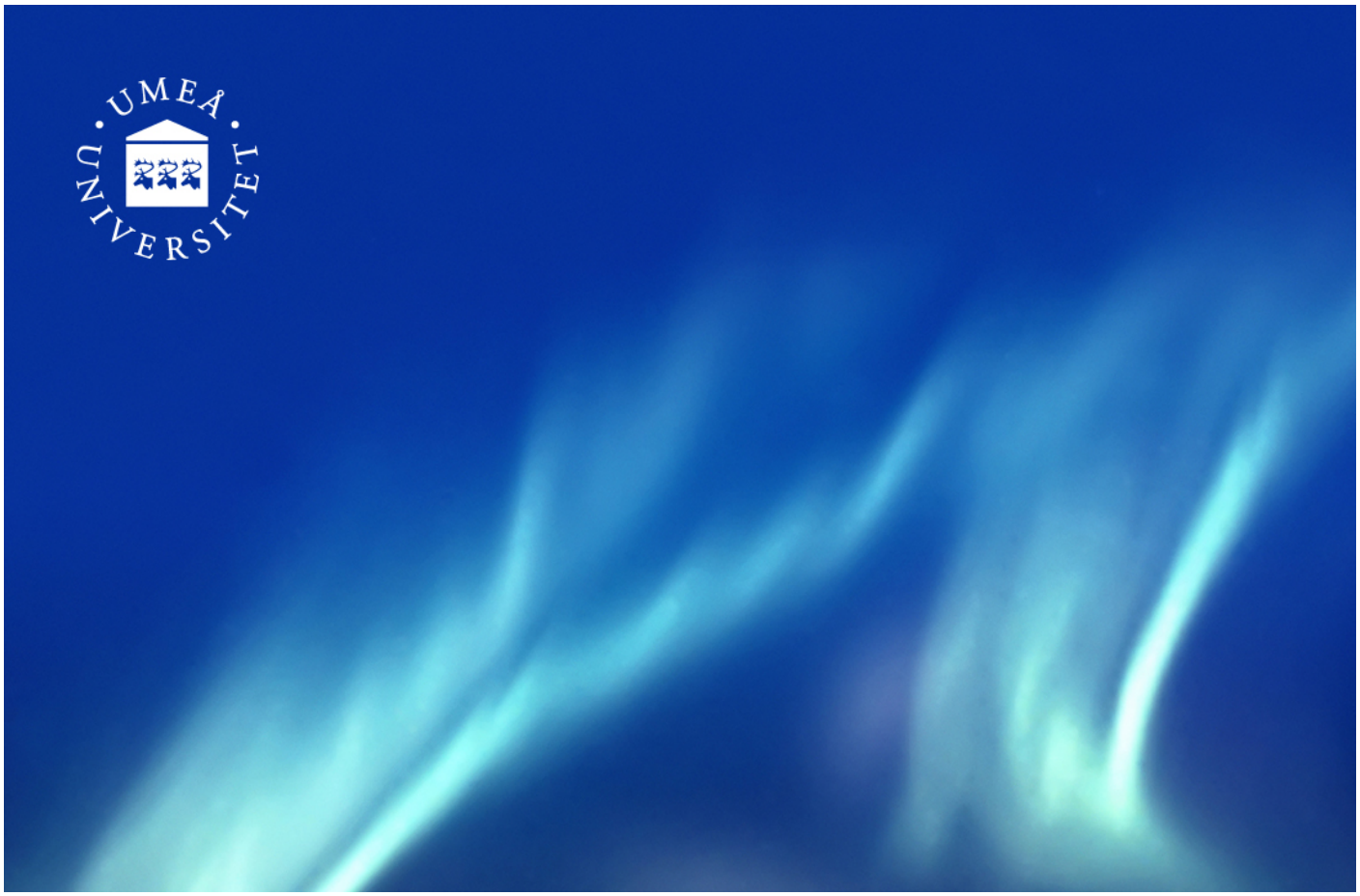

# Master Thesis Report

## Female Core Motivation to Digital Games

*Designing to increase female engagement in multiplayer and shooter games without losing retention from the original target group*

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**Abstract**

While mobile as a platform has enabled a more diverse audience to become immersed in digital games, different genres of games are still significantly segmented. Mobile games are commonly associated to female players and casual games, while core games are associated to male players. As core games become more common for smaller devices, the question was raised whether female players automatically would begin to engage in such games or if there were obstacles blocking.

This thesis investigated preferences among female players with the aim to identify design parameters that had a motivating effect on women in multiplayer shooters, and added layers of gamification to the mobile third person shooter game, Edge of Combat, to test the hypothesis. The process was carried out by following the iterative design framework called design thinking.

The result from empathizing with users showed that female core players' preferences were generally in line with male core and casual players, but that female players with little gaming experience had different preferences. It was found that those players needed to perceive games as available, since people in general choose games according to previous beliefs and knowledge. All research was brought forward into a design sprint to solve this issue in Edge of Combat. The idea that was chosen was an alternative way of presenting winners – a scoreboard with layers of gamification to increase intrinsic motivation for the game.

The idea resulted in an implementation of a new post game screen. It received positive response from all target groups, except from players with a deeply immersive play style. Although the screen fulfilled its purpose, as the effect possibly will increase retention by creating incentive to engage in the game, the obstacles for minority gamer groups are often incorporated in the earlier state of selecting games. This is a combination of previous experiences and social pressure to participate or not participate in certain activities, and since shooters are games that are already stigmatised, the genre itself can be a blocking factor. Shooters that have a significantly higher percentage of female players have succeeded because they have rewritten the rules for what defines a shooter, in both design and game play, and thus shooter stigmas and norms around shooters are removed which can alter the subjective norm and perceived behavioral control towards the game.

## List of Abbreviations

Game specific words and phrasing that are used in this thesis are explained in the list below.

**Shooter** A genre of games where the player controls a character with a ranged weapon to eliminate targets, either controlled by the computer (bots) or real players.

**Multiplayer** A game where people can play with each other in the same environment at the same time, online or locally.

**First Person Shooter** Seeing through the eyes of the character. First Person describes the camera-angle which is positioned at the same level as the eyes of the character, creating an effect of the character being an extension of the player. Usually only the hands and weapon is visible on the screen.

**Third Person Shooter** The camera is behind or above the character so that the player can see their character as a part of the environment.

**Top Down** The camera is hoovering above the battleground and follows the character like a drone.

**Skill** Skill refers to the skill of the person who plays the game. There are three main groups of skill. Physical skill directly relate to physical input devices like a controller, mouse, keyboard or VR-Goggles. This includes timing, reflexes and precision. Mental skill includes cleverness, strategical thinking and management ability. Social skill is about interacting with other players, including leadership, synchronization and communication.

**Abilities** Abilities refer to what the character can do like shooting, throwing grenades, running or jumping.

**Cosmetics** Items that changes the appearance of something, usually the character.

**Game Engine** A development environment for building video games. It is common to include support for rendering graphics, a physics engine, scripting and animation to name a few key components. The same engine can often be used for a variety of different games.

# Contents

# 1 Introduction

Some games require lots of effort, skill and a full engagement to play. A player who enjoys such a play-style is said to be core or hardcore. Digital core game audiences have one thing in common though, most of them are male [1]. At least this was historically the case, as video games developed in the 80's were marketed towards boys. Core game audiences still mostly consist of male players, however, the audience for games overall is more diverse. During 2018, 45% of gamers in the US were women, and the average age for female gamers is 36 years [2]. The smartphone turning into a gaming device has enabled more people to become immersed in digital games. In fact, more women than men use the phone as their primary gaming device, and women also invest more time in mobile gaming [1]. Adult women also represent a larger fraction of the gaming population (33%) than boys under the age of 18 (17%) [2].

Mobile games are commonly associated with a casual game audience. Casual games do not require heavy engagement from the player nor advanced game engines or devices which has made the casual genre great for mobile devices [1]. But continuous improvements in mobile technology has made it possible to develop games demanding better performance. Level Eight's multiplayer and third person shooter, Edge of Combat, is one example of such a game. It will be soft launched during 2019, and the independent game studio from Umeå, Sweden, expects a core audience (male players of age 35-60 years) to play the game. Level Eight also seek an opportunity to attract new fans like female players to Edge of Combat as well, utilizing the fact that women play games on their phones to a larger extent than men do.

This raises the question whether female players automatically will begin to participate in heavier games as they become more available on their primary gaming device, or if there are obstacles blocking.

A few game studios have managed to attract female players in addition to the usual audience in core games. One example of a core category genre is shooters, in which the player controls a character with a weapon to eliminate opponents.

In 2016, the game studio Blizzard released the team-based hero shooter Overwatch. Female players in Overwatch represent 16% of the total player base which is more than double the average percentage of females in shooters, according to a quantitative study by Nick Yee [3].

The third person shooter, Fortnite: Battle Royal, developed by Epic Games in 2017, has also succeeded in reaching the female audience. Demographics of players over 18 years, in the United States, show that Fortnite is as popular among female players as Overwatch [4]. Fortnite has also been released on iOS where the female player base was 28 percent. That is a 300% increase from the average percentage of female players in the shooter genre.

The two games described above have a significantly higher percentage of female players compared to other games in the shooter genre. This could suggest that it is neither the genre itself, nor the complexity or the competitive nature of a game that make female players refrain from it, but rather parameters concerning game design.

How did Fortnite and Overwatch succeed in attracting female players to the shooter-genre? Finding what parameters in shooters that attract or discourage female players could create an opportunity for game studios to reach new audiences. Being in the forefront of developing games for new audiences can be very profitable. The market of mobile games has the highest distribution of the game market revenue [5]. So, now could be a chance to reinvent core games, like shooters, to reach a wider audience.

## 1.1 Objective

The objective of this thesis is to identify design parameters that have a motivating effect on women to engage in shooters. The aim is to increase interest in multiplayer shooter games for female players as a new target group, without losing players or player retention from the main target group.

This will be carried out by following the process of the iterative design framework, Design Thinking, and a qualitative research approach. To test the hypothesis, Edge of Combat's user interface will be reworked to fit a wider audience. The desired outcome is when both female players and the main target group prefer the new design.

# 2 Background

This section presents background information to the topics discussed throughout the thesis. This includes the collaboration game studio, Level Eight, and their current game, Edge of Combat, that was investigated in the thesis. Limitations from Level Eight will also be covered in this section. The reader will then be presented with ways to distinguish between different play styles. Furthermore, mobile as a platform and its success among certain groups of players, along with popular mobile genres will be investigated. Lastly, two shooter games, Overwatch and Fortnite, which have had a relative success among female players will be briefly described.

## 2.1 Level Eight

This thesis is done in cooperation with Level Eight AB which is an independent game development company located in Umeå, Sweden [6]. Their focus lies on developing games based on original Intellectual Properties (IP:s) for Apple iOS and Google Android platforms. Their most famous game is Robbery Bob, with over a million daily players. During its peak it reached sixth place of most downloaded iOS games in China [7]. They are currently (2019) working on a new game for Android called Edge of Combat.

## 2.2 Edge of Combat

Edge of Combat is a Top Down multiplayer and shooter game developed for Android mobile devices, and Level Eight expects a core game audience to play the game. Edge of Combat uses soft launches to be able to get feedback during the development period. The game is still being developed and has by spring 2019 therefore only been released in a few countries.

The game is Free to Play, and uses a method for monetization called "Gacha" [8]. By spending real currency, the player can purchase a "lucky draw" to have a chance to win a virtual item with different rarities, for example equipment that changes game play, or cosmetic items that changes appearance. Weapons also have a level which can be upgraded through Match Cases (lucky draw), the higher level, the better weapon. Weapons with a higher rarity are also better. A player who wins matches will rank up to another division, thus the competition will get tougher. This mechanic makes players want better items, but the player will still have reasonable competition.

The aim for the graphical style in Edge of Combat is a classic war theme which is prominent in the game's character and UI-design with inspiration from games like Call of Duty (CoD) [9]. Although, maps have more of a fantasy game setting like a bright factory map, a temple map of old ruins accompanied by classic fantasy elements like crystals, cracks in the ground and colorful lights.

