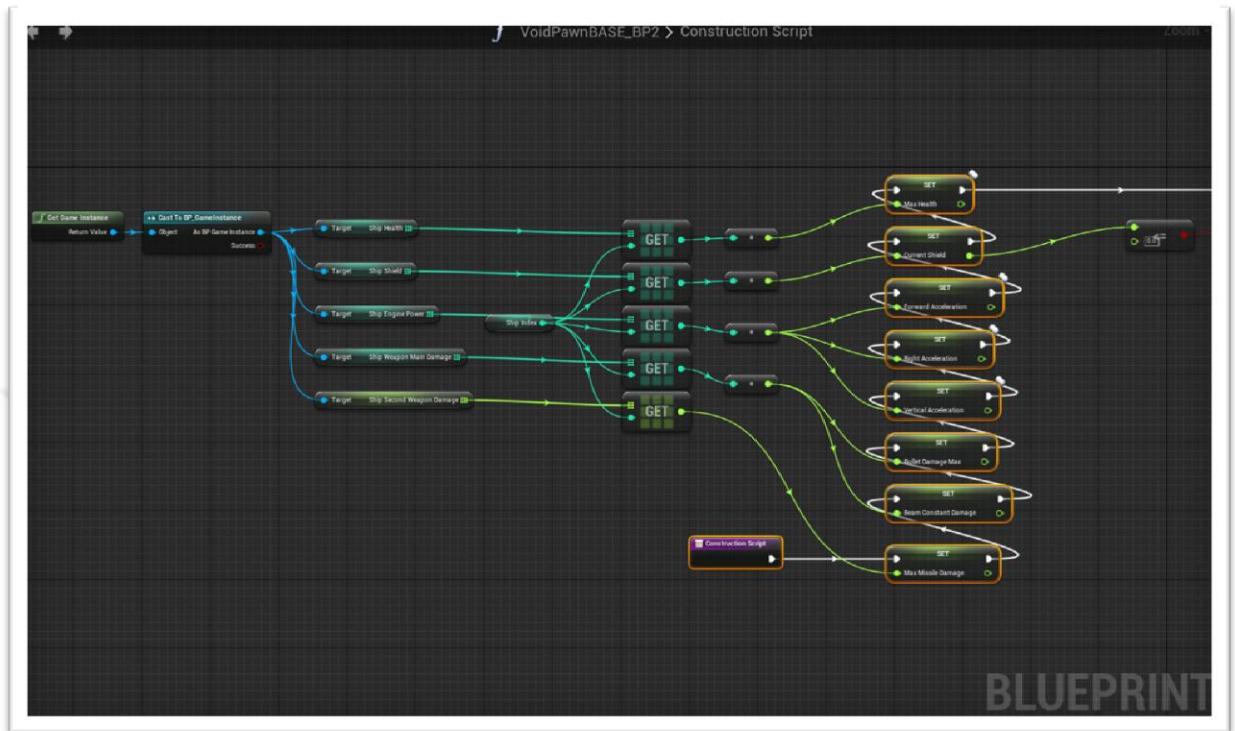
#### **4. THE VOIDRUNNER GAME: INSPECTING THE ABILITIES OF EACH TYPE IN A TECHNICAL WAY AND HARMONY BETWEEN THEM**

In the previous episode, I have explained how we decided to change the game from a single-player game to a MOBA game. Also, I mentioned about all the 24 abilities of 12 battleships in Voidrunner game based on player types. While creating abilities for a MOBA character, it is very important to create a harmony between its all abilities. Because, by doing this, the designer creates a game mechanic between these abilities inside the character. This nuance gives the identity to the character which is created.

With this episode I will try to explain, how did I created the abilities in technical way by using “Blueprint Visual Scripting Language” of UE4 and how did I create harmony of both abilities of one battleship has. While doing this, I picked six of Voidrunner battleships based on player types which are carry, initiator, disabler, tank, ganker, support. Let me explain them below.

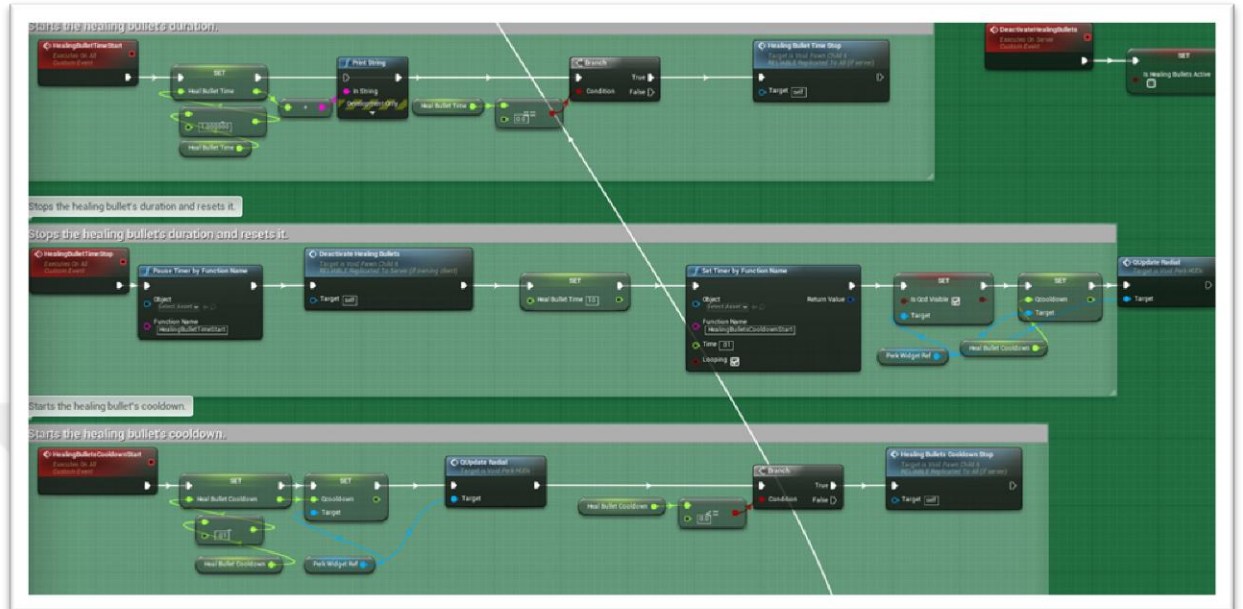
First, as a team we created a basic battleship which includes base values of all the other ships in the game. The base ship has base health and shield values, speed, maneuver capability, firing rate, ammunition type, death condition, team information, first ability slot, second ability slot etc. We created the other battleships as a child of this base ship and added extra features and abilities on them or changed their base features according to its type. All the ships’ own features could change in the construction script when the game started.

**Figure 4.1: Base ship blueprints**



All of the Voidrunners' battleships have their own abilities. These abilities have two common features. One of them is lasting time of the ability, the other is cooldown time of the ability. Because if we do not limit the usage of the abilities, the strategy in MOBA games will be missing.

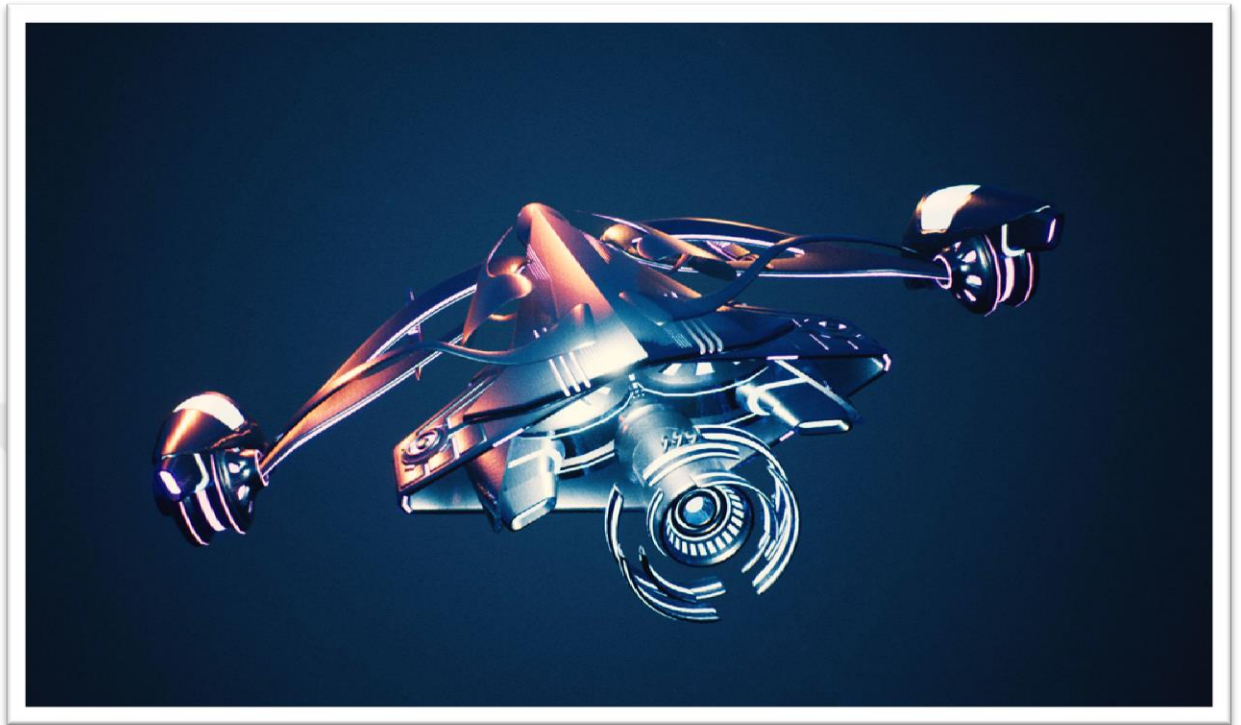
**Figure 4.2: Cooldown duration blueprints**



#### 4.1. CARRY

First, we will see one of our carry battleships, Inquisitor. Inquisitor is a carry type battleship. So, it is very fragile. That means its health and shield values are lower if we compare with the other types. However, its speed, maneuver capability, firing rate and firing damage are pretty high. These features make it very dangerous but again the player who is using it must be very careful and must position himself very well and use the battleship's abilities in right time in a fight or he will die immediately and his team will lose that fight and of course in the end, they lose the match as well. Especially, the mechanics inside its ability sets can keep that ship alive in battle only if these abilities were used in right time and right way. Because of the harmony between two abilities of Inquisitor will make it last during the fight even though it is very fragile.