The current game modes are Team Deatchmatch and Domination. In Team Deathmatch, the team with most eliminations before the time is up wins. In Domination the teams are competing about capturing and holding points on the map. Capturing and holding a point grants points, and the team with the highest score when the time is up wins, if no team has reached the score limit.

## 2.3 Core or Casual Gamers

The definition of a gamer according to Google Dictionary is "a person who plays video games or participates in role-playing games". In today's society, people in every market segment occasionally plays games including women, children and elderly people. User statistics from 2016 in the U.S showed that 70% of mobile phone owners also played games on their phone [5]. The word *gamer* has therefore become quite homogeneous in its definition, however, the word still has a connotation to the stereotypical male teenage nerd. People who play games seldom identify as gamers themselves, and female players are even less likely to do so [10].

The terms casual and core are commonly used to be able to distinguish between different player behavior [11]. There is no exact definition to what they include or where they are

separated but the difference is the time and effort one is willing to put into gaming.

Some games require more effort and skill to play. They are usually time consuming and the gaming experience benefit from full engagement and long play sessions. A player who is into games that require such a play style is said to be a core or hardcore player.

A casual player should not be thought of as the opposite to a core gamer, as the casual player is also interested in games. However, the casual player will invest less time learning and engaging in a game. Casual games therefore require less commitment from the player [12].

Typical categories that can be described as core are shooters, fighting, action-adventure, sports, racing, strategy, survival, horror, role-playing-games and massive multiplayer online games [13]. Casual games can be platform, puzzle, social games, party, simulation and adventure, among others.

## 2.4 Mobile as a Platform

The mobile gaming market continually grows bigger each year [14]. As a gaming device it enables playing games outside the home, such as commuting on the train, waiting for the bus or while taking short breaks.

The United States alone has 209 million mobile phone gamers, making it the country with the highest revenue of all platforms in the digital games industry [5]. The United States is often used as a reference country for key statistics and can predict mobile market trends globally. Other countries where mobile gaming is big in terms of player quantities are India, China, Brazil and Russia.

Statistics from 2016 shows that mobile covered 40% of the revenue in digital games in the United States, and console was on second place with only half the coverage [5].

Casual seem to be the most popular game genre globally and reached 59% of all Android users in 2017 [5]. Four other popular game genres in descending order are puzzle, arcade, action and racing.

In 2018, the top grossing iPhone mobile gaming app in the United States was the action multiplayer, Fortnite [5]. It generated 32% more daily revenue than the casual game Candy Crush which was on second place.

Console players' interest for playing the same version of a game if it was also available on mobile platform, was quite equally divided between likely, unlikely and neutral. However, it did not account for casual or core play style. Other research has suggested that core players prefer console or PC over mobile regardless of gender [1].

## 2.5 Two Core Games That Have Succeeded Among Female Players

There are few female players in shooters overall but Overwatch and Fortnite has a relatively high percentage of females in their player base.

### 2.5.1 Overwatch

The game studio Blizzard Entertainment has developed and published many games for core audiences. Some of their famous titles include Diablo (1996), Starcraft (1998) and World of Warcraft (2004). In spring 2016 they released their fourth franchise, the multiplayer team-based shooter, Overwatch, for PlayStation 4, Xbox One and Windows. Two teams of six players each are competing against each other on a variety of maps and game modes. Somewhat unique for Overwatch is that it is a shooter game based on roles such as healers, damage dealers and tanks [15].

The game has a competitive mode, where anyone can climb the ladder in a ranked division. The game has 40 million active accounts worldwide, and 16% of those are female players [16]. This is approximately 5 million female Overwatch-players in total.

### 2.5.2 Fortnite: Battle Royal

Epic Games released Fortnite: Battle Royal in autumn 2017 as a new game mode to Fortnite: Save the World [17]. Fortnite: Battle Royal is available on PC, PlayStation 4, Xbox One, Nintendo Switch, Android, iOS and Mac. Crossplay is also supported between all platforms which is making it possible to play with friends on different devices.

Fortnite: Battle Royal is a 100 player versus player (PvP) shooter game. It uses the popular Battle Royal mode where the last player or team to survive wins. Players drop from a plane onto different locations on a map where the area in which a player can stay without losing health points is constantly decreasing, forcing everyone to eventually meet and fight. Other game mechanics includes looting for weapons and materials, and to build shelters.

Some celebrities has also gone public about playing Fortnite. For example, the rapper and singer, Drake, is a fan of the game.

# 3 Theoretical Framework

The theory section presents a wide range of research related to the topic of digital games. To explain why there exists a difference between genders when it comes to gaming habits is difficult. Many studies have tried, but with entirely different results. It seems hard to determine whether behavior is genetic or a consequence of ancient social constructs. One thing is of certain however, the situation is not the same today as it was 40 years ago. To understand why, and the circumstances around gaming, the perspective needs to be broadened from only looking at numbers.

What influences gaming habits will hopefully become clearer by diving into models of technology acceptance, the role that marketing plays, the history of video games, gendered gaming preferences and motivational factors. Finally, the framework used to carry out the work in this thesis will be presented.

## 3.1 Technology Acceptance

Theories about motivation can explain why people act the way they do, and are therefore often used in a range of fields, including education, healthcare, organizations, environment, sports and marketing. Another use-case is the field of Information Technology Acceptance [18].

Many motivational theories can be used to describe an individual's acceptance of technology. One common model is the Technology Acceptance Model (TAM) [19]. It analyzes Perceived Usefulness, Perceived Ease of Use and Subjective Norm. Because it takes perceived usefulness into account, the method can successfully be to used to understand how people in an organization would perceive the integration of a new IT-tool in their daily tasks. However, a game is not useful other than being fun. Therefore, the model does not quite accurate describe how an individual would perceive a game.

The Motivational Model (MM) [20] can also be used to describe Information Technology Acceptance. The method separates between intrinsic and extrinsic motivation that has been widely used in psychology to understand behavior. The model is quite general though, which makes it difficult to describe an individual's acceptance of a game.

Another behavioral model is the Theory of Planned Behavior. It has not only been used in Information Technology Acceptance but also extensively in marketing, to influence consumer behavior [21]. It takes into account three parameters that is directly applicable to how an individual perceives a game.

## 3.2 The Theory of Planned Behavior

The model describes how the intention to act on something affects a subject's final behavior. Intention is affected by three things, attitude, subjective norm and perceived behavioral control.

**Attitude** Emotions affect the subject to think that the behavior can either be favourable or unfavourable. For example, a persons attitude towards gaming could be "I don't like games as they make people lazy".

**Subjective norm** Informal understandings about what is acceptable social behavior. For an individual it means the perceived social pressure to perform or not perform a particular behavior. For example, the subjective norm could affect a woman to not buy a war game, because the norm for women is to be caring.

**Perceived Behavioral Control** The individuals beliefs (opinions, attitudes and values) about the performance of the behavior being easy or difficult. It is based on a reflection of previous experience and future obstacles. For example, someone who never played a shooter could think the controls would be too difficult to learn and therefore shooters are not worth trying.

Many user-centered design methods use cognitive psychology to understand and predict user behavior, and the same goes for marketing [22]. In the context of gaming and gender, marketing has been a key factor to forming norms around games, specifically who games are for [23].

Knowing users intentions enables framing the marketing message in a way that fits the user. That can be achieved by either altering their attitudes, change their view on how others see them or change their perception of the difficulty. The example of the subjective norm described above could possibly be countered by showing an ad of women playing the war game.

Applying TPB in order to achieve a certain result can produce a positive outcome. One case was a study investigating how gamification could influence entrepreneurial intentions, and it showed that gamifying tasks had a clear effect on attitudes and perceived behavioral control [24]. Another case for encouraging behavior are ads to quit smoking, which also have the goal of changing the perceived behavioral control.

If however, TPB is ignored or used with bad intentions, in for example marketing, destructive social constructs that already exist in society are left untouched, and can even be nourished. Continuing to make ads of men playing games, whether it be a conscious decision or not, is one explanation of how norms have been retained.

## 3.3 Marketing Influences How We Think and What We Desire

This section will look into how humans are affected by marketing, as well as what parts of cognition that can be utilized for marketing reasons.

Throughout a day, consumers receive thousands of messages that marketers are trying to convey, and personal word of mouth messages [22]. In order to not become exhausted by an overload of input, the brain filters out the more meaningful messages, a process that humans are unaware of. The brain does approximations relying on situational factors or memory, like prior attitudes, beliefs and needs.

One effect is that consumers with no previous experience or knowledge about a product is not very likely to buy it, even if advertised "correct" [22]. If the customer on the other hand gets an opportunity to try it first without expectations, the consumer will be more likely to buy it. Consumers existing knowledge of products are quite often inaccurate but the consumer will strongly believe that what they know is right.

Consumers are not stuck in their mindsets forever though. They are continually learning about new products and trends in other ways, and learning about products changes the way they perceive them. The most recent theory of learning is social learning [22]. The theory proposed that humans have something called delayed gratification. It means that humans have choice on how to react to stimuli, can reflect on behavior and also change it. But more importantly for marketing, it means that humans can learn from observing how others react in a situation. This is important because not only does personality affect internal beliefs but input from others does as well.

That is why marketing successfully can focus commercials on a segment of a market to reach people with the same beliefs. This common strategy is called market segmentation [22]. Perhaps one of the most famous examples is how Coca Cola marketed Cola Zero to men after Diet Coke had been stamped as a feminine drink for weight loss which kept men from buying it. It can easily be overlooked, but marketing heavily influences how we think and choose to consume products.

## 3.4 A Brief History of Video Games

Market segmentation was done in the early 80's when the home computer first entered the market. The computer was initially used to play simple games, and marketed as boys' toys [25] [26]. Families were more likely to buy a computer for boys than for girls, and some argue that this is why modern computer science has been dominated by men ever since, which includes the game industry [27].

A game designer who worked in the field during the early era of video games described the effect as vertically integrated companies, where games were made by young men, for young men and sold to young men [28]. One of the first companies to make video games solely for girls was the company Purple Moon, where the designers focused on addressing young girls' needs and issues by using character representation, and situations from a girl's perspective. Purple Moon's first games were "Rockett's New School" and "Secret Paths in the Forest". Another game that became popular was "Barbie Fashion Designer", although it was a little counter-intuitive to what Purple Moon was trying to achieve, according to the creator of Purple Moon [28]. Common for all three games was that they were aimed towards girls with no computer experience, by relying on already socially accepted concepts for girls, like relations, friendship dramas and fashion. All games have more lately received critique for being stereotypical [29]. Purple Moon defended their games by claiming that they were solely based on the girls wishes.

Using socially accepted concepts might not have been a total awful tactic for introducing new players however. A study by Carr et al. [30] about girls' preferences in games showed that already popular franchises could be used as a gateway to explore games with other attributes than the player had encountered before.

One example would be choosing a Harry Potter game due to the lore but in the game the player also learns how to use potions and spells. Picking the next game can in turn be based on the game mechanic of using potions and spells.

### 3.5 Gendered Gaming Preferences

The research by Carr et al. [30] introduced in the previous section identified game preferences among girls. The test took place at an all girl-state school in United Kingdom at a lunch-break games club. The girls were given different consoles and PC:s with games from different genres and their actions and attitudes were observed during one year.

One of the key findings was that gaming preference mostly relate to access and previous knowledge and recognition of attributes in a game. The girls in the study were likely to either choose games where the story was already familiar, like Harry Potter and Lord of the Rings, or games where they recognized game mechanics or genre. By seeing others play, interest to the specific game would also increase. When choosing a new game, they would first judge it by its cover but if the game-play failed to satisfy, it would quickly be discarded.

It was also found that players acquire knowledge about games according to patterns in their social contexts. In the study, it was confirmed that gendered tastes exist but that it was shortsighted to separate that from other parameters, like beliefs in the society.

The result of the study could make it valid to question other research about girls and gaming. For example, one study stated that the most popular video games value victory over justice, competition over collaboration, speed over flexibility, transcendence over empathy, control over communication, and force over facilitation [31], and further claimed that girl's did not value such games.

The study by Carr et al.[30] showed no evidence of these parameters being more attractive to boys than girls. One of the most popular games among the girls was the fighting game Dead or Alive 3, and fighting games in general became the most popular genre.

One explanation to these results can be found in a study by Nick Yee [32]. The quantitative study measured motivational factors among 140,000 gamers, and found that competition, in terms of competing with other players in player-vs-player scenarios, is the motivational factor that descends the most with age. There is a motivational gap between genders among young players, but the descending curve is steeper for male players. By the age of 45, there is no gender difference in competitive preferences. The motivational gap between young female and young male players is also smaller than the difference between the youngest and oldest male players, making age a more prominent factor to competitive preference than gender.

Another study which purpose was to examine gendered design preferences, not only made a distinction between female and male players, but also core and casual [13]. The study was performed as a questionnaire with a Likert scale and the interaction between

the groups was statistically evaluated. The results showed that game preferences of male core, male casual and female core players where generally in line with one another, whereas preferences of female casual players differed significantly. The authors argued that a possible explanation could be that the male casual players were more experienced with the gaming technology because of cultural boundaries that had limited women to engage in gaming activities.

This reinforces the previous research about how knowledge about game mechanics affects preference more than other things.

The findings from Vermulen et.al on gendered, core or casual opinions, relating to specific game attributes, are summarized below.

**Perception of violence** Women are less attracted to in-game violence than men. Also, experience with core games has a moderating effect on gendered preferences of violence. So female core players are more okay with violence than female casual players, and male core players had the least problem with it. However, the assumption that women dislike competition was not supported.

**Complexity** Women are generally less attracted to complex game play than men. However, if the player is core or casual also determines the level of complexity.

**Sexual representation** Women are overall more annoyed than men by sexual representations in characters. However, it was very important that the character they were controlling was attractive.

**Avatar customization** Men are more interested in exploring different game characters. But overall, differences between gender depend on the level of experience with core games. Female core players are the most interested in customizing their avatar, and it is important for women in general to play with a character of their own sex.

**Game setting** A fantasy game setting seem to appeal most to female core players. But there was no evidence of general gendered preferences.

**Social interaction** Social interaction are more important to core players than casual players.

**Narrative elements** It seems like female casual players enjoy humoristic games, while female core players are the opposite. Male core players prefer rich story-lines, and female casual players are the opposite.

## 3.6 Three Major Discussion Waves about Gender and Games

The research that has been mentioned in previous sections can be split up in three major waves of conversations about gender and games, according to Yasmin B. Kafai professor of Learning Sciences, and expert in Computer Science, Learning Science, Equity and Diversity, and Serious Gaming. She have organized conferences about gaming and gender since the nineties and written three books on the subject since [33].

The first which happened during the early 2000's focused on how game features included narrow gender stereotypes, like the Barbie and Mortal Kombat games, and how very few games were marketed towards girls and female, and women not being part of the production of games [31]. Overall, the first tried to identify sex and gender differences in playing, participation, experience, and thematic difference in skill and interest.

The second wave was investigating the sociocultural context and to understand women who do play games [34]. Games changed to be more about real life scenarios and social dilemmas, and some games altered design themes and focused on marketing to be more inclusive. Examples of a game from the second wave was the one's by Purple Moon, mentioned in the previous section.

But the third wave, which is more recent, from 2016 and forward, is how game culture is heading toward intersectional concepts, and more nuanced experiences across gender [33]. This includes understanding and defining what gender actually means. Gender, as described

in the book "Diversifying Barbie and Mortal Kombat" is to involve active decisions that are always in a state of change, and determined by a multitude of things like race, class, age, peers and context. Hence, what defines a "girl gamer" and "what girls like to do" are compiled expressions with loss in quality and precision, and not an accurate way of addressing the problem. This is because the expressions are not neutral but rather involves the person acting in the world as part of a very complex identity. Therefore, designing for girls misses the point, because then, only one context in which girls are girls have been examined [31].

## 3.7 Flow in Game Design

The concept of flow describes a mental state where a person becomes totally immersed in a task [35]. It is unusual that flow refers to passive tasks, it is more often achieved when a person stretches the body or mind to its limits in order to accomplish a goal. During these moments, humans often feel a deep sense of enjoyment which is called "optimal experience".

Flow, or optimal experience, is a key factor in game design [36]. The player has to get an optimal gaming experience for wanting to play the game. This is achieved by matching the skill of the player with the right challenge, see Figure 1. If the skill of the player is lower than the challenge, it will result in anxiety. If the situation is the opposite, it will result in boredom.

The game should however not wrap the experience around the player. Preferably, the game should allow players to pick their own levels, or let players pick a game-mechanic or ability that suits their skill [36].

The illustration shows the player "A" during four different states. If an experience of flow once has occurred and the player then diverges from it, the player will do what it takes to get back into the flow state.

As long as the game provides the tools to adjust the level accordingly, the player will take care of staying within the flow chart.

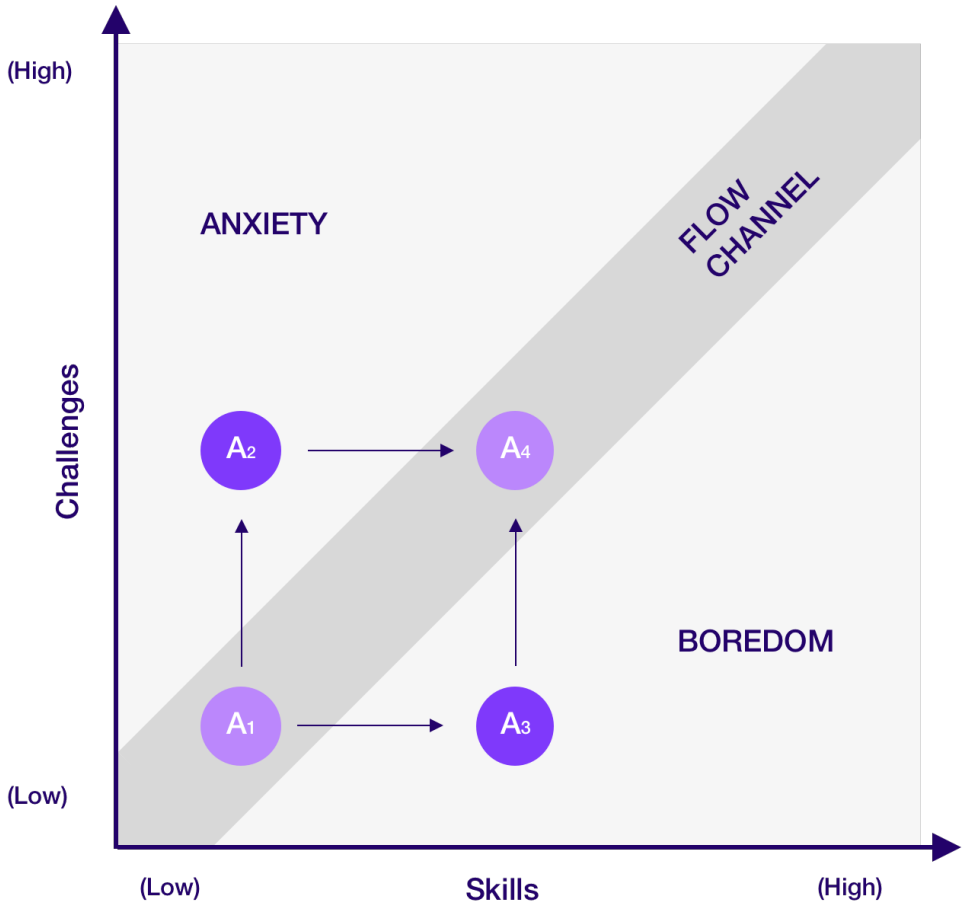


Figure 1: Flow: The Psychology of Optimal Experience

### 3.8 Games User Experience

Traditional User Experience (UX) is about meeting user needs and provide a seamless interaction with the company, its services, and its products [37]. A key aspect of UX is usability. A product should be easy to learn and to master, and there should be no obstacles in the interaction that block the user from achieving a goal, this make learnability and efficiency key aspects to usability. User satisfaction is also one of the main usability criteria. Traditional UX will make sure the application, website or whatever feature is designed, is pleasant. However, user satisfaction is only a small part of the complete experience. In most cases, users do not visit the feature for the sake of having fun or enjoyment, but rather for a primary goal.

Games User Experience (GUX) is much more about the criteria of user satisfaction than traditional UX [38]. A user will play a game because it is enjoyable or fun. Which makes GUX primary goal to design a fun experience. An efficient game would lead the player straight to the goal, provide the easiest tools to reach that state, and thus removing the notion of fun. A game with high learnability would also lead to boredom, like a puzzle game where all solutions were basically the same.

One criteria that contributes to a fun game is deep and robust game mechanics, which is how the player interacts with the game [39]. Game mechanics enables gameplay which is a game's rules, plot, objectives and challenges. Gameplay should be engaging so that the player is entertained, or at the least give the player an impacting and worthwhile experience. Quality in pacing and variety is another aspect that adds to a fun game. Pacing refers to the tempo and rhythm of levels and how the gameplay events flow, they should also vary so that the player does not get bored. Artificial rewards that are motivating are also essential.

A player needs to get recognition and reward for a good performance. It is okay for the gameplay to be challenging, but the user interface should be intuitive for the same reasons as traditional UX. Lastly, the overall user experience will need to be polished. A game with bugs or flaws will be noted by users and discarded.

### 3.8.1 Gamer Motivation Model

There are 12 Motivational factors in games according to Quantric Foundry that have developed a Gamer Motivational Model based on empirical research [40]. These 12 motivations can in turn be clustered into six main categories: action, social, mastery, achievement, immersion and creativity. The motivations are described more thoroughly below.

**Action** Players who score high on action like aggressive play and to be surrounded by chaos, while players who score low enjoy slow and calm games. The action motivational category in turn consists of destruction and excitement. Destruction refers to explosions and guns while excitement is more about a fast pace, intense gameplay and a constant adrenaline rush.

**Social** Players who are motivated by social aspects of a game enjoy interacting with others by either playing with or against them, and players who are not motivated by social prefer solo quests and independence. The social component can be split into competition and community. Competition excites players who want to compete in duels or PvP-scenarios, and also includes being acknowledged as someone with high rank or level. The community aspect is more about socializing and collaborating, and keeping a social network.

**Mastery** Players who enjoy mastery, like challenging, complex and strategic game modes, while players who score low on mastery like forgiving and accessible games. Mastery can be split into completion and power, where completion is about finishing a game, getting achievements, collecting all cosmetic items and completing all levels. Power is about becoming as powerful as possible, collecting tools and equipment to become the strongest and maximizing stats.

**Achievement** Men are more interested in exploring different game characters. But overall, differences between gender depend on the level of experience with core games. Female core players are the most interested in customizing their avatar, and it is important for women in general to play with a character of their own sex.

**Creativity** Players who score high on creativity like to experiment with the game and design their own worlds. Players who score low accept the game as it is. Creativity can be split into discovery and design, where discovery is about exploring game worlds and design is about expressing their identity and to design their own creations.

**Immersion** Players who want to be immersed in the game world value good narrative, characters and settings. Gamers with low immersion score are more grounded and value gameplay mechanics. Immersion can be split into fantasy and story. Fantasy is about becoming someone else in an alternative world. Story is about elaborate campaign storylines and characters with interesting back-stories.

## 3.9 Gamification

Gamification has been a buzzword for the last couple of years, and the technique has been popular among non-gaming businesses that applies gamification to non-gaming contexts. For example, the coffee shop Espresso House use gamified elements in their app, like collecting badges to earn a bonus. RunKeeper is another app which purpose is solely based on gamifying running sessions. To systematically add game-like features to non-gaming contexts has long been the common view of what gamification is. But a more recent and experimental definition has evolved. This definition is ”a process of enhancing a service with

affordances for gameful experiences in order to support users' overall value creation" [41]. This definition is agnostic in defining the core service being gamified. Thus, it means that elementes in a game itself can be gamified.