**Figure 4.3: Inquisitor**



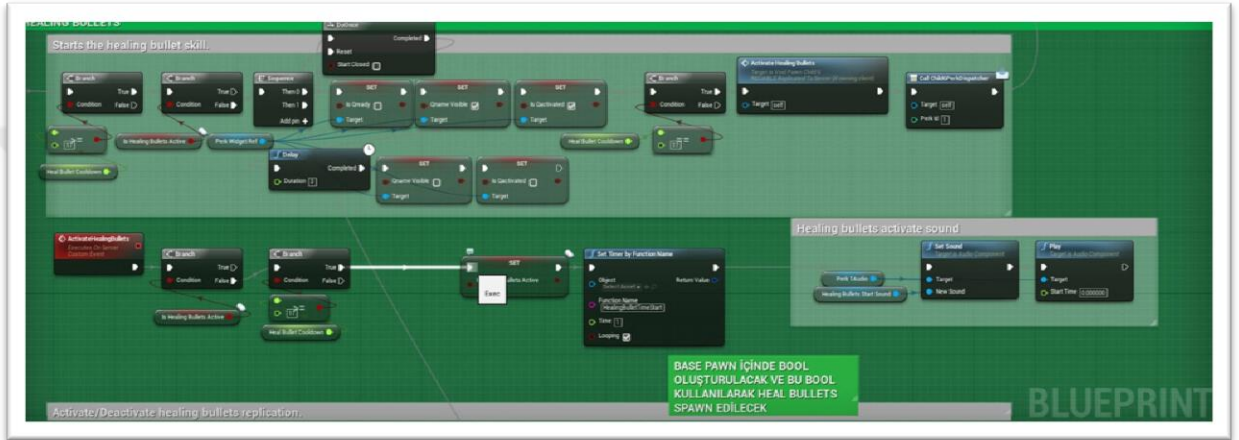
Inquisitor's first ability is "Healing Bullets". This ability is in this battleship's first ability slot which the player can activate the ability by pressing "Q" key on his keyboard.

#### **4.1.1. Healing Bullets**

When the player hit "Q" key, this ability turns active, ability duration timer starts and changes the ammunition type of this ship from a powerful bullet into a less powerful bullets. At the same time, these less powerful bullets have one more feature. They heal Inquisitor while they damage the opponent. The normal ammunition of the battleships would damage the opponent, same as Inquisitor's. But the ability ammunition of this ship both damage the opponent and increase the current health of the battleship during the ability time. After the ability time passed, cooldown timer starts, and the player cannot use the ability again during that cooldown timer of the ability. The trick was very easy. We created a base ammunition type as a game actor at first. And after that, we created new types of game actors as children of this base game actor and changing them

with the normal ammunition when the player activated the ability. The battleship was spawning the ammunition type we created for its own ability during the ability time. Here it was the “Healing Bullets” which is a created actor in UE4 by using blueprints for the Inquisitor.

**Figure 4.4: Healing bullets blueprints**



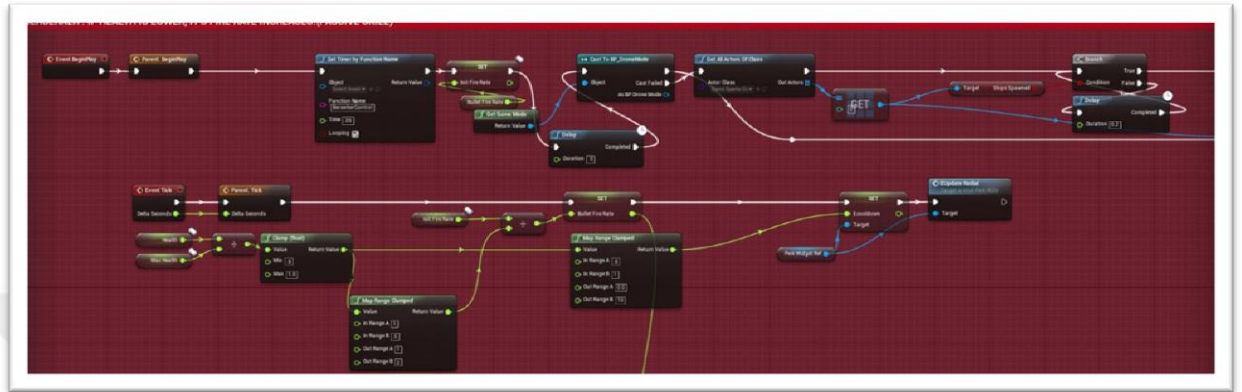
Second ability of Inquisitor is “Berserker”. This ability is in this battleship’s second ability slot which is controlled by “E” key on the keyboard. But this ability is a passive ability. This means, the player cannot control it. It is always active, but it has a condition to work. Thus, I will explain this ability one paragraph below.

#### 4.1.2. Berserker

This ability is passive, and it works while the Inquisitor’s current health value is lower than its total health value. The missing health of the ship increases the fire rate of the ship. The firing rate of the battleship can only be increased %49, because %50 more firing rate means that the ship lost its health values %100 and it means the battleship is dead. While creating this ability, I used the “Event Tick” node as parent node to get the timer of the computer. By doing this, the blueprint checked the Inquisitor’s health values every for every 1 second and if its current health was lower than its total health, the

firing rate multiplied by the ratio between these two health values and clamped into  $\frac{1}{2}$  rate.

**Figure 4.5: Berserker blueprints**



### 4.1.3. The Harmony Between Berserker and Healing Bullets

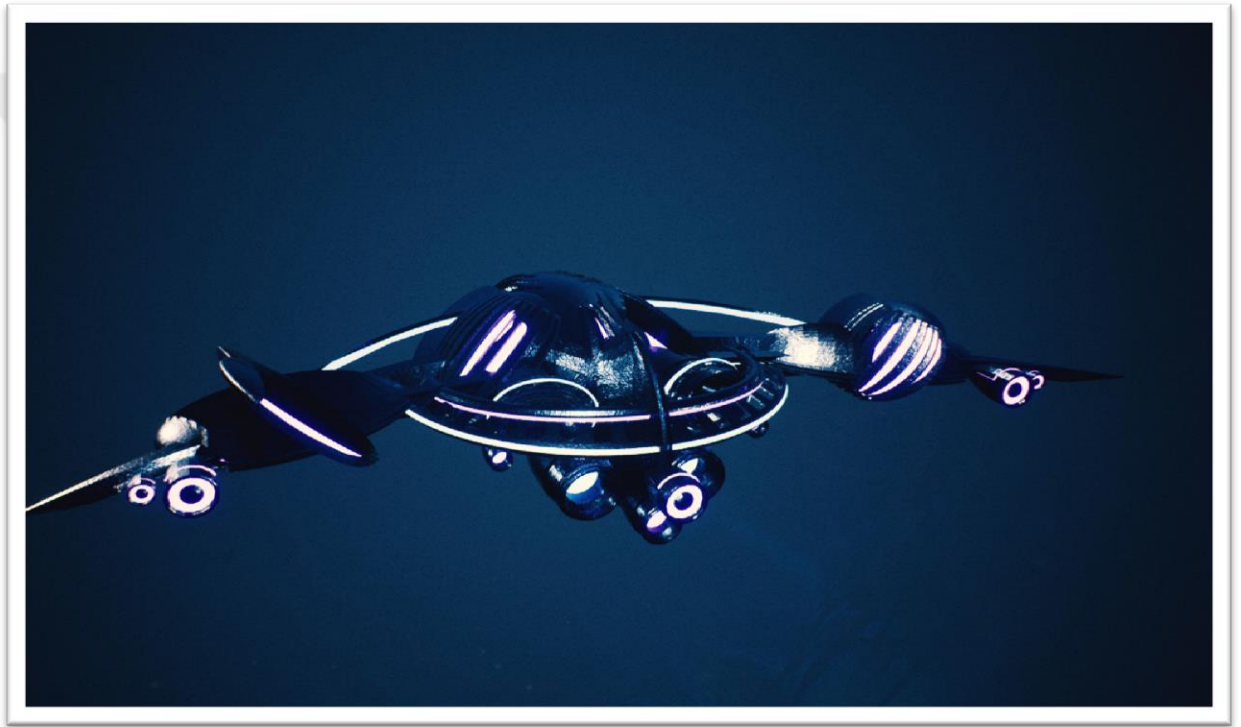
In the team combat, usage time of the abilities of Inquisitor is very crucial. Because, it is powerful and fragile at the same time. These two attributes of it, puts it first order as target for the opponent. However, the harmony of its two abilities can keep it alive only if they are used on right time. Because of the “Berserker” ability, it can fire very fast. This means that it can create too much damage on the opponent. At the same time if Inquisitor needs a fast healing, the player should use the “Healing Bullets” ability on right time while the health is low. Because, this will give a fast firing rate healing bullets which can keep Inquisitor alive in the combat.

## 4.2. INITIATOR

This is a little bit tougher than a carry type. This means, this type of battleship has more health and shield. Their main job is to start a combat and stay alive while doing this. By doing the right move on right time they can surprise the enemy and create confusion among them, and this will give its teammates the time and opportunity to join the combat safely. If the initiation is successful, the combat can be a victory for that combat or

maybe for the match. Void Hunter is an initiator and a trickster at the same time. This ship has the most complicated controls and mechanics in the game. But if someone who has a great control on this battleship, will be a game changer for the match's fate. Its abilities' makes this battleship highly mobile. Now let's inspect these abilities closer. The first of its abilities is "Like Old Times", the second one is "Teleporting Missile".

**Figure 4.6: Void hunter**

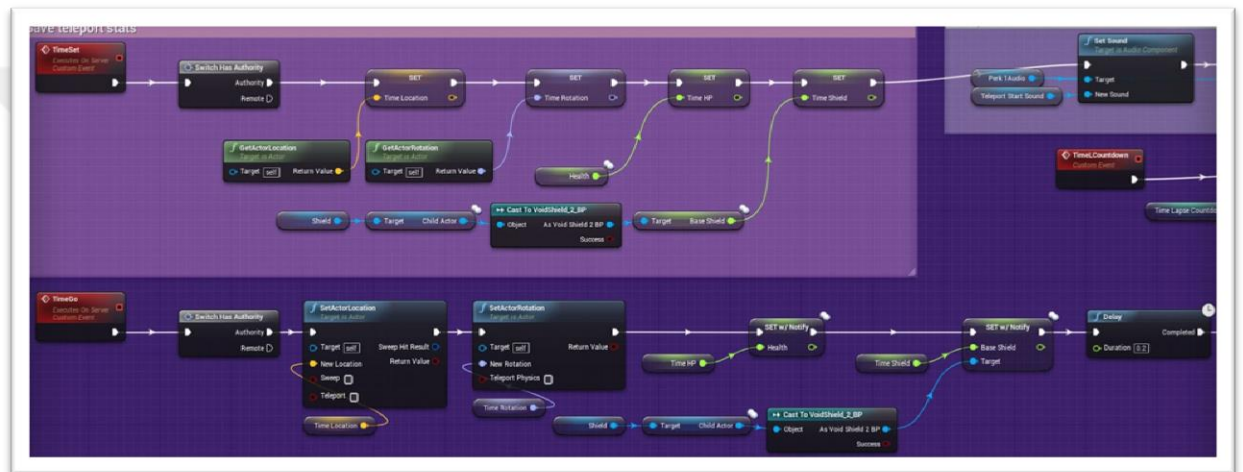


#### **4.2.1. Like Old Times**

This ability is placed on "Q" key on the player's keyboard and has two phases. When the player hits the "Q" key at the first time, custom event "TimeSet" which is created in blueprints, gets the current location, current rotation, health and shield values of Void Hunter and sets these values as the variables for later use. At the same time, the duration counter of the ability starts immediately. The player should use this ability for a second time when he needs, or Void Hunter re-activates this ability after the ability duration

finished. When the ability is activated a second time, the battleship returns the location, rotation, health and shield values that are taken before. Custom event “TimeToGo” starts to work and sets the values that are taken beforehand to this battleship’s current values. This means, this ship escaped the combat and gained its strength back and the damage it dealt to opponent does not return. The time rewinds only for Void Hunter.

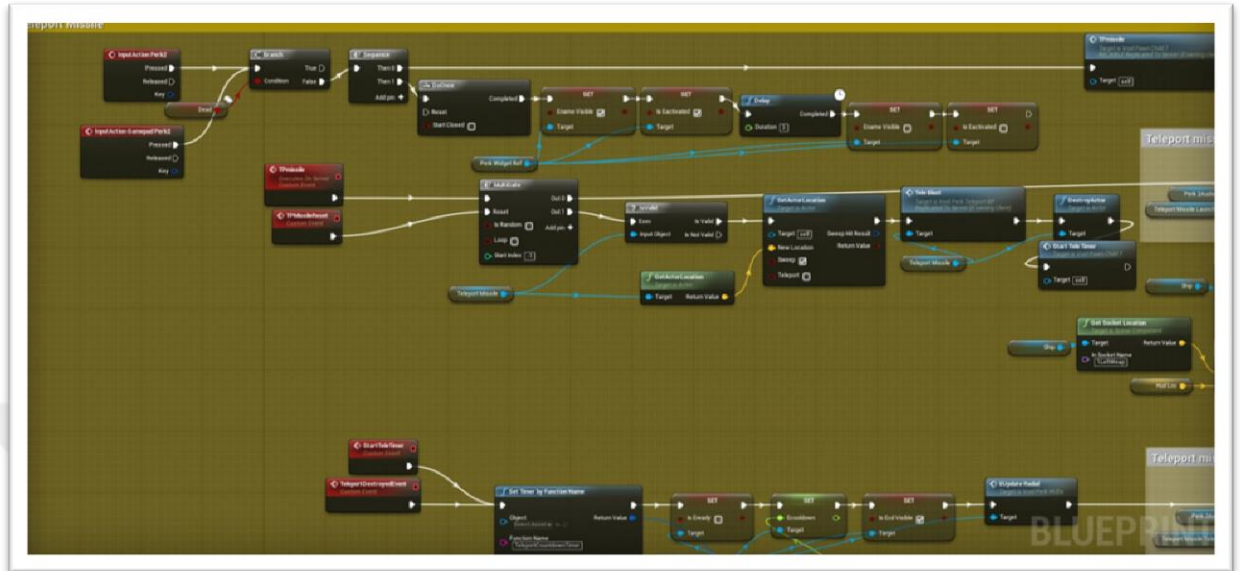
**Figure 4.7: Like old times blueprints**



#### 4.2.2. Teleporting Missile

This ability is the second ability of Void Hunter and it placed at “E” key on the player’s keyboard. When it is used at the first time, Void Hunter releases a slow-going missile and this missile has a lifetime before it explodes. If that lifetime expires and missile explodes it deals only an area damage like a normal missile that the other battleships’ have. Else if, the player uses this ability for a second time, this will teleport the Void Hunter to this missile’s current location and rotation in the game and after that the missile explodes immediately. This will deal an area damage to the location where the Void Hunter teleports. And after that, the ability enters a cooldown duration for later uses.

**Figure 4.8: Teleporting missile blueprints**



### 4.2.3. The Harmony Between Like Old Times and Teleporting Missile

These two abilities were created to work together. By using both in the combat wisely will confuse the enemy and give chance to initiate a fight safely for teammates. “Like Old Times” will remember a safe position for Void Hunter and “Teleporting Missile” will provide this battleship to infiltrate between its opponents with no effort and damage them in an instant. After that, the second usage of “Like Old Times” will pull Void Hunter from the danger zone to a safer place and return its lost health and shield values and refreshes it for the fight it started. The player should use both abilities in a harmony if he wants to be successful and safe in his initiating attempts.

### 4.3. DISABLER

This type is very dangerous in MOBA games. Because, they are controlling the battleground by using their ability mechanics. A disabler can be a tank or an initiator at the same time. It is not the base features that makes these type disablers, it is their disabling and control mechanics make them disablers. Predator is a disabler type and it is

an initiator at the same time. It has two abilities like the other battleships. But these two abilities work for making the opponent cannot work properly for a short duration. The first ability of Predator is “EMP” and the second one is “Virus”. A good placed “EMP” can control a crowd of opponents and after that the player can continue with “Virus” to make enemy ships lose their controls.

**Figure 4.9: Predator**



#### **4.3.1. Electro Magnetic Pulse (EMP)**

This ability is the first ability of Predator and activation key is “Q” key on the keyboard. EMP means “Electro Magnetic Pulse” and it is very dangerous for the electronic devices especially. When the player presses the “Q” key, Predator creates a field which grows in time and the opponent battleships which got caught by this field of EMP, stops working and drags unconscious in the void for a short duration. This game mechanic’s working principle is very simple. When this ability is activated, a sphere-shaped game actor will be spawned on the location of Predator and its diameter grows in time. If an opponent

battleship which collides with this game actor, will be uncontrollable for a short duration.

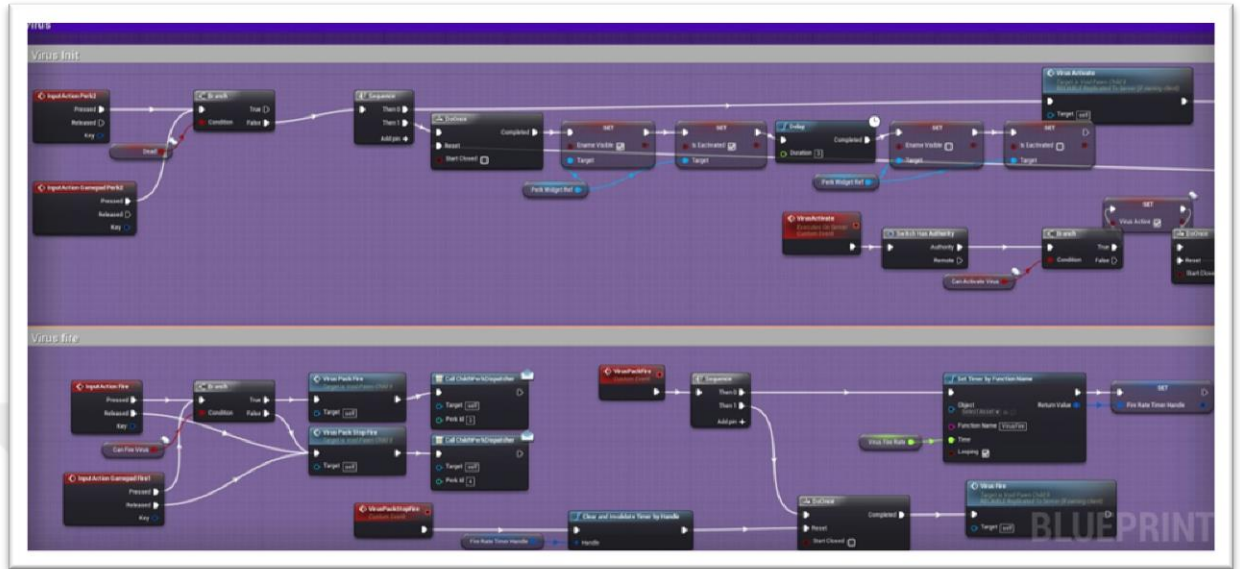
**Figure 4.10: EMP blueprints**



### 4.3.2. Virus

The second ability of Predator is “Virus”. This ability placed on “E” key on the keyboard. Virus is a very unique ability among the other MOBA games because of the unique flight mechanics of Voidrunner. By using this ability, the player confuses the enemy battleships’ control mechanics for a short duration. When in this case, the opponent ships cannot be controlled properly so they become easy prey for Predator and its teammates. Again, it is an easy method of programming. When the player pressed the “E” key, Predator’s normal ammunition changes to virus ammunition and this ammunition does the trick. If this ammunition which is a game actor, collides with the opponent battleship, it randomly assigns the axes and directions of the ships controller mechanics for each hit. This means, the player who is the opponent of Predator, cannot control his battleship properly. Cannot both escape and fight back. In the end, it becomes an easy prey for this relentless Predator.