But why gamify something in the first place? Depending on how gamification is applied, it can increase either short-term or long-term motivation, also known as extrinsic and intrinsic motivation [42]. Extrinsic motivation can be triggered through giving the player external rewards, like free coffee, money or achievements for completing a task. If a user's extrinsic motivation has been triggered, it must continually be nourished, meaning that the user will be stuck in a reward loop. A more meaningful way to encourage behaviour is through building intrinsic motivation. Instead of providing rewards for behaviour, designers can provide ways for users to find their own reasons for engaging with a task. It is not possible to combine reward with long-term motivation as it has been found that extrinsic reward inhibits intrinsic motivation [43].

The professor, Scott Nicholson, has by researching game design brought forward what he calls a "Recipe for Meaningful Gamification" [42]. This includes: Play – Explore and fail within boundaries, Narrative – allow the player to see the relationship between the past, present and the future, Choice – The freedom to choose what to interact with, Information – providing the player with the "why" and the "how" instead of "what was done" and "how many points is it worth", Engagement – Social engagement and the creation of an engaging gameplay experience, and finally Reflection – Creating opportunities for players to step back and think about their gamebased experiences.

Furthermore, using game design to increase long term motivation can be seen as a journey of keeping the player in the game for life. The ultimate goal of the journey is then to entirely remove the gamified elements. This is why meaningful gamification should be thought of as a way to bring about lifelong change.

# 4 Design Thinking

This chapter shortly introduces the framework called Design Thinking, that was followed in order to carry out the work in this thesis. Various techniques were used within the scope of the framework, but they all emanated from a user-centric approach to problem solving.

Since Design Thinking is an iterative process, all decisions made during the process were based on preceding steps. This meant that the natural order in which to present the work would be the same as the chronological order in which it was executed. Therefore, the following chapters will contain each part of the design cycle, presenting the methodology and results specific to every chapter.

Design Thinking can be interpreted in many ways. A common view is that Design Thinking is a non-linear and flexible way to design. The CEO of IDEO, Tim Brown, describes Design Thinking as a way of seeing the world where constraints should be approached in a holistic and interdisciplinary way, which inspires innovation [44].

But the framework that was used as reference for this thesis, is The Institute of Design at Stanford's interpretation of Design Thinking [45] [46]. It describes a more hands-on process, explaining which methods to execute and when. Although the design cycle contains six steps, each step can be performed in an order that makes the project evolve naturally. This means that feedback from the prototyping can lead to new ideas or new ways to empathize with the users, see Figure 2.

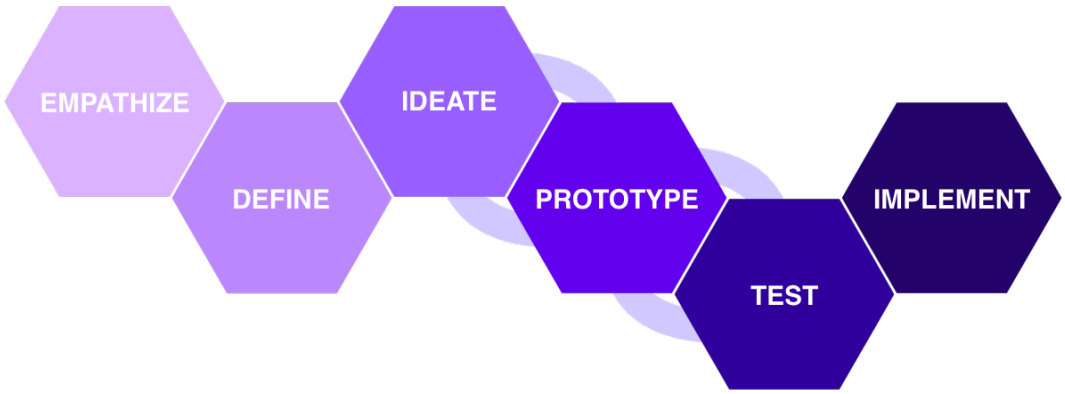


Figure 2: The steps in Design Thinking

**Empathize** Research within the *empathize phase* is conducted with the aim to gain knowledge about users within the context of the design challenge. Empathy is the cornerstone of any user-centered-design process. Empathizing includes all the work about understanding the users; like the "how" and "why" in user behavior, their physical and emotional needs, how they think about the world and what they find meaningful.

**Define** Transitioning from empathy work means that a lot of information needs to be processed. This is done in the Define phase, which is about making sense of all the gathered information. All that was learned about the users are dissected to understand where the problems of the users exist. Making sense of the data will grow insights. Even more clarity can be brought to the design space by framing the design challenge further by determining the specific challenge to take on, called a point of view (Point of View). Pinpointing the users' needs also simplifies the transition to the *ideate phase*.

**Ideate** During the idea generation phase, focus lies on generating ideas and solutions to the specific problem identified in the *define phase*. This phase relies on the Point of View from the *define phase* to have a reasonable scope and a clear phrasing, so that the brainstorming topics stays within the scope of the POV. But it is also a process of

exploring new concepts and outcomes, where quantity is valued higher than quality. Ideation provides the foundation for prototyping.

**Prototype** To keep the innovation potential that was achieved in the *ideate phase*, the process on deciding what idea to prototype should be done through considered selection, where a few ideas are brought forward into prototyping. The aim is to understand which ideas work and not, also in terms of impact vs. feasibility. The *prototype phase* is an iterative process of developing artifacts that brings the project closer to its final solution. In an early state of prototyping, artifacts should be cheap to produce, but good enough to receive feedback from users or employees. In a later stage of prototyping, the artifacts can become more defined and detailed.

**Test** Prototyping and testing are performed almost interchangeably. They are one entity more than something to transition between. The extra step that testing brings is that it requires planning and executing a test scenario. Simply putting a prototype in-front of a user seldom results in honest and natural feedback, therefore it is important to know how and when to perform tests. The test phase is an opportunity to learn about the prototype in relation to the users. It is also an opportunity to gain more empathy with users but the feedback will be more focused this time. A golden rule is to build prototypes with the aim to produce a masterpiece, but always test as if it was not. This allows to refine the solutions and continuously improve them. The best way to test is as close as possible to a real context of the user's life, but if that is not possible, a scenario should be created to capture the real situation and make the user role play it when approaching the prototype.

**Implement** Implementing is not a part of Design Thinking according to the Institute of Design at Stanford. But according to Nielsen Norman Group, Implementing is the most forgotten and most important part of Design Thinking[]. Don Norman himself states that "we need more Design Doing". Furthermore, Milton Glasser argues that creativity is such a long and difficult thought process of realizing an idea that it feels like work[]. But making sure the solution reaches the end users and that the solution is put into effect, is the most crucial and important step. No matter how much impact Design Thinking can provide for an organization, it only leads to true innovation if the vision is executed.

# 5 Empathize

This chapter contains the methods used to empathize with the potential users. It does not include a result section since the findings from the literature study were presented in the theory section and the result from the interviews were processed in the define section.

## 5.1 Method

The *empathize phase* was performed using a literature study and interviews. The purpose of the literature study was to assess female player behavior and to gain knowledge from previous research about gaming and gender. The purpose of the interviews was to understand emotion behind behavior.

### 5.1.1 Literature Review

To gain knowledge about a variety of fields that related to gaming and gender, a literature study was performed [47]. This was to get an understanding of how users behave and how parameters in our society influences behavior.

Information about gender and games was gathered from blogs, websites, info-graphics and articles, and the databases used to search for research-articles was Google Scholar and Scopus. The information about marketing was gathered from an Oxford textbook.

### 5.1.2 Interviews

Interviewing was chosen as a method because of its advantages in evaluating a subjects attitude towards something [48]. The participants were female players that frequently played the games Overwatch and/or Fortnite. The goal was to measure the subjects beliefs and get an in depth understanding about parameters that enhanced their gaming experience. Also, their previous knowledge and how they first decided to play Overwatch and/or Fortnite was of interest. Observations from their early experience was important as well.

The interview format was semi-structured [49], which combines structured and unstructured interviewing techniques. The semi-structured format was used since both techniques had advantages that could be utilized, like structured interviewing being easy to review and prepare, and unstructured interviewing giving a broader and deeper perspective. The interview was prepared with a series of predetermined questions but answers had no response categories. The questions were as open as possible to not bias the subjects. Follow-up questions were also asked and emphasized on the subject's emotion. The interview can be found in the appendix.

Recruiting was done in the Swedish Facebook community "Female Legends" whose member base consists only of female and trans people who play a variety of games. The goal was to perform at least five interviews with Fortnite players, and five with Overwatch players. The interviews were carried out using Video Calls using Skype or Discord, to be able to record the sessions. Sessions were then fully transcribed. Each session lasted between 15 and 30 minutes. A small gift was offered as a gesture of gratitude to the participants, Fortnite players received a physical mail with chocolate and one "Trisslott". As Overwatch offers in-game gifting, players received two "Lootboxes". Recruiting and performing the interviews were done in accordance with ethical guidelines [50].

# 6 Define

This chapter presents everything related to the define phase. This includes the methods used to dissect the information gathered in the previous chapter, and the associated results.

## 6.1 Method

This section describes the *define phase*. It involved combining and grouping ideas from the material gathered during the *empathize phase*. The methods were performed according to the Interaction Design Foundation Blog [51]. The first method was Empathize Mapping which was chosen to understand and prioritize user needs, and to extract valuable data from the interview transcripts.

A competitive analysis was also performed according to Danforth Media [52]. to understand how graphical elements, UI and style in Edge of Combat differed from the games that female players seemed to appraise. A competitive analysis is preferably conducted early in a project therefore it was conducted during the *define phase*.

### 6.1.1 Empathy Mapping

The purpose of empathy mapping was to make sense of the user-interview transcripts. It ensured that the user opinionated data could be translated into a denser form, without getting a biased result or cherry-picking the "right" answers. The method helped getting all information structured and onto a single space, which made it easier to see emerging patterns or things that stood out. This was the beginning of the synthesis process, which later led into the *ideate phase* [51].

The empathy map was made in the software Mural, and consisted of a framework for how to organize post-its. The structure mainly followed the same pattern as the interview. The first step was to determine what content to present on the empathy map. The empathy map consisted of the following sections:

**Situation** The situation in which the user-reactions took place was defined.

**Persona** Two personas were partly created; only their primary game (Overwatch/Fortnite) was defined in this stage. Each persona were given four fields: an avatar, demographic and psycho-graphic details, behavior and actions, and needs and pain points.

**Experience Map** The personas had one experience map each. The experience maps consisted of a grid structure to which post-its were sorted later in the process. Stages were defined and were displayed on the x-axis of the grid. Stages would be the different areas that the interview-subjects had been asked to comment on, like "choosing the game" or "character customization".

The y-axis had four categories that were pre-established in the template, these were steps (initial thoughts and actions), good and bad feelings, pain points and opportunities.

The second step was to fill the empathy map. While reading through the interview-transcripts, post-its were filled out with the participants thoughts, opinions and observations. Then they were clustered with similar notes and aligned to the most fitting place on the map. This way of structuring the data made it possible to see patterns and what stood out.

### 6.1.2 Point of View - Problem Statement

Another important piece in the *define phase* was the Point of View (POV) [53]. A Point of View can be described as an actionable problem statement. It built on insights gathered during the research and *empathize phase*.

The purpose of the POV was to narrow down the design challenge in order to address the right problem, and to ensure that the ideation session that followed was carried out in a goal-directed manner.

The POV was created by extracting a representative user, needs and insights from the empathy map. The information gathered about the user, the needs and the insights were then inserted in the following sentence:

**[User...(descriptive)] needs [Need...(verb)] because [Insight...(compelling)]**

### 6.1.3 How Might We

To make the transition into the *ideate phase*, How-Might-We (HMW) questions were articulated by using the POV. The questions were all subsets to the main problem statement, and their purpose was to open up for problem solving and solutions by framing the user's (female Overwach and Fortnite players) needs and pain points into questions.

The "How" suggested that the answers were yet unknown, the "Might" opened up for a various set of ideas and the "We" was an invite to a collaborative approach to problem solving.

The HMW questions served as support for the *ideate phase* about which fields to focus new ideas on, and to answer the correct questions. The limit was five to ten questions per POV.

### 6.1.4 Competitive Analysis

A competitive review of the two games Overwatch and Fortnite was executed as the final part of the *define phase*, and was performed in accordance to Danforth Media [52]. Only graphical elements were compared, hence the assessment criteria was limited to characters (representation & customization), UI (symbols, buttons and text) and game setting.

The purpose of the competitive analysis was to reveal problems in Edge of Combat that could prevent or discourage female players to engage in the game.

## 6.2 Result

The results from the *define phase* are presented in this section. It includes the empathy map, point of view, how might we questions and the competitive analysis.

### 6.2.1 Empathy Map

The empathy map was created according to Mural's Empathy Map template. The map's results are presented in this section and includes a definition of the situation, two personas, two experience maps and their stages.

**The situation** A female players view on playing Fortnite or Overwatch.

**Persona 1** The female Fortnite player, see Figure 3.

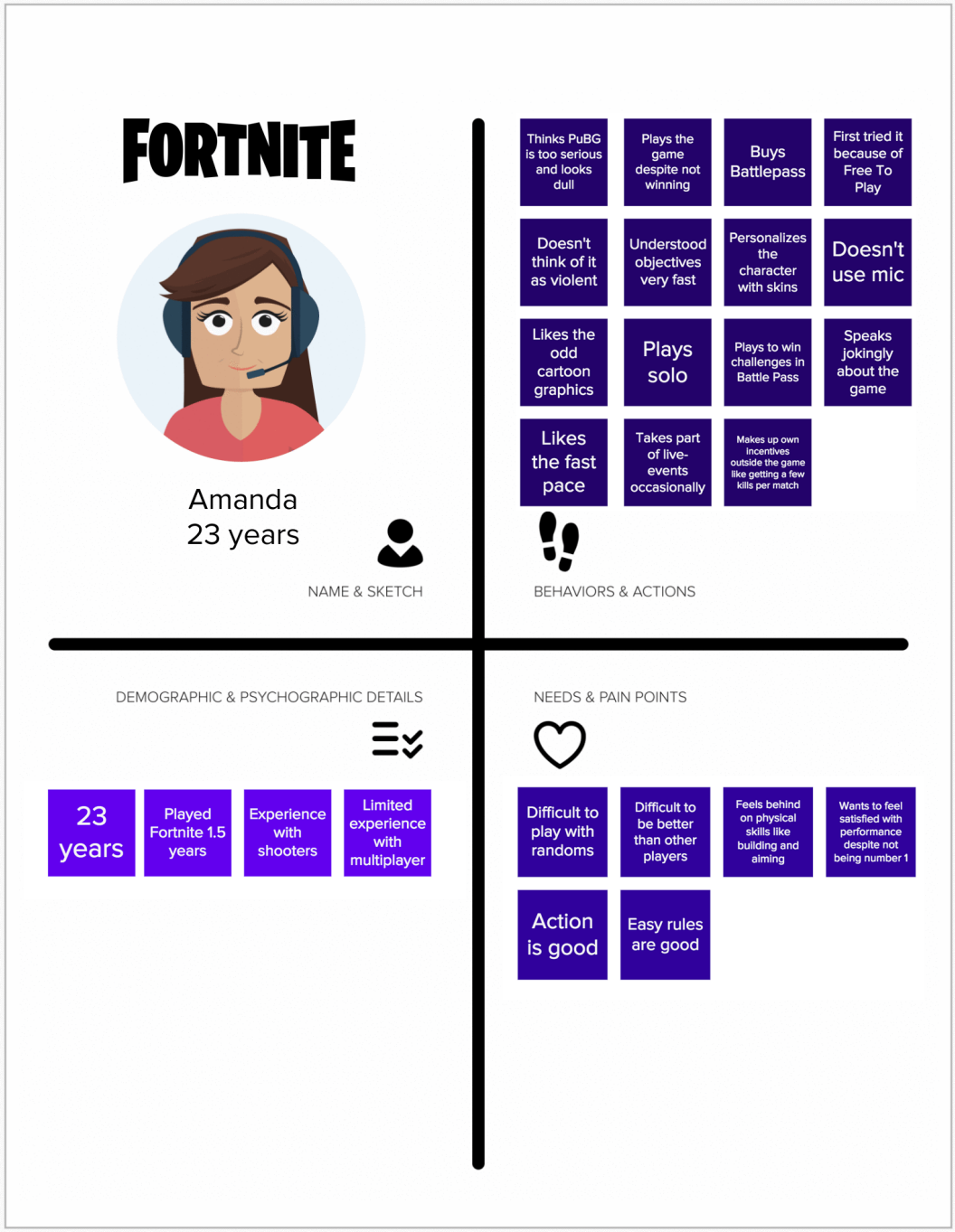


Figure 3: The female Fortnite player persona

**Persona 2** The female Overwatch player, see Figure 4.

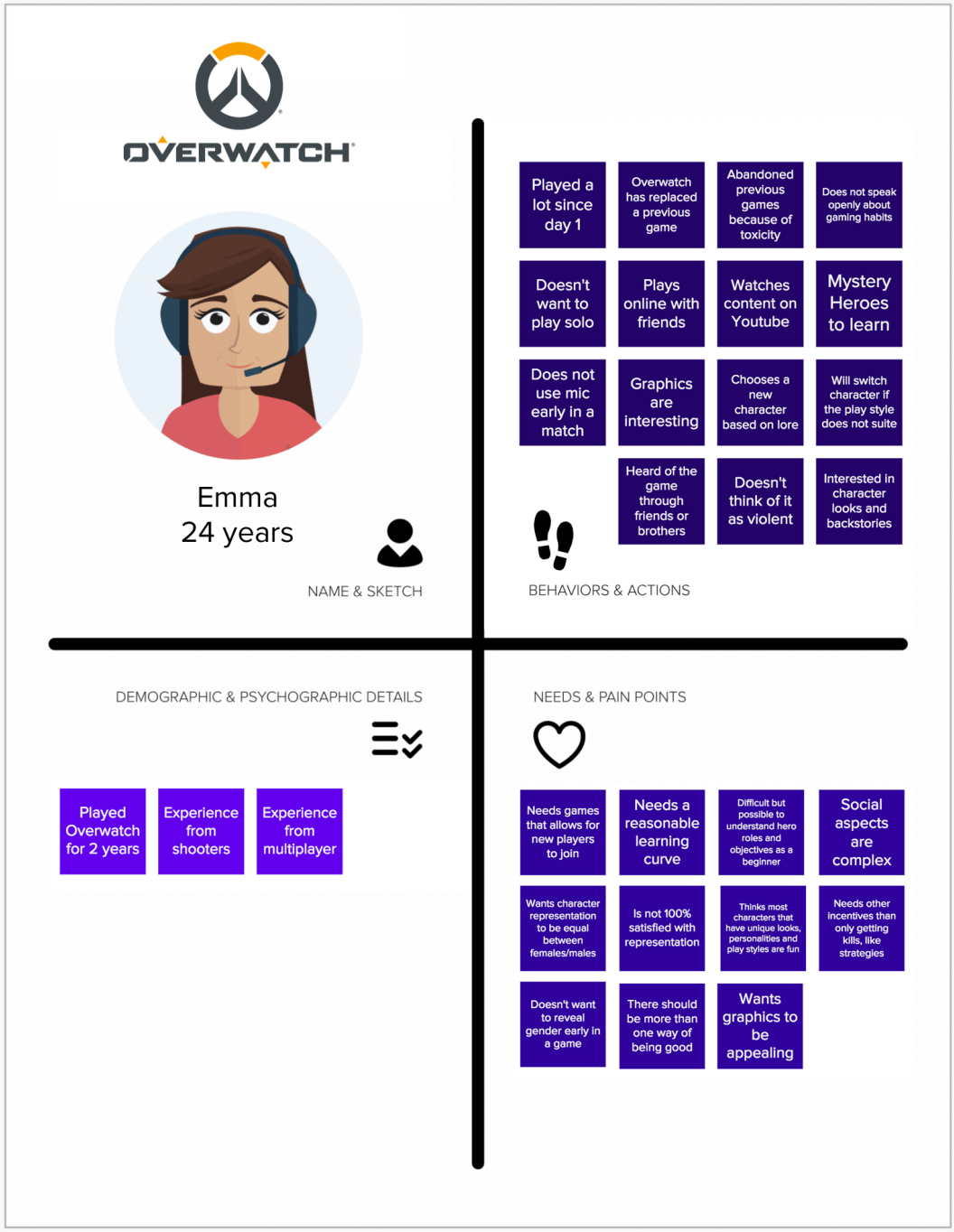


Figure 4: The female Overwatch player persona

**Experience map - The stages**

- Choosing the game
- Female Gamer
- Violence
- Complexity
- Character representation
- Character customization
- Game Setting
- Social Interaction
- Narrative Elements

An overview of the two experience maps is shown below, see Figure 5.

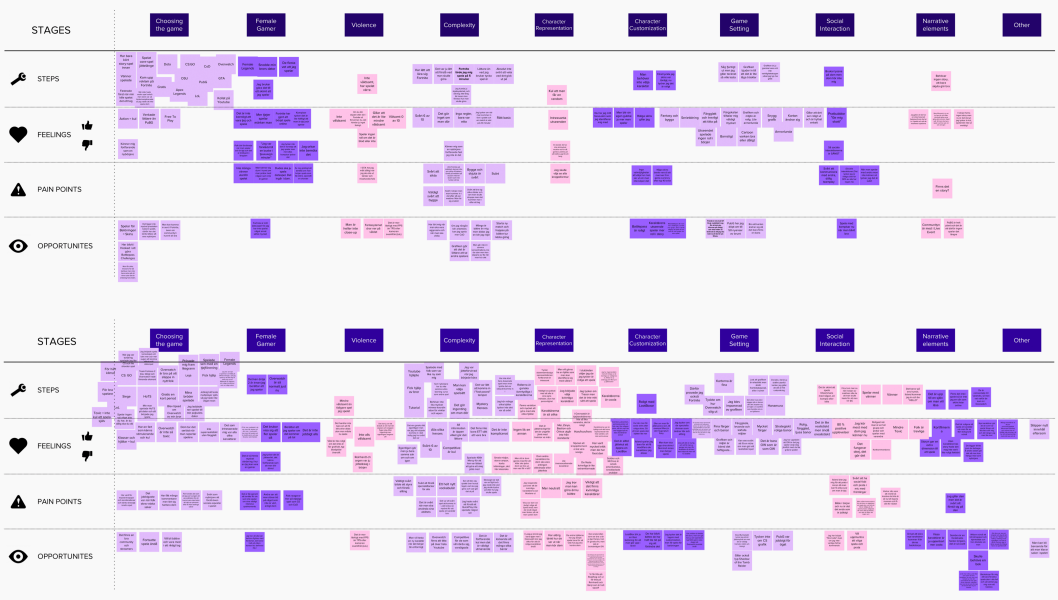


Figure 5: The image presents one experience map for each persona.

### 6.2.2 Point-of-View

The empathy map combined with the findings from the literature study helped define the user, need and insight required to construct a Point of View (POV).

**User** A female player who has tried a few multiplayer and/or shooter games before.

**Need** To perceive the game as available and appealing to the eye.

**Insight** The user has some experience with shooters and/or multiplayer's. She is most likely to try out a new game based on word of mouth advice about alternative games from relatives, friends or a partner who plays games. She will however judge the game herself.

She does not think that being a female gamer is weird but notices that others can be surprised or judging.

She does not necessarily associate shooters to violence, but she thinks a lifelike environment can be more unpleasant in that violence becomes more real.

She prefers games with an unrealistic setting because it lowers the expectations of other players skill. She also likes when a game provides open information that demands low memory coordination, and which in turn requires less experience and training. She wants a reasonable learning curve and more than one way to be a good player.