**Figure 4.11: Virus blueprints**



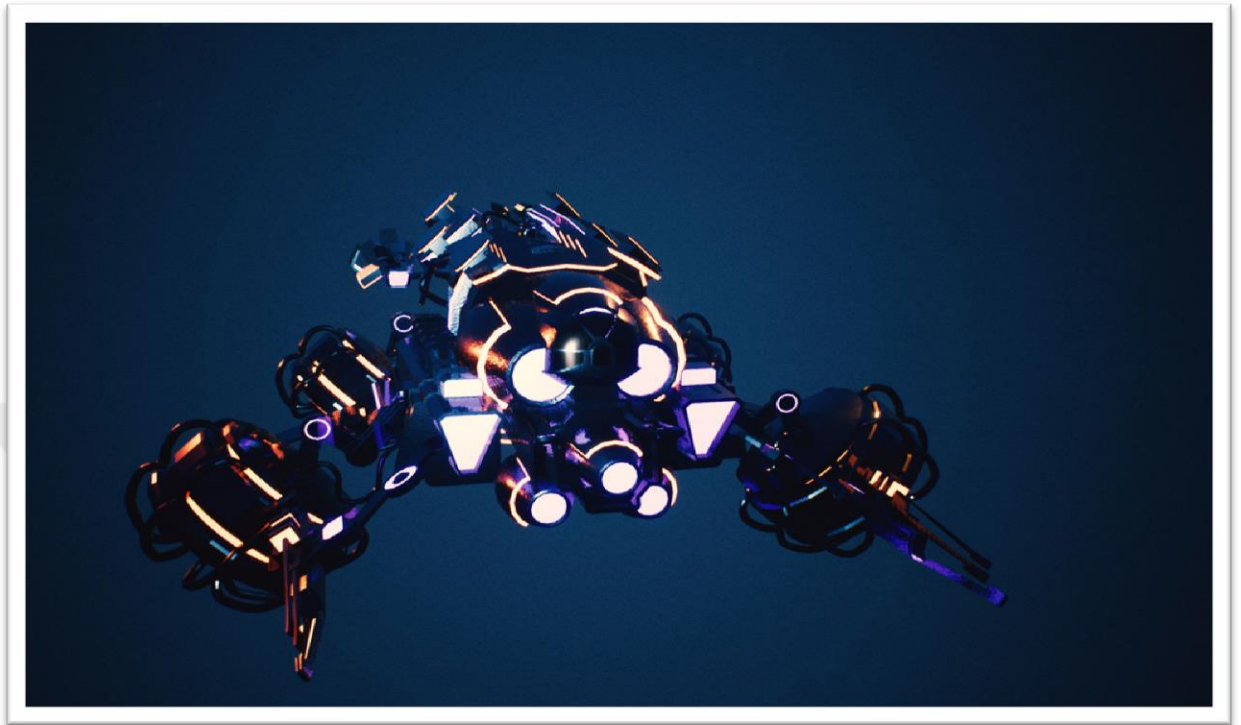
### 4.3.3. The Harmony Between EMP And Virus

These two abilities are crowd control mechanics of this game. Both describes what a disabler is. Emp, kills all controls of the opponent which is hit by and virus confuses the controls of the opponent battleships. Both abilities can be used for making the opponent defenseless or help Predator and teammates a chance to escape from a bad situation.

### 4.4. TANK

This type is the toughest among all of them. Their health and shield values are the highest and they have slow firing rate, but their damage is devastating for ones who got hit by. One of the tanks' base features is they are slow moving ships and their maneuver capabilities are not very good as real-world tanks. Defiler is one of its types and when it is your teammate, you can feel you are safe because of his surviving abilities and devastating damage.

**Figure 4.12: Defiler**



#### **4.4.1. Last Chance Shield**

This ability is Defiler's first ability. The name of the ability tells much about itself but if we peek closer to this ability, we will see extra features. Ability slot is "Q" key. This can both activated by the player or self-activate if the health is lower than 70. When it is activated, a sphere-shaped game object spawns at the location of the Defiler and attaches to its parent actor which is Defiler. That ability has its own health and of course duration too. This game object overlaps with the projectiles and incoming ability damages which are shot by the opponents and prevents them from harming Defiler's health and base shield. While it is taking all the incoming damage, if it loses all its health, it will explode and returns the absorbed damage to the opponents in a diameter. For making it, the ability itself spawns another actor at its location which harms the opponent who are inside its diameter. If this last chance shield's duration expires by itself, it will not damage any of its opponents.



## 4.5. GANKER

This type usually wants to deal with one opponent and tries to bring a quick death to him. These type's characters are mostly very fragile, but they have a great damage and maneuver capability. Addition of these features, their abilities mostly helps them to sneak their enemies without alerting them, kill and escape the incident area. Stalker is one of this type's best examples. Its thin hull, great speed and maneuver capability makes it a hard-to-hit target. Besides, its high damage makes it a very dangerous against fragile opponents. And also, its abilities can both give it sneak, escape and instant kill capabilities. I want to mention about its two abilities. The first ability of Stalker is "Camouflage" and the second one is "Stalker Sting". Both of them are describing what a ganker looks like very well.

**Figure 4.14: Stalker**



### 4.5.1. Camouflage

The "Camouflage" ability is Stalker's first ability and it placed on "Q" key. This ability works two ways. One, engaging the enemy silently. Two, escaping the area by giving no clue. Using this ability is very crucial for the Stalker. Because, going unseen and killing the weakest enemy and returning alive means making your team superior in combat. The

working mechanism of this mechanic is very simple. When the player presses the “Q” key, all of the materials the battleship has changing from opaque to translucent ones. With this change, the transparency timer starts and make whole battleship transparent in 1 second. At the same time, the forward speed of Stalker increases. Taking damage and attacking with normal base weapons of the battleship will blow the camouflage. While I am programming this ability, I did not want to make Stalker invisible. I wanted to make it camouflaged. There is one detail between two. If the player who is focused greatly to the game can notice Stalker and this situation gives an opportunity to that kind of player to live the powerful and stealth blow of Stalker.

**Figure 4.15: Camouflage blueprints**

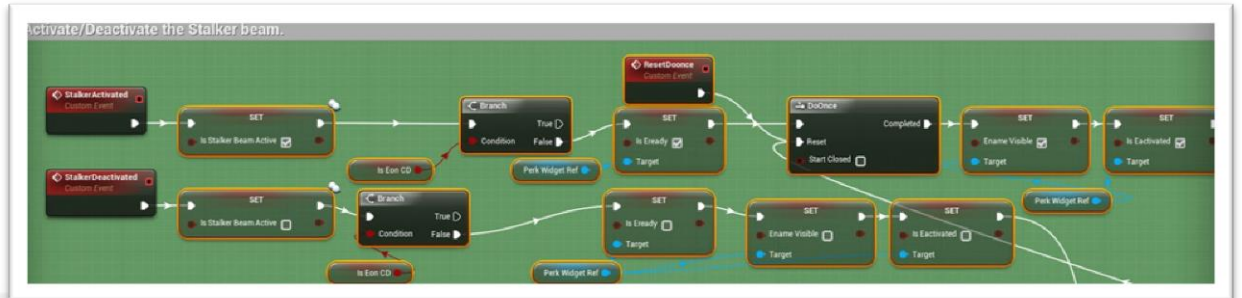


### 4.5.2. Stalker Sting

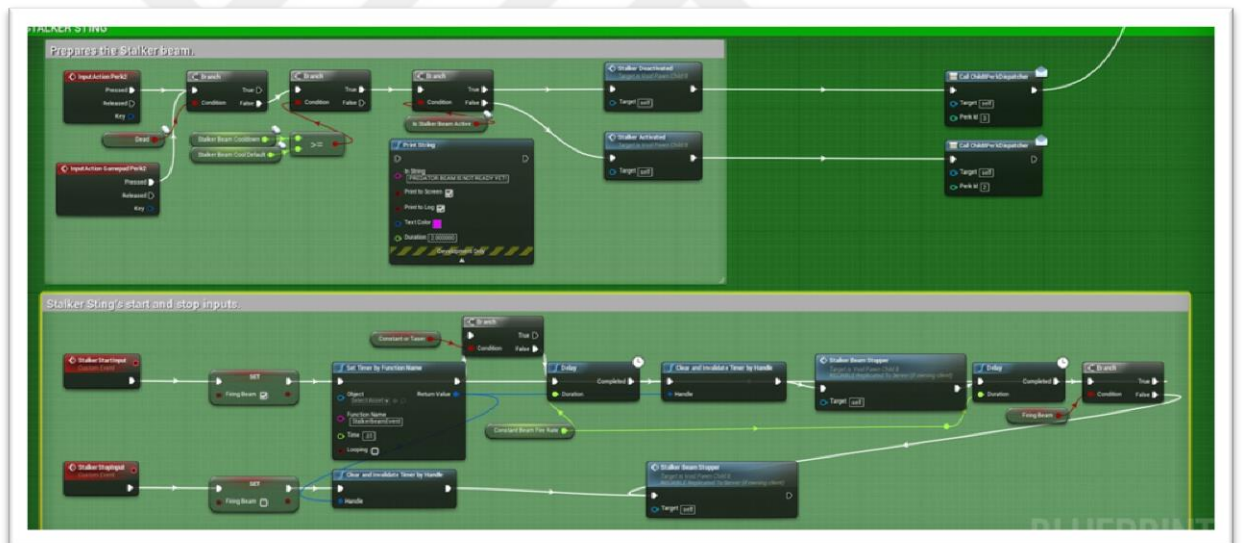
This ability is the second ability of Stalker. Its placed on “E” key. This ability can be activated and if the player gives up using it can be deactivated without using it and this move will not start the cooldown timer for this ability. This ability is a powerful, single-shot ability. It will sand a powerful laser ray and if this ray conflicts a target which is an opponent battleship, will apply very high damage. Unless the battleship took this ray is not a tank type or does not use any of its defense abilities, probably will be withered with one blow. To aim this one-shot ability is not very easy while moving, so the player who is using Stalker should stay steady and aim. This situation creates a big danger for the

Stalker because staying steady means being easy prey for other battleships in the void. But its damage will be devastating for the enemy battleships.

**Figure 4.16: Stalker sting blueprints (a)**



**Figure 4.17: Stalker sting blueprints (b)**



### 4.5.3. The Harmony Between Camouflage and Stalker Sting

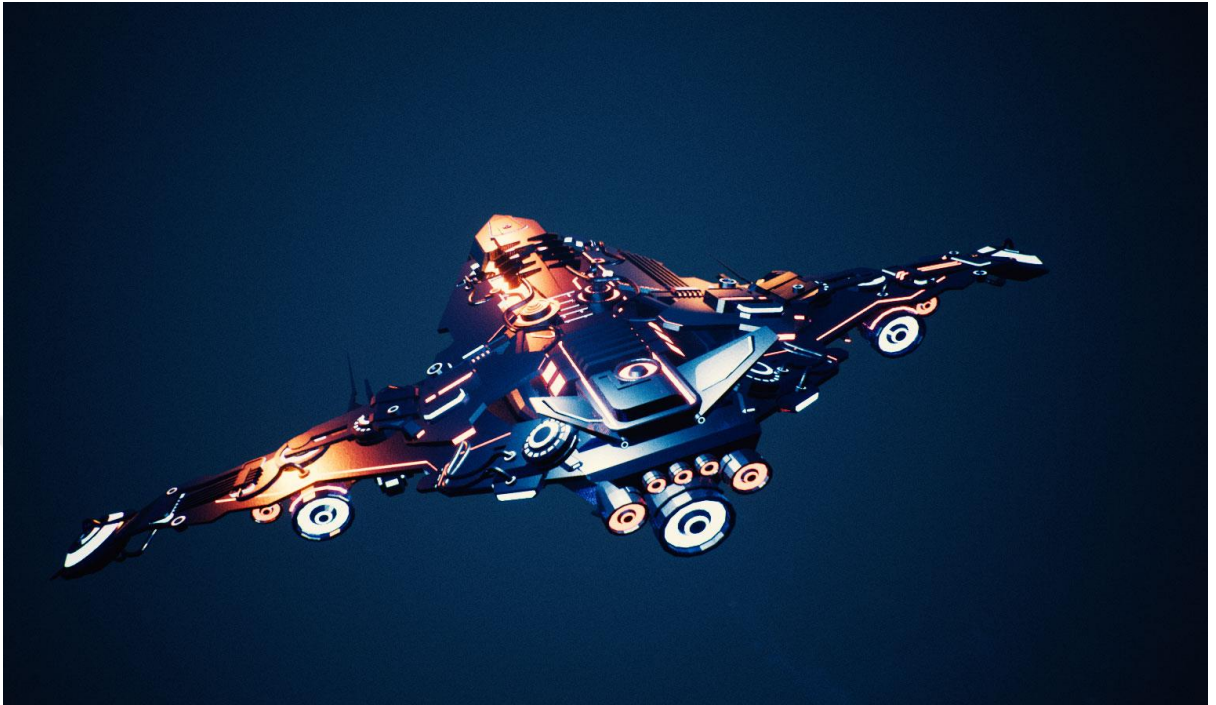
The harmony between abilities of one battleship is crucial. But if the subject is Stalker, creating harmony between its abilities is high priority rule. Because, it has a very powerful ability named “Stalker Sting” and for using it successfully, Stalker should stay steady. But this is very dangerous for this ship because it is very fragile. However, thanks to Stalker’s “Camouflage” ability, the player can stay steady and aim without being seen. I told “Attacking with regular weapons will blow the camouflage” but