If the rules are simple and the game seems appealing she will try it herself, otherwise with friends who play. She will use guides like in-game tutorials, YouTube-videos or experienced friends to improve. She will not choose a game she perceives to be too complex. She feels that it is hard to be better than other players but can be okay with that if being good is not only measured in number of kills, she wants more than only one way of being good. She values competition but winning the game is not the only aspect to whether she thinks she does a god job or not.

She wants to play characters with unique identities and abilities, not to identify with the character, but because the option to play a character with personality is important. Character representation is also highly important, she will be annoyed by stereotypical looks but also values attractiveness. If character customization is available, she will use it to give the character more identity. She likes skins that change the character completely.

She enjoys the colorful environments and is generally not appealed by dull colors, unless the game setting is very niche. She likes to participate in annual events, when skins or maps are modified.

She will be more careful with social engagement when she is not playing with friends. She will abandon games if the environment is toxic and if communication is essential to the game.

She will engage in most of the available lore, as she thinks it gives the game and characters another dimension, and she likes how backstories give incentive to explore new characters.

**POV** A female player with moderate gaming experience need to perceive the game as available and appealing because she will choose a game according to previous beliefs and knowledge.

### 6.2.3 How Might We...

The following How Might We questions were articulated from the POV. How Might We...

- ... make multiplayer and shooters perceived as available for female players?
- ... make game mechanics more familiar?
- ... provide unique and diverse characters?
- ... ease the learning curve?
- ... make graphics and style appealing to female players?
- ... make sure that players who join late can keep up with the game?
- ... create available lore?
- ... get players with low skill to feel competent?

### 6.2.4 Competitive Analysis

Both Overwatch and Fortnite have been designed with much focus on usability, the analysis could therefore work as a guide on what to strive for in Edge of Combat. Overwatch and Fortnite were not flawless however, and in some aspects the analysis could also highlight areas that need further improvement, thus enabling Edge of Combat to leap ahead.

Overwatch has 29 heroes with set abilities. They differ in gender, looks, nationality, skin color and some are animals or robots. Men and women are represented differently, where it is common for male characters to have clothing covering their face, whereas more females show face and body to a larger extent. Characters in Fortnite lack abilities, and therefore only two characters exist, one female and one male. They have mainstream and stereotypical looks. The gender of the character is random before each game. In Edge of Combat there are four characters, two male and two female and the player chooses one in the beginning. The others can be unlocked with skill points which is a currency that is collected by playing the game. The characters have stereotypical and mainstream looks, they all have the same armour and weapons, but they are portrayed in different ways. The females have more skin, unusual hair and look tiny.

In both Overwatch and Fortnite, a player can customize their characters with skins, emotes/dances and voice lines, and other features. In Overwatch, a player receives such items through Lootboxes which is reward for reaching a higher level on the player's account. In Fortnite, customization is only available through the purchase of challenges, which in turn rewards the player with cosmetic items. Customization is not yet available in Edge of Combat, however, abilities can be upgraded through purchase, and weapons can be upgraded through Match-Cases which is received by playing the game, the same as Overwatch. See Figure 6 for details.

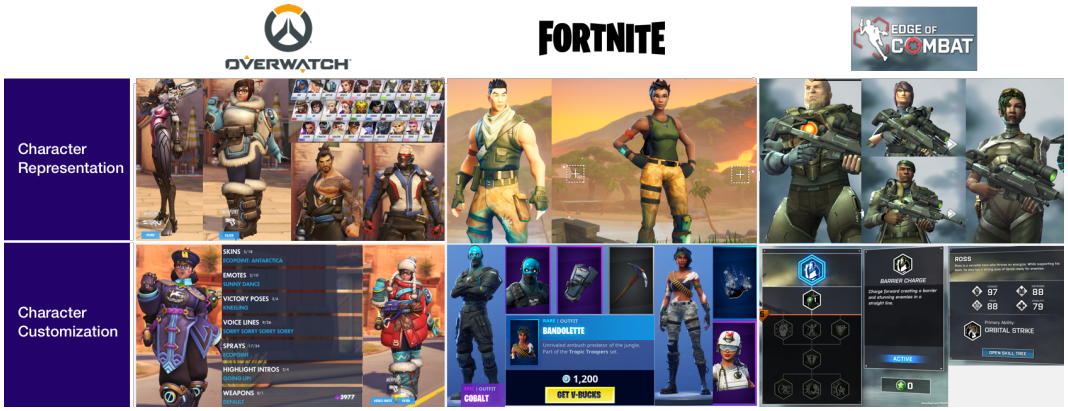


Figure 6: Competitive analysis of Character Representation & Customization.

Symbols in Overwatch are used sparingly. Text menus do not have additional symbols, the same goes for Fortnite. Edge of Combat uses symbols to a larger extent, in various menu's and to reinforce the intended meaning of text or events like getting a new Match-Case.

All menu-text and button-text in Overwatch are white, have capital letters and use one font with three different styles (regular, bold, bold/italic), the font has slightly rounded edges. Buttons are yellow, blue or transparent and are slightly rounded. The same color with a slight opacity is used as background color in menus.

Fortnite also uses white text as default, however active menu-items and the Play-button have black text. They have three fonts, and mix lowercase and capital letters between menus and items. Buttons are yellow, or opace grey. Some menu-items are dark-blue, have borders and a gradient.

Edge of combat also uses white text with a mix of fonts, sizes, capital and lowercase letters, styles like regular, bold, italic and shadow. Five different types of buttons exist, with

the colors green, red, blue and black. Active menu-items are yellow, others are transparent. Some menus are blue.

Color and graphical style in Overwatch do not reflect the real world, as the colors are vivid and saturated. However, the game has quite detailed graphics, placing the environment somewhat in between a realistic and unrealistic setting. Fortnite has even more saturated colors and less graphical detail giving it a cartoon and unrealistic look. The color setting in Edge of Combat differs between the user interface (UI) and in-game. The UI and characters have de-saturated colors and grey tones. In-Game, maps are more saturated than the UI, they also have detail, miscellaneous objects and dim lighting. See Figure 7 for details.

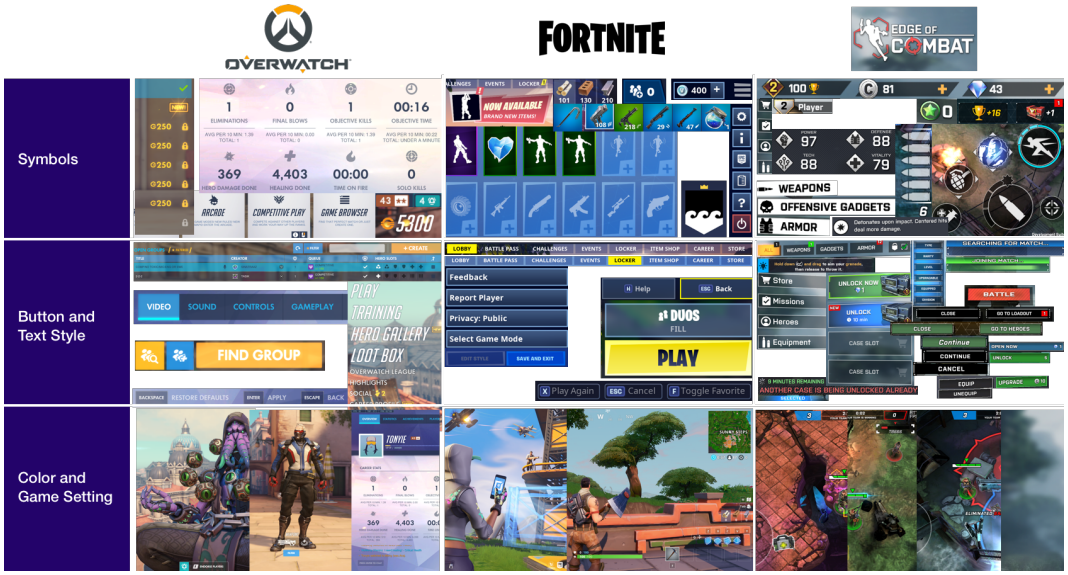


Figure 7: Competitive analysis of User Interface elements and overall style.

# 7 Ideate

This chapter contains everything related to ideation, the method and the result.

## 7.1 Method

The purpose of the *ideate phase* was to produce solutions to the POV that was constructed in the *define phase*. With a solid background about users and their needs, the ideation session aimed to generate a wide range of goal-directed ideas. The last step of the *ideate phase* was to decide which solutions to prototype. Ideation ensured that all needed materials to start building was in place before moving forward to the next phase - Prototyping.

According to The Institute of Design at Stanford, any ideation technique could be used as long it deferred the judgement of ideas. The technique that was chosen was Google Sprint's Sketch and Decide phase [54].

### 7.1.1 Limitations in Ideation

In October 2018, Level Eight considered a redesign of the graphical style in Edge of Combat. They had seen an increased amount of cartoon-styled games on the market and believed that it was a trend that could be worth joining; they thought that more people would download the game if it had an unrealistic game setting.

Cartoon styles also have advantages in game design compared to designing a realistic setting. The main gain is that a cartoon environment enables a larger design space. This means more creative freedom and room for error, as people generally have more expectations on how a realistic setting should look like. For a example, a realistic city where the designers forgot to add lampposts might look uncanny.

Level Eight produced a prototype of a cartoon version of Edge of Combat, and their publisher then performed a marketing survey on Facebook users in the form of A/B testing, with one cartoon and one realistic version of the game. The result of the survey was that Edge of Combat was 94% more likely to succeed with a realistic setting.

The survey could be critiqued in some ways, like the target group of Facebook users being the same for both versions (male 25 to 45 years old). The cartoon version was also advertised with a somewhat realistic background image. It is possible that the expectations for those who clicked the ad was not met when they discovered the content (cartoon). It is also possible that players who would click an ad of a cartoon game bypassed the ad as it was portraying a realistic game.

However, Level Eight trusted the survey and their publisher's advice, hence the limitation for this thesis was to not focus on the graphical style of Edge of Combat since the findings would not be of value to them.

### 7.1.2 Design Sprint

Two chapters from Google's Design Sprint was performed to fit Stanfords requirements of Ideation [54] [46]. First, the Tuesday chapter which involved idea generation and sketching was performed to come up with potential solutions to the POV and sprint questions. Then, the chapter Wednesday was performed which was all about decision making.

Both sessions were comprised in time, so that they would not exceed two hours. Apart from that, every step from Sketch and Decide was performed according to the book. This included finding a team of seven people with different occupational fields within the company, choosing a facilitator (myself), deciders and a scribe. The deciders were the head of the art-team and the head of the UI-team. They were chosen because they influence decision-making in the company, and also because their fields corresponded well to the subject of this thesis. Other members that were chosen was people from design, tech and prototyping. The gender distribution was two female and five male participants.

Since Google Sprint's Monday, mapping, usually involves the whole team, the team in this case somehow needed to be informed about the problem. This was provided in the first step, Sketch - taking notes. The team was given key information that had been compiled

during the *define phase*. This included the personas, competitive review, key-findings from the theory section and lastly the user, need and insight to create the point of view. A long-term-goal (Increase engagement among female players in multiplayer/shooters) was also articulated and presented together with the sprint questions and POV. Providing everyone with relevant background information and material helped getting the team in the same mindset and ensured that the direction of the design sprint were inline with previous work.

The goal of the session was to get at least one idea to carry forward into the prototyping phase.

## 7.2 Results Design Sprint

The Google Design Sprint ideation session resulted in seven ideas. One idea got the single most votes, four. However two very similar ideas had two and three votes each, and the most super-votes, making the combined vote count of the ideas a total of five. Thus, they were the most popular ideas, see Figure 8. The ideas to be carried forward into prototyping were therefore the two similar ones called Accolades.


Figure 8: The two sketches to the left were variations of the same idea, "Accolades". The rightmost sketch was "Daily Challenges".

Accolade means praise, reward or honor. It is an established concept that can be found in other games, for example Overwatch. The purpose is to acknowledge players for individual performance after a match. The accolade feature in EoC would be based on an algorithm that kept track of multiple parameters during a match, such as damage blocked, self healing, team healing, number of grenade hits, seconds on objective, team damage taken, percentage of kill participation, longest kill streak, and many more. It would then calculate what each player did best and present it along with catchy titles like Most Valuable Player (MVP) or Guardian Angel. Moreover, the accolade ideas from the sprint included game setting. This was as a post-game screen where the accolade titles would be displayed in relation to personal content, like character miniatures or banners, cosmetic items and equipment. Another feature in the scene was to positively endorse other players, by hitting a like-button.

The deciders in the workshop voted for the accolade idea with the motivation that female players seemed to value alternative ways of being acknowledged as a good player. Moreover, the accolade screen provided the opportunity for players to display how their character had been customized with skins, items or other personal details, which corresponded to that female players also seemed to appraise character personalization. The deciders also valued the idea because it exposed players to purchasable content. It can be noted that female core, male core and male casual players' opinions are generally in line with one another, so the opinions that were the basis of the decision were not necessarily exclusive to female players.

The remaining ideas were put in the maybe-later pile, see Figure 9. These included Daily Challenges, adding events and narrative to maps, a collection system for cosmetic items and an option of group up as a duos within a team of more players.

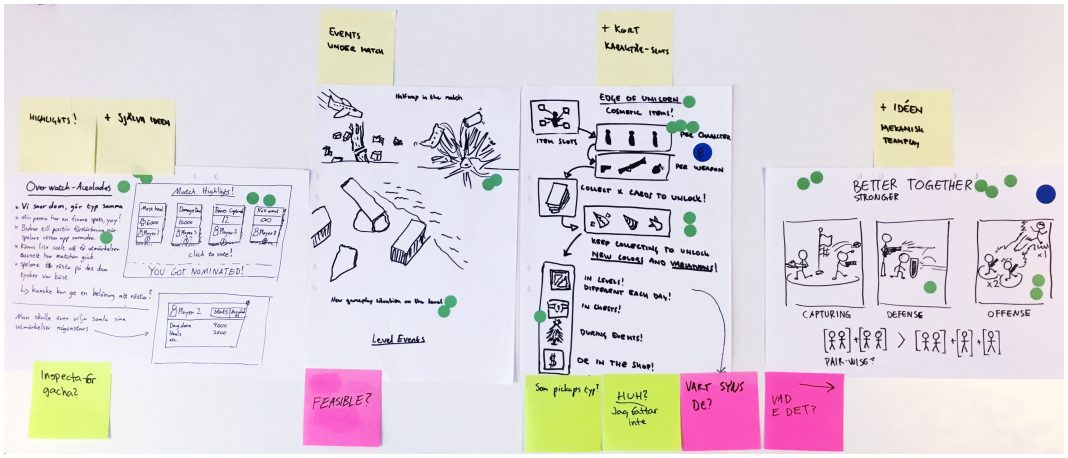


Figure 9: The sketches that received less votes than the winning sketches.

# 8 Prototype and Test – Iteration One

This chapter presents the first iteration of the prototype and test phase. The first section includes the prototyping and test methods, and the second section includes the results from each. During the first iteration, a variety of mockups were produced. Of the few that survived long enough to be brought into testing, only one mockup was finally selected and brought into the next iteration.

## 8.1 Method

This section includes the method used for prototyping (in the first iteration prototyping rather consisted of mockups rather than functional prototypes) and the method used to test the prototype.

### 8.1.1 Generating Mockups in Photoshop

Prototyping was performed in line with Level Eight's own process. Their methodology was to start making mock-ups in Photoshop with images of game objects, icons and menu-items from Edge of Combat, to assemble a somewhat realistic mock-up. Following Level Eight's way of working ensured that guidance to the software's were always within reach, hence Photoshop was chosen as the mock-up tool. All prototypes emanated from the feature that was chosen in the Google Sprint, which was the "accolade scene".

Creating mock-ups was an experimental phase, with the goal to produce a many and different versions close to the solution that came forward during the *ideate phase*. The mock-ups were shared with people with different areas of expertise within the company, to get feedback and input. The mock-ups then evolved, were re-constructed or rejected. A few guidelines to prototyping were used in the process. The first was to start building right away, using the concept "build-to-think" [46]. The second was to avoid spending too much time on one mock-up because emotional attachment to any one mock-up could hold back other possibilities. The next was to identify a variable that was being tested with each mock-up, so that each mock-up could answer a specific question. The last was to build with the user in mind, and to answer questions like what user behavior to expect.

One of the mock-ups that came forward during the building phase was then carried into prototyping in Unity to add functionality to it. The mock-up was chosen based on a decision from the Design Team at Level Eight.

### 8.1.2 Comparison Test

Because an iterative design process was used, testing was done at different stages of the product development cycle. This meant that prototyping and testing were performed in relation to one another; user tests were performed to evaluate the prototype before deciding on moving forward to another iteration. Goals for the upcoming iterations were set from the user test results.

The product development cycle was used as a reference for deciding what kind of tests to perform and when to perform them, see Figure 10. This meant that testing in the early stages had an exploratory nature for getting new ideas or to decide which ideas to develop further. Tests done in the middle of the *prototype phase* were more about assessing the quality and value of different features. Later tests were done to finally validate the prototype before taking it to implementation. Using the product development cycle as a pointer was beneficial in that the test methods could easily be applied to the iterative design process that was used in this thesis. But ultimately, test methods were chosen based on the research questions and what was hoping to be achieved with testing as well as limitations to how the tests could be performed. All tests involving people followed a guide by IDEO on how to conduct ethical research and user tests [50].

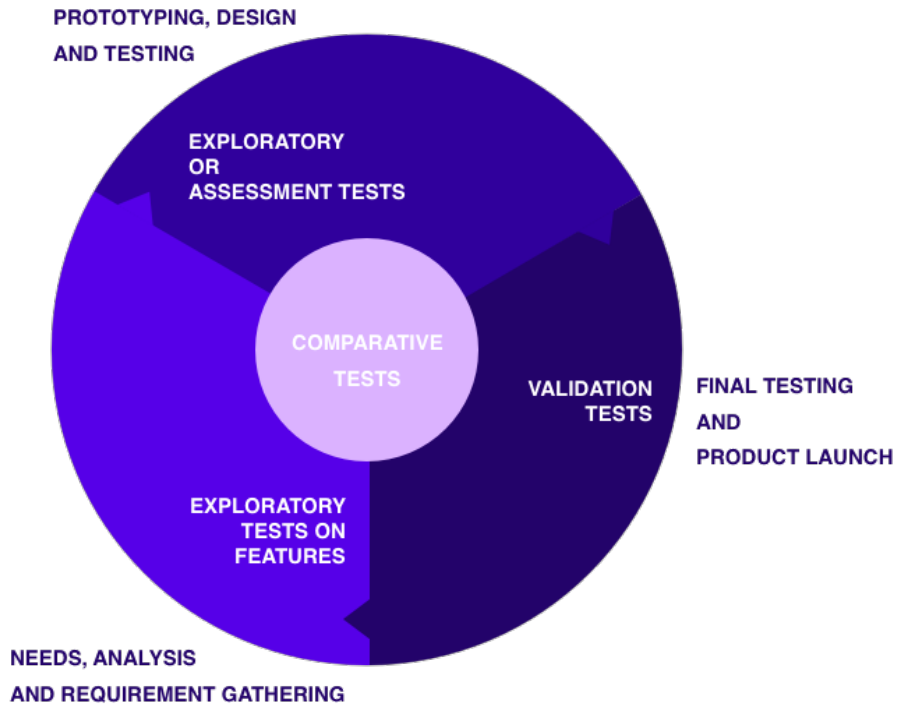


Figure 10: The steps in Design Thinking

The first tests were performed early in the development cycle, and had an exploratory, formative and informal nature. The testing took place when the product was still being defined and with the strategy "build-to-think" [46].

Comparison tests were performed throughout the mock-up generation in the *prototype phase*. Different versions of the same interface, the accolade screen, were compared to see which version had the biggest potential and how the usability of single elements and actions performed. The tests made it clear which advantages and disadvantages the different designs had, and which parts that needed further improvement.

Expertise within the company was used when performing the comparison tests. Using employees saved time and resources, and it ensured that a mutual agreement with the company regarding the feature's purpose was established. It also became a collaborative way of working towards a solution. This was advantageous especially for getting ideas on how the feature could be integrated into EoC, like determining its position in the chain of events after a match, what things it could contain and setting its main purpose.

Hence, initial tests were performed with employees at Level Eight. Apart from asking employees very informally on their thoughts and opinions about the UI, where to put a button or what size of an element felt more pleasant, one official exploratory comparison test was performed. The participants were from the Design Team of two people, one User Interface architect and one 3D-graphics artist.

They were presented with a set of mock-ups that all presented different solutions, this was to keep a creative and exploratory atmosphere to the session. Pro's and con's of each solution were discussed, and which solution to focus on further and implement was decided.

## 8.2 Result

All iterations of prototyping focused on designing and perfecting the feature that came forward in the ideation phase: the accolade screen. Although, the screen changed back and forth during the iterations, its primary functionality remained. The purpose and definition of the screen can be comprised to the following: an alternative or supplement to a traditional scoreboard, that increases intrinsic player motivation with meaningful layers of gamification.

### 8.2.1 First mockups

Over 50 artboards were created in Photoshop during the first week of prototyping. At this initial stage, the accolade screen was about inclusion and displaying cosmetics. The scene included all members of the friendly team, their characters, accolade titles and statistics, player names and icons, see Figure 11. The scene also presented the option for players to vote for one player in the team who they thought deserved to be acknowledged.

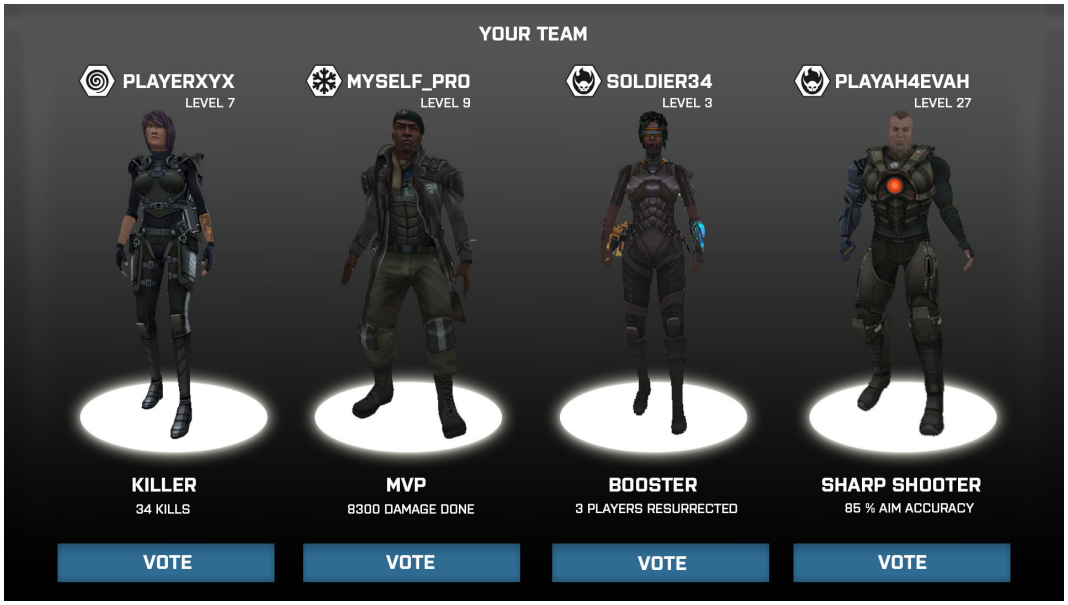


Figure 11: One of the first ideas was to present all members of the player's team in the accolade screen.

Another mock-up during the first iteration changed the way characters were displayed, by placing them inside cards. In this way, players could vote for a player by simply tapping the card instead of a distinct button that used up significant screen space, see Figure 12.