“Stalker Sting” is not a regular attack. This ability is created for make a harmony among the abilities of Stalker. If the player attacks with “Stalker Sting”, this will not blow “Camouflage” and Stalker will remain stealth unless it gets damage, or the ability time expires.

#### **4.6. SUPPORT**

This type has only one goal in the game. It is to help his teammates and keep them alive somehow. Cleric is a support type battleship. So, usually in MOBA games, the players do not give importance to support type if they are not playing this type. Because, they seem weak and cannot deal big damage to enemy. However, maybe they cannot deal great damage, but they can heal great injuries, or they can cure a lot of de-buffs. So, supports can protect all his teammates with his abilities. If their abilities are not enough, a support can sacrifice himself for his team. Usually they are fragile, but they are not easy to kill because of the supporting abilities can be usable on themselves too. It has two abilities like the other battleships. The first ability is “Healing Aura” and the second one is “Anti-EMP”.

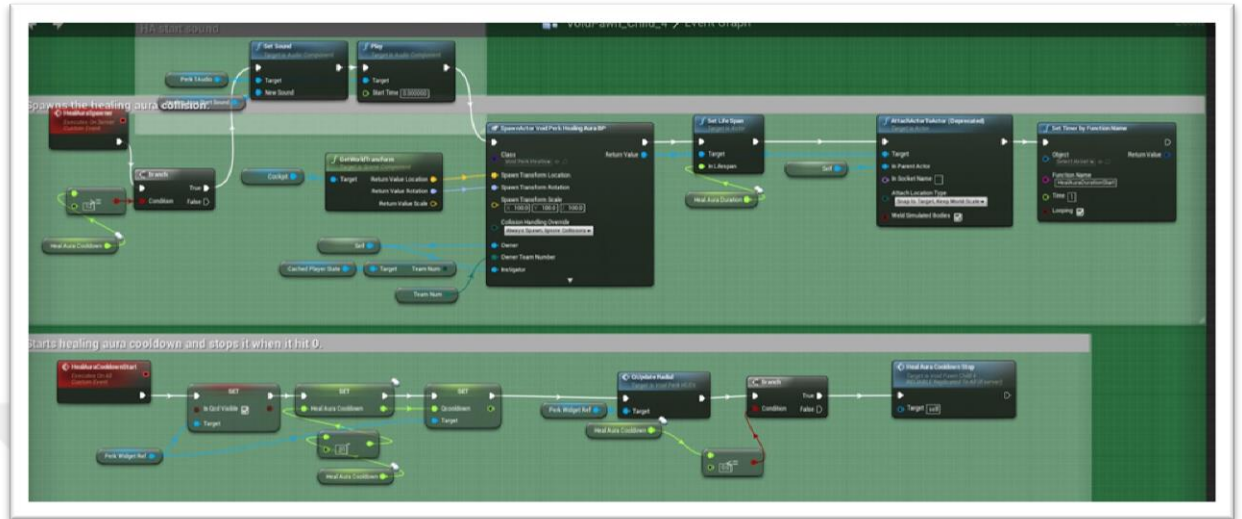
**Figure 4.18: Cleric**



#### **4.6.1. Healing Aura**

This is the first ability of Cleric. It is placed on “Q” key. This ability can reach a wide area and heal all of teammates who are within the area at the same time. When it is active, a game actor spawns at the location of Cleric and attaches to it. This game actor heals teammates which overlap with it. This ability makes its teammates hard to kill targets.

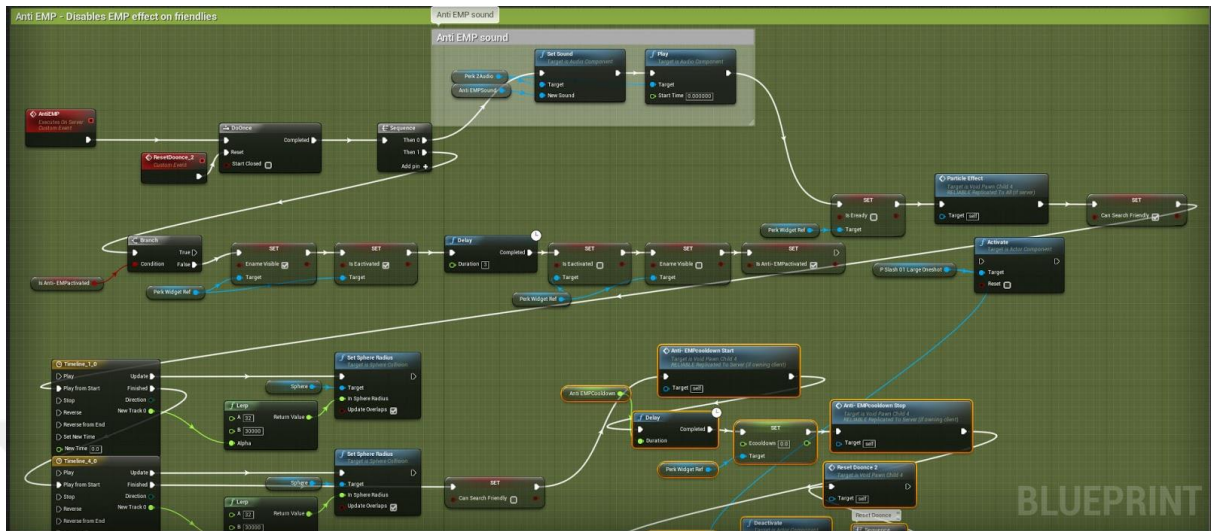
**Figure 4.19: Healing aura blueprints**



#### 4.6.2. Anti-EMP

The second ability of Cleric and it is placed on “E” key. The “EMP” ability of Predator is disabling everybody who got hit by it. This ability makes the battleships defenseless. But Cleric is not one of them. Because, Cleric can cure the effects of EMP. EMP cannot stop Cleric and teammates who are close to it. The working principle is the same with “Healing Aura”. When it activated, a new game actor spawns on the location of Cleric and its diameter grows in a short time. If this new game actor overlaps with the teammates and if they are got hit by EMP, cures them and cancels the effects of “EMP” ability. This ability is very effective way to fight with a disabler type.

Figure 4.20: Anti-EMP blueprints



### 4.6.3. The Harmony Between Healing Aura and Anti-EMP

Cleric supports many of its teammates in void but, if it is disabled or killed by opponent battleships, it cannot help anybody. However, its “Anti-emp” prevents this situation and Cleric can help its teammates because of the harmony between its abilities.

## 5. INTERVIEW WITH THE EXPERT

I always wanted to play a game where I would experience excitement similar to the escape scenes in the movies. In general, flight games have lost their popularity, but are now on the rise again with games like Star Citizen, Elite: Dangerous. I thought that flying games would come to life with these kinds of games and Voidrunner, and in the end I would be making a contribution to the games I dreamed of. As I said, Voidrunner is not a space simulation, but a flight game. It can also pass through space, between the skyscrapers of a high-tech city, or between the stone walls of an ancient city. I always wanted to play a game where we can experience excitement like the follow-up scenes in the Death Star corridors at the end of Return of the Jedi. Let's escape from narrow places when necessary, fight on large lands when necessary ... But let the spaces be different, always whip your imagination. With the same FPSs as each other, the exotic world of Unreal 1 made a jump in my subconscious, I want to give a similar effect. My source of inspiration is all the music I listened to, all the books I read, all the movies I watched. Voidrunner; a surreal world fed by the real world and the myths of this world. Our general culture is our biggest inspiration. First of all, it is worth saying that it started as a speed and reflex game, but Voidrunner's main purpose was to provide experiences similar to the exciting flight scenes in motion pictures. Therefore, in some modes, you need to show your flight and reflex ability, and in some modes, your combat ability. In addition, we also aimed to play Voidrunner online because games such as League of Legends, DOTA2 and Overwatch were also progressing very successfully, and it was a game suitable for playing in this style in Voidrunner. At least we were able to design accordingly. The player would be able to play alone and explore maps, or he would have tough challenges with his friends and try to outwit the rival team. For example, I am a player who plays MMORPGs like Single Player. I am a boring player who runs around the trees, rivers, and reads every quest window to the bottom as the other players go on raids with hundreds of people. Voidrunner was able to appeal to both a player like me and players who like to play with more friends. We also prepared extremely fun modes by considering the multiplayer system. Voidrunner may be the first flight game to

combine MOBA and open world RPG features. I can proudly say that there is no other game like this. So strange, but not really. While preparing our business plan, we thought what we could give an example, we thought we could not find it. It's not a game like the X-Wing Alliance or Star Citizen. It's not a game like Descent. It's not exactly like League of Legends or DOTA2. Voidrunner is probably something like one. The main goal of the game is speed and reflex yes, but you can use these features not only while racing but also when fighting. Consider dogfights and struggles to be cut in abstract spaces. Voidrunner will achieve this with both single and multiplayer modes. Apart from these, we also designed mods specific to our game, apart from the classic mods. For example, you are trying to go one piece to the exit portal of the map while chasing enemy hunters in a mode. In another mode, you have to destroy the hunters that are after you to go through this exit portal. There is a mode where you have to find your way and get out of the labyrinth while a wall of flames is quickly coming from behind you. There is another mode that you need to go to the exit by solving the small hints on the map and opening or blasting your way in a short time. In short, each mode aims to provide a different game experience to the player and to drive your vehicle with different strategies.

While doing all these things, I went through many stages with my team. We eliminated some modes because we thought they were not working well. We have added some new modes. In particular, we renewed all of our ships from start to finish. We have enhanced their looks and added talent. Skills such that each of the 12 ships will have 2 abilities. Of course, we have determined them all according to the classes to which the ships belong. This was not easy. We produced nearly 100 skills and tested and filtered how they would work in the game. Finally, we limited it to the 24 talents our ships now have. After this work, we worked on balancing. Balancing is not simply done. It would be better to say that we have started balancing works. As the game is played, we will have to continue balancing according to the feedback we have made.

To sum up briefly; Voidrunner is the result of studies on an idea that came up as a result of my desire to produce myself because I could not find a game in my dream game type. It has been a great experience for myself and my team.

## 6. CONCLUSION

The development process of the game Voidrunner has started with very different ideas than the final version of the game. Players ideas and suggestions were the main reason of this difference. These ideas and suggestions from players are crucial during game development process because players are the ones that would contribute to the later success of the game. At the end, the game is classified under a different genre than it was first designed in. While practicing this style of play, the team tried to balance the game and maintain this balance. In the game, the team wanted to play all the skills that were created according to MOBA player types.

All of the ships in the game changed and developed as a result of the feedback the team received. The ships have transformed from weapons that fly and shoot into a game character that has a variety of abilities and varies according to the style of each player. In addition, the team aimed to establish power balances in the game according to the feedback players gave. These feedbacks were delivered to us from platforms such as reddit and steam. Of course, we also need to consider the many emails we receive. Players complained about the imbalance of power between the ships. This affected the entertainment factor of the game badly. Balancing power between game characters is quite a challenge. That's why we focused on a certain strategy. When we look at other MOBA games, we see that the power balances of the characters in the game do not fit perfectly even if they have been playing for years. Power balancing work in such games never ends and needs to be constantly worked on. We started our balancing efforts in line with the feedback given to us as a starting point. Below, I will be explaining our work on how we try to balance power.

While balancing, we ignored the abilities of the players because if we consider this, it would be impossible to balance. For power balancing, we separately deal with the ships' normal attack power, attack speeds, health points, shields, and powers provided by their abilities. We wanted to make it clear to players that all the ships were different. While

balancing, we examined the ships on a class basis and tried to balance them according to their duties. For example, a support ship should not have hit much more than a carrier ship. A carrier-type ship should not have healed the teammates' wounds.

While balancing the normal attack power of our ships with tank and carrier characteristics, we fired on a hybrid ship that we temporarily created and held on the stage. In this way, we aimed to make our tanks and carrier-type ships destroy this hybrid ship within the same period of time. The time we set was aimed at destroying this hybrid ship within two seconds for all our tanks and carrier ships, in case all their shots were successfully hit. Therefore, while increasing the attack speed of the attack ships, we reduced their attack power; and increased the attack power of the tank ships while decreasing the attack speed of them. Thanks to this balancing, our tank ships would fire less, but would do more damage if hit, and our carrier ships would have more hit chances because they would shoot too much even if they couldn't deal too much damage if hit. This balancing may sound unreasonable, but our aim was to dominate the opposing team, based on the abilities that the ships in the game have and the dominance of the players over these abilities. In this way, the abilities in the game would have a huge impact on the game. When it comes to life and shield values, of course, our tank ships' life and shield values should be higher than all other classes. Because they had to be durable during the team battle. We have reduced their speed and maneuverability because of their high durability. Their hitboxes were also larger than other types of ships, so they could be hit more easily. In short, we thought that being durable should have come with a price. Our carrier type ships were much more advanced than our tank type ships in terms of speed and maneuverability. Because if a ship with high firepower had more durability, it would be impossible to stand in front of it, which would make the game boring for players who rival these types of ships. We reduced their maneuverability and speed, as we reduced the durability of our carrier ships. In this way, they would have to fight by escaping from the fire opened on them while shooting accurately.

For the assassin type ships, we made the normal firepower different for our ships, compared to the carrier types. This type was able to destroy the same hybrid ship with

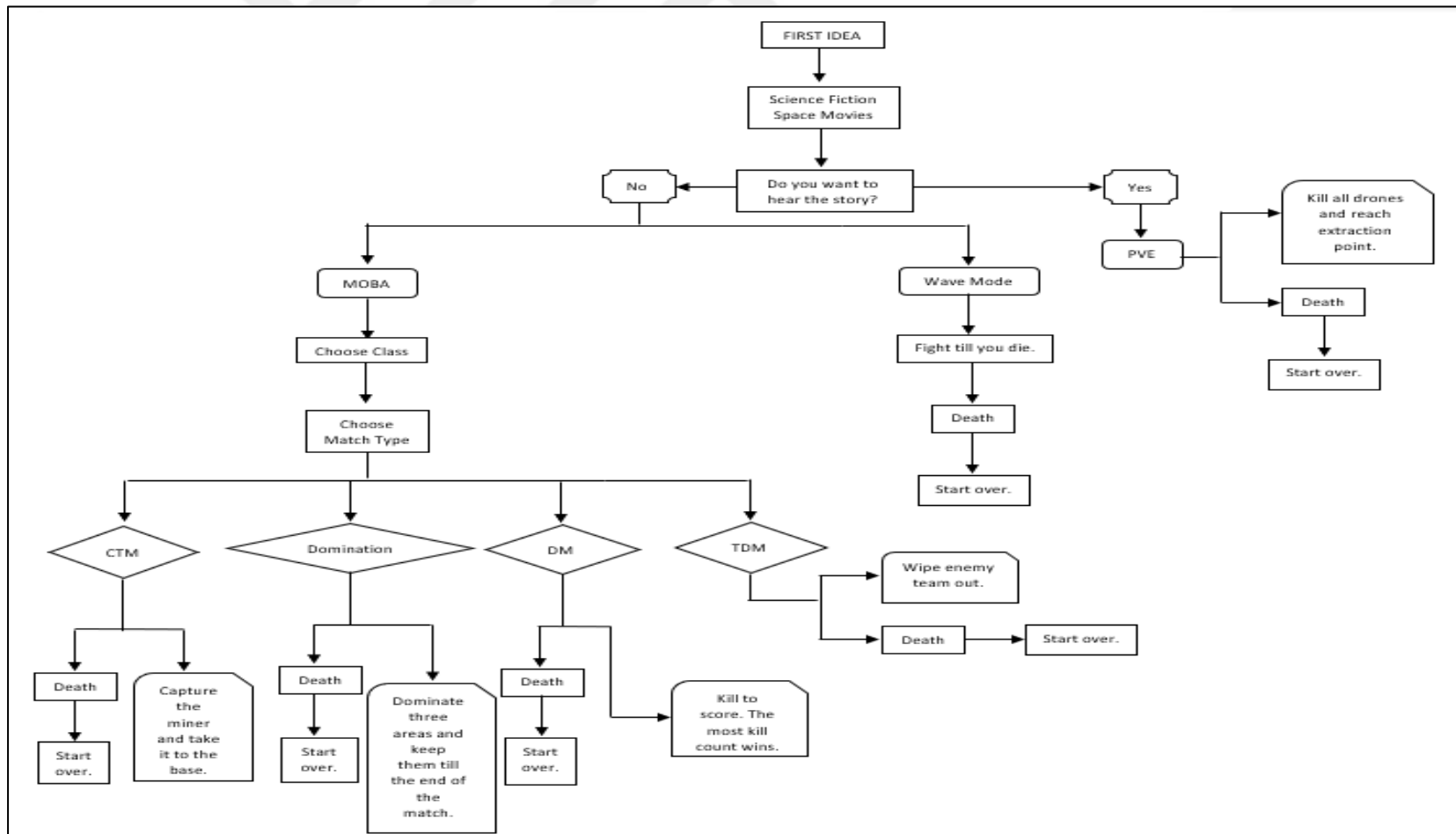
normal firepower in three seconds. We made balancing speed and firing power accordingly. Because if these types of ships use their abilities, their damage to their opponents would be very high and these ships were designed for player types that are experts in talent shots. Although his abilities were very painful, they would not do anything unless they were used at the right place and time, and they could not help their team as they wanted. Therefore, before using this type of ship, it was necessary to master all its maneuverability and abilities very well. Otherwise, they would have been more harmful than being good for the team. We adjusted the health and shield values to be lower than tank-type ships but slightly higher than carrier-type ships. Because these types of ships should be selective about the target, and thanks to our balancing, they prevented them from disappearing quickly when choosing the right target. Of course, we did not only strengthen it in terms of durability. We set our assassin-type ships as the class with the highest maneuverability and speed. In this way, we aimed to take positions quickly in order to use their talents at the right moment. While this speed and maneuverability always seemed to be an advantage, it also meant missing abilities that should definitely be used successfully during a battle for an incomplete player. In other words, they had to be expertly controlled even if they had a great power.

For the support type ships, the abilities of these types of ships had an impact not only on themselves but also on teammates. This means that the ability actually affects more than one ship. In short, the most powerful ships are actually these ships. Therefore, we thought that the damage they caused alone should have been less than other types. When looking at other MOBA style games, we can see that the support type is the weakest in terms of damage. Because, as the name suggests, they need to provide more support than fighting, and of course they have to be able to defend themselves even a little. With all this in mind, we have set the duration of these ships to destroy the hybrid ship, which we temporarily created, to four seconds. When these ships used their abilities on this hybrid ship, we aimed that the hybrid ship should not be destroyed when it is supported by its abilities, if it is hit by a carrier ship, if it is a friend. In this way, our support type ships started to behave according to their aims. When we look at the life and shield values of these types of ships, we can see that they are higher than the carriers but lower than the tanks, as in the assassin class. Because, since the firepower is not very high, defense

systems are weak. We tried to close this gap from resilience. If they use their talents at the right place and time, they will already be indestructible. When we look at their maneuverability and speed; it is seen that the team have adjusted their speed to be very high, although these ships are not very maneuverable. In this way, they could quickly reach their teammates in trouble and be with them. If they were caught alone, they could quickly leave the dangerous area. This served as a kind of defense mechanism for this class ships.



Figure 6.1: Flowchart of VoidRunner



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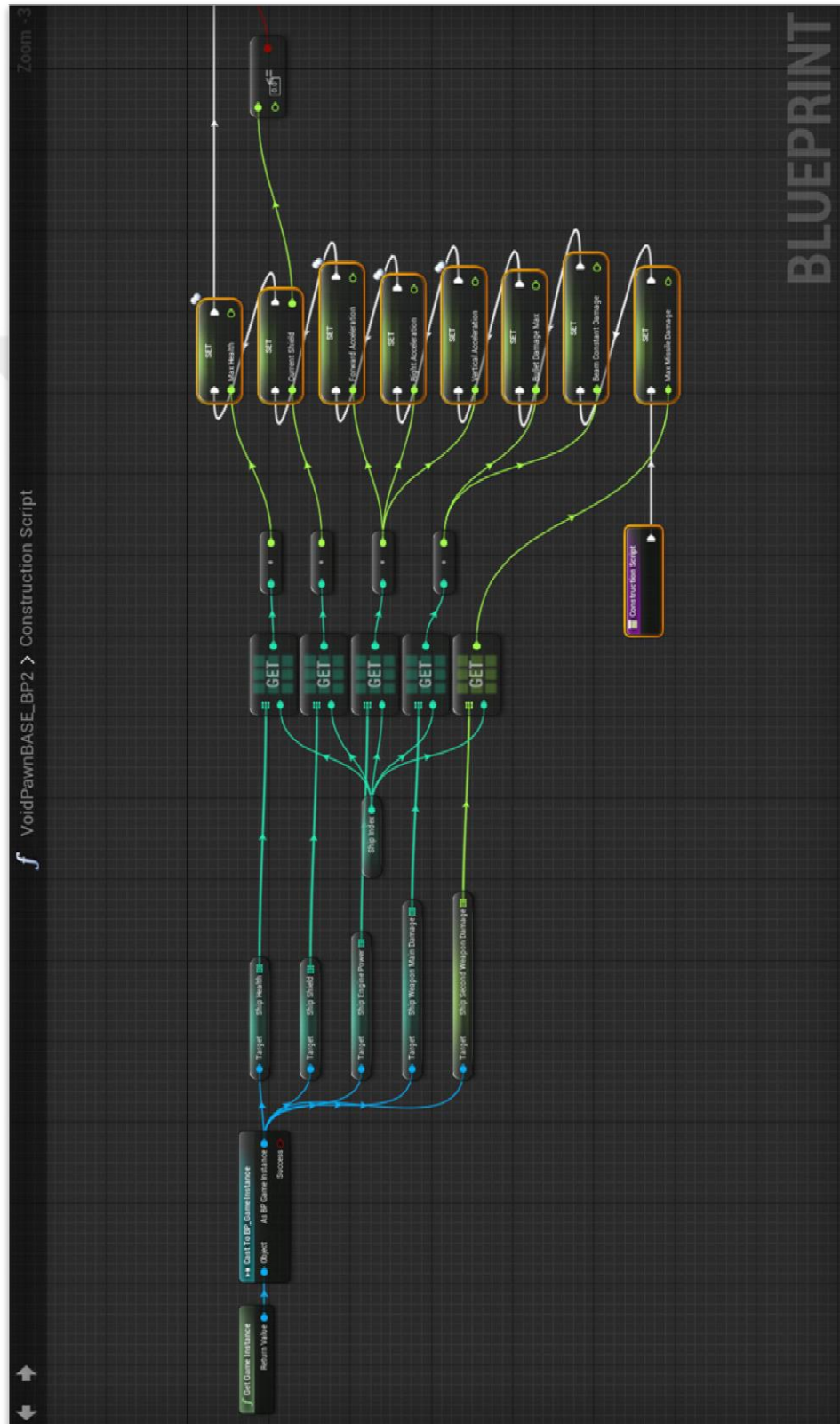
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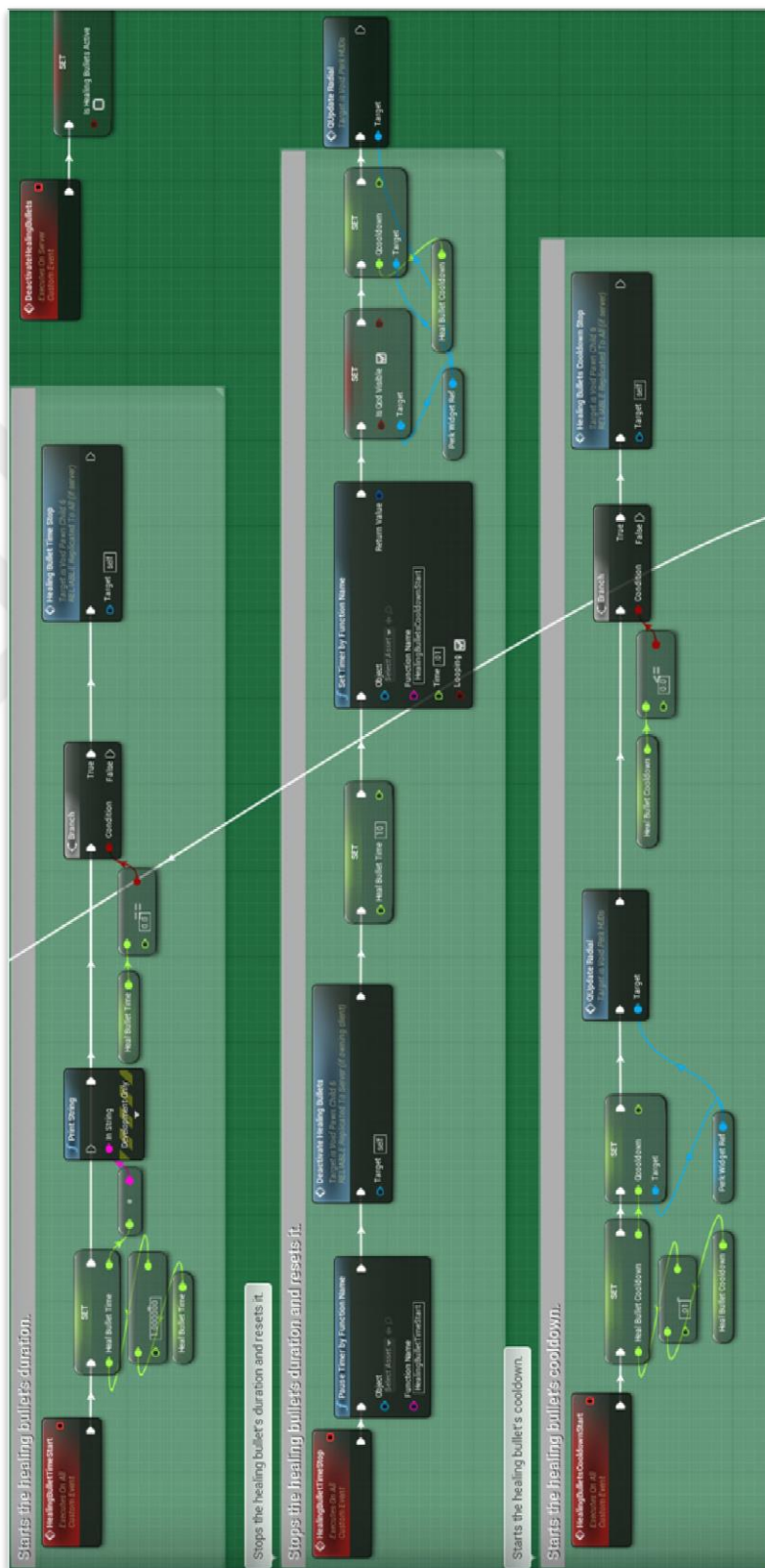
## APPENDICES



# APPENDIX – A: Figure 4.1 Base Ship Blueprints



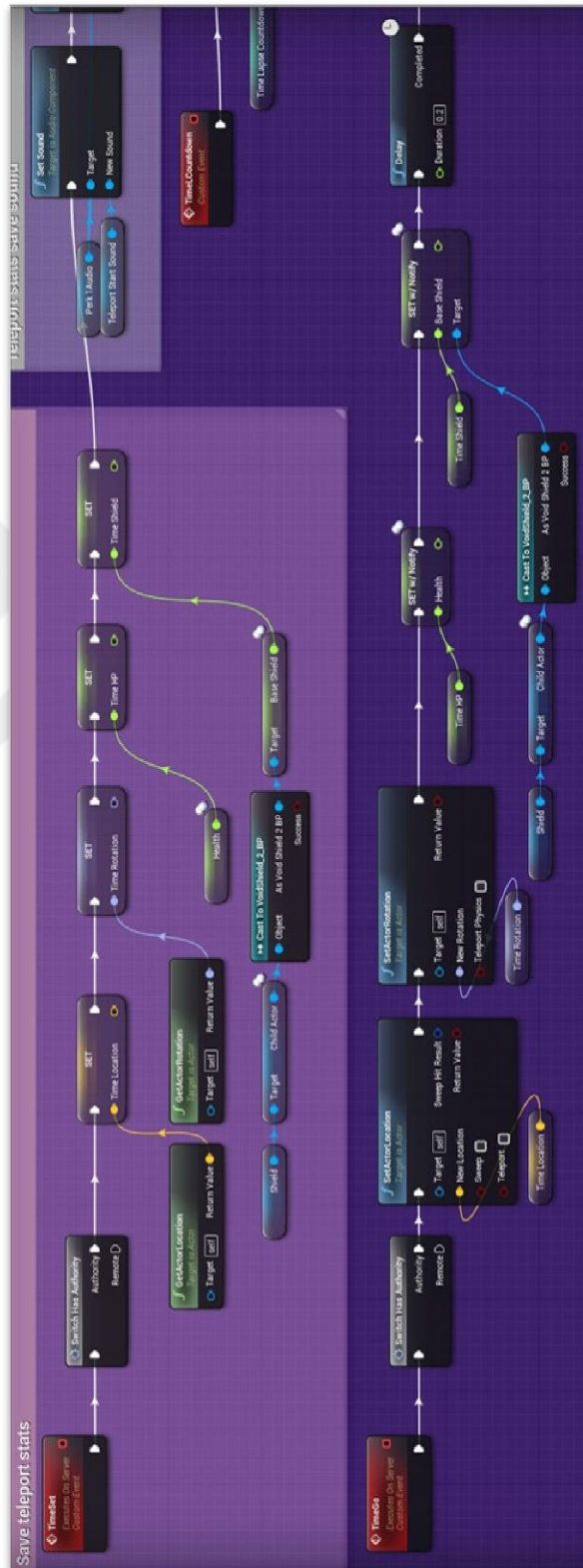
## APPENDIX – B: Figure 4.2 Cooldown Duration Blueprints





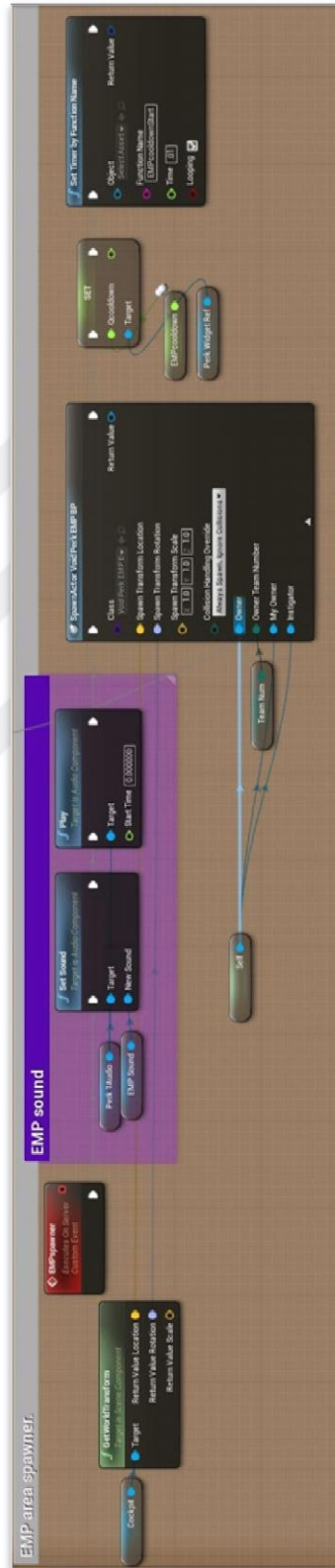


# APPENDIX – E: Figure 4.7 Like Old Times Blueprints





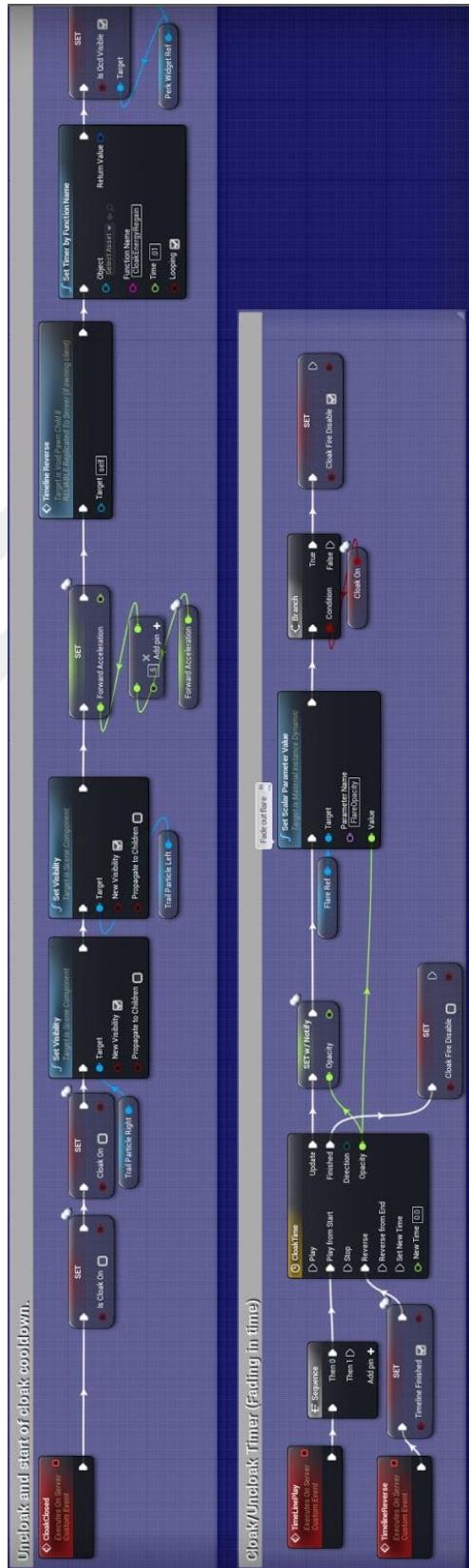
# APPENDIX – G: Figure 4.10 Emp Blueprints





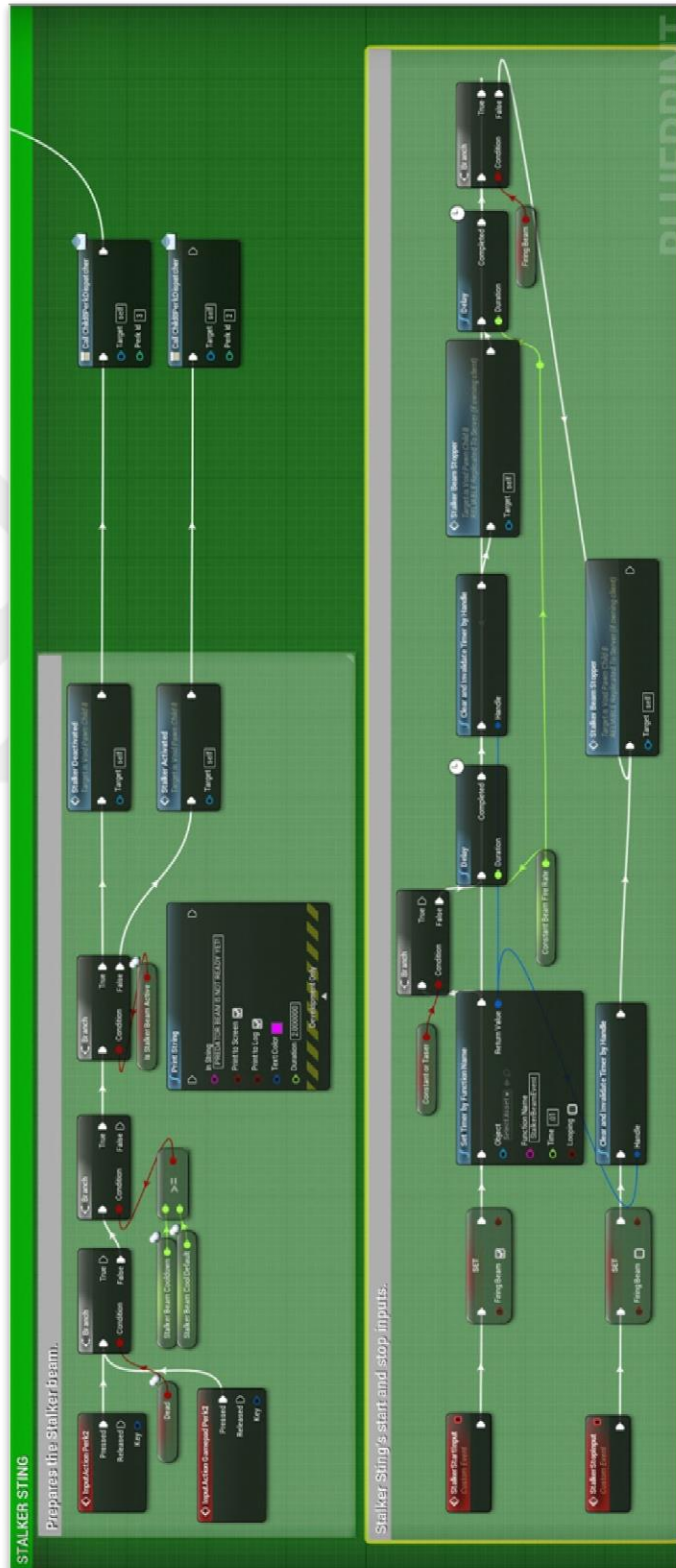


## APPENDIX – J: Figure 4.15 Camouflage Blueprints

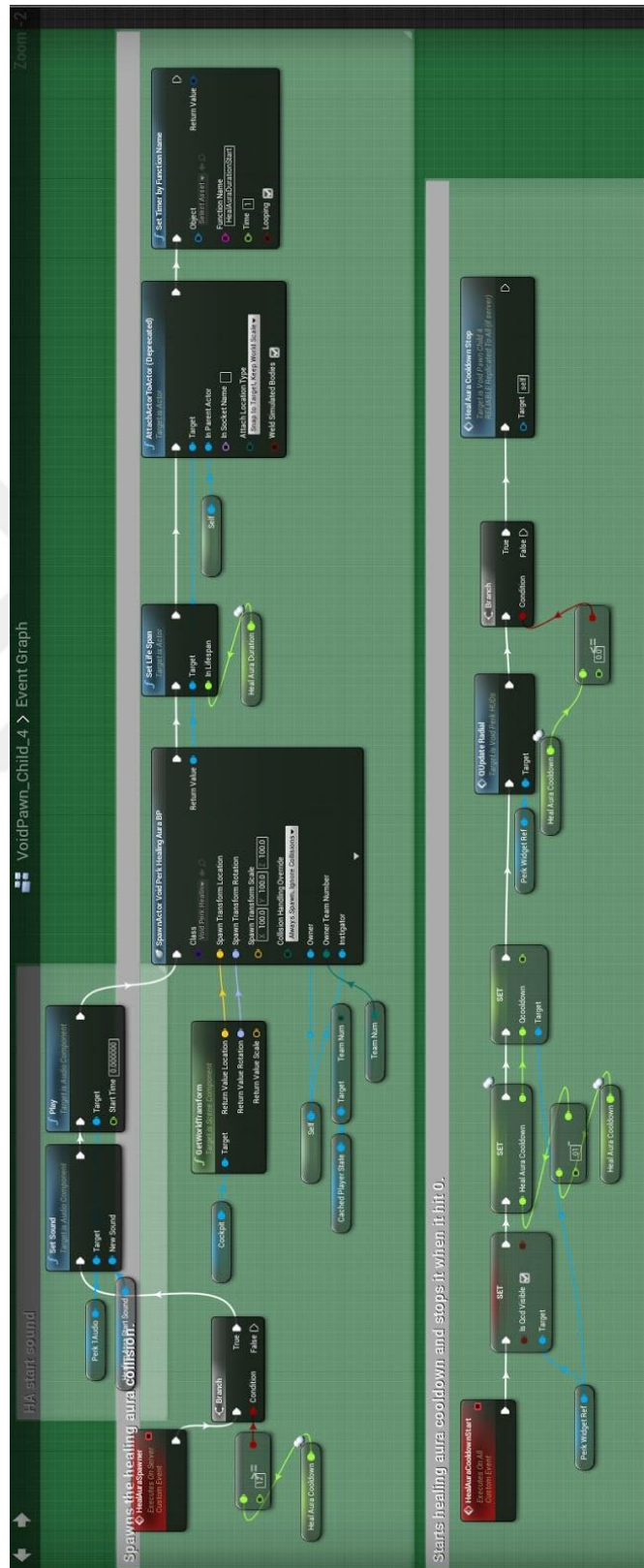




APPENDIX – L: Figure 4.17 Stalker Sting Blueprints (b)



# APPENDIX – M: Figure 4.19 Healing Aura Blueprints



# APPENDIX – N: Figure 4.20 Anti – Emp Blueprints