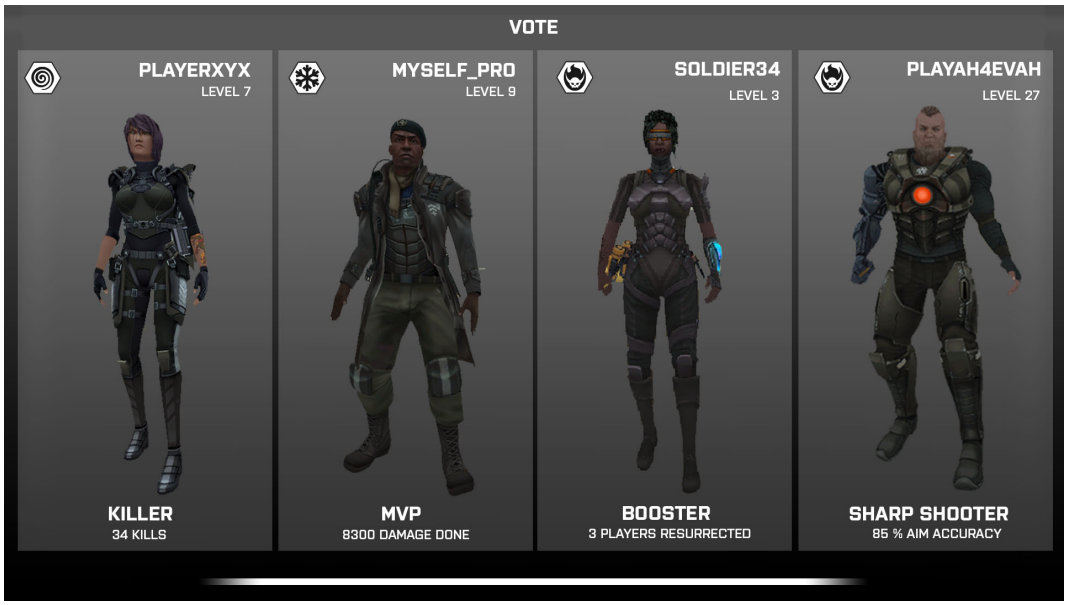


Figure 12: This was a rework of the previous idea, but players were displayed on cards instead of platforms to save screen space.

### 8.2.2 Testing Mockups Conclusions

What came forward from evaluations and discussions about the very first mock-ups:

- The average screen size was approximate to an iPhone 6/7, and thus, the miniature figures were too small too recognize detailed appearance. However, reducing the number of players to three would make it ”unfair” for the player who was not displayed. Another option would be to display players from both teams. That would also work in favor with the competitive nature of the game.
- Displaying the miniatures on cards instead of placing them on platforms could be advantageous for saving screen space as it would make the card itself clickable, thus being able to remove a button like ”Vote”, flipping the card or playing an emote or victory pose.
- The user interface was not appealing to the eye, as it looked dull, plain and too minimal to fit the overall graphical style of the game. Adding the red and blue team-colors to card backgrounds did not work either, as some planned skins were too close to those colors. Using more subtle pre-made character specific backdrops was therefore a better solution.
- Since Level Eight used the Gacha-method for monetization that focused on equipment or leveling up equipment for performance improvements, they wanted to remind the player of the gacha throughout the game. The gacha could be included in the accolade screen by adding an option to view what equipment the champions had, thus creating a desire for other players to get the same.
- Even with three miniatures, details were hard to distinguish. Therefore, screen space should be optimized for being able to increase miniature size. The vote-button which was fairly large could therefore be switched to a like-button.
- The accolade screen enabled a re-ordering of the other post-game screens like the scoreboard that was displayed along with an animation. It was suggested that the animation could be removed, and that the accolade screen could replace it, as well as partly replace the scoreboard. If the accolade screen was to be the last post-game screen, it did not have to consider transferring all players into the next state simultaneously. But if something would load afterwards, it would need to keep all players within the scene for a set time before loading the next state.

# 9 Prototype and Test – Iteration Two

This chapter presents the second iteration of the prototype and test phase. Similar to the first iteration, this chapter includes the methods for prototyping and testing, and their result. In the second iteration, the prototype was built with some functionality which enabled the prototypes to be tested with real users to measure both the value and the usability of the idea.

## 9.1 Method

This section describes how the prototyping in the second iteration was performed as well as the user tests.

### 9.1.1 Prototyping in Unity

Unity is a game development platform that can be used to create real-time 3D- or 2D-games. It provides a game-engine that represents the real world physics, like gravity, velocity and a 3D-space. Its primary scripting language is C#, but it also provides drag and drop functionality. Level Eight uses Unity because it enables collaboration between 3D-artists and developers.

The benefit of using Unity as a prototyping tool compared to prototyping tools like Adobe XD, Sketch or FramerX to name a few, was that all content in the develop version of Edge of Combat was available to re-use. Hence, the prototype would get the exact same graphical style as Edge of Combat, getting a more close-to-finished look which was favorable for later tests.

The strategy was to split implementation into two parts, the first was to implement a prototype in Unity, with the perceived functionality of a fully implemented version. It would set elements dynamically to the scene by loading them from the code, like a full implementation. However, the prototype did not consist of real data, but instead made-up data stored in lists. The content would be generated with functions like GenerateFakePlayer(). In the fully implemented version, those functions would later be switched to GetPlayerData() and similar.

Dividing the implementation like this ensured a soft transition and learning curve to the software, Unity, and the scripting language, C#, which was connected to the editor Microsoft Visual Studio.

The second iteration included the basic parts of implementation. This meant that game objects, like player name, character specific images or team color in header, to name a few, were set through code. Also, datatypes and objects were initiated according to needs.

### 9.1.2 Test: Measure Value and Locate Usability Issues

The tests performed in the second iteration of prototyping consisted of usability tests and interviews. The tests had a qualitative approach with the main goal to measure the value of the Accolade-feature itself. The secondary goal was to measure its usability. Furthermore, the tests hoped to answer whether opinions and values about the mentioned feature differed between genders or between player personalities, or if there was no evident difference at all.

To estimate what value Accolades had and to whom, the test needed to differentiate between player personalities among the test participants. This was done by using a model about gaming motivations by Quantic Foundry [40]. The model consists of six main motivational areas: social, action, mastery, achievement, immersion and creativity. EoC mainly covers social and action, has less focus on mastery and achievement and nothing in the game provides immersion and creativity. Users were asked to complete the motivation survey to extract their Gaming Motivation Profile. This made it possible to evaluate what value the Accolade-feature would have to different types of gamers by matching the test participants' Gamer Motivation Profiles to EoC's components. Participants were then divided into three groups: target group, somewhat target group and outside target group.

To further understand the value of the Accolade-feature, it had to be tested in its context, in close relation to the traditional scoreboard. This was to understand if Accolades would complement the scoreboard, could replace it or if Accolades was an excess.

To evaluate the usability of the Accolade-feature, the test participants' previous experience of similar games had to be considered. This was because games often re-use concepts, components and icons from other games, and since learnability is an important component of usability, test participants could have different mental models of features. Users were therefore asked to estimate their previous gaming experience with multiplayer games, shooter games and games based on character roles.

A test script was created so that the tests would not differ too much. The script contained one part about usability testing and another part about estimating value. The script can be found in the appendix. The whole test combined hoped to answer the following benchmarks.

- Best and worst features of the approach.
- Identify all usability deficiencies and sources of those problems. Determine which must be fixed before implementation.
- Which functions are "walk up and use" and which will probably require either help or written documentation?
- What do users conceive and think about using the feature?
- Does the feature's basic functionality have value to the user?
- Understand why players like or dislike the feature.
- If level of experience or gamer profile affect preference for accolade screen vs traditional scoreboard.
- If gender affect preference for accolade screen vs traditional scoreboard or whether gender correlates with experience and gamer profile.

The user tests were individually performed and included five female and five male users. The mean age of the participants was 23 years, the youngest was 19 years old and the oldest was 32 years old.

Because EoC can be somewhat difficult to master the first few games, users were not given the opportunity to play a match before the tests. This ensured that participants were not biased from a bad first impression. Instead, users were given a short introduction of what the game was, its objectives and gameplay, and a scenario of how a match could unfold was also read to the users to bias them to think they were good players, the scenario can be found in the appendix. The participants then got handed a mobile device with the prototype installed. The test followed the pre-made script.

The interview part of the test was semi-structured. Questions were prepared but the order in which they were asked was irrelevant. The interview had more of a conversational tone, hoping to extract quotes from the users to measure value.

Sound was recorded and notes were taken. The tests were then fully transcribed. To extract information from the transcribed result, everything from the usability tests and interviews were sorted into a list that contained Accolade Value, Accolade Usability, Scoreboard Value and Scoreboard Usability. List items were weighted by one point for each item that occurred more than once, and items were also color coded by the motivational profile.

## 9.2 Result

This section includes the result of the second prototyping iteration, and what was discovered in the user tests.

### 9.2.1 Prototyping

In the second iteration of prototyping, ideas that came forward in the first test iteration were added, and usability issues were fixed. One major change was to only display three players from both teams after a match, and thus, increase the desire to get nominated with an accolade. Furthermore, the mockups were part of a flow where supposed interactions would lead to new states of the cards. There were three stages in total, the first being the default frontside of a card displaying the characters, accolades and vote area, the back of a card displaying the players equipment, and the third was a popup that displayed detailed information of each equipment item.

**Card Front** The scene included three cards with one player each, who were chosen from both teams for good performances. The size of UI elements were small to give more space to the character miniatures, so that details could be distinguishable.

The header of the card showed the team-color, blue for friendly and red for enemy, player name, earned title, clan-name and clan-symbol. The background-image was character specific to fit the lore. The top left of each card had a button for Inspecting Equipment, if pressed it would load the back of that card. The left side of each card hold possible positions for long term achievements or medals. Accolade Title and Accolade Statistics were displayed on the bottom left of each card.

On the bottom right was a like-button and a vote count. A special effect could be applied to the card when a certain number of votes were reached, as an acknowledgement.

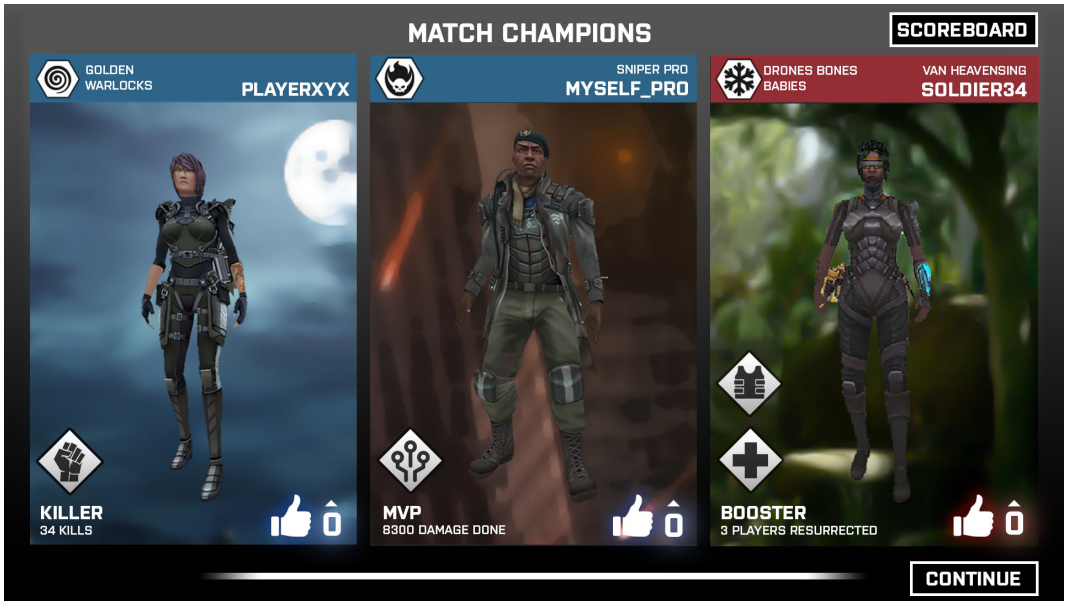


Figure 13: Opening scene of "Accolades". The front of each card were showing the character.

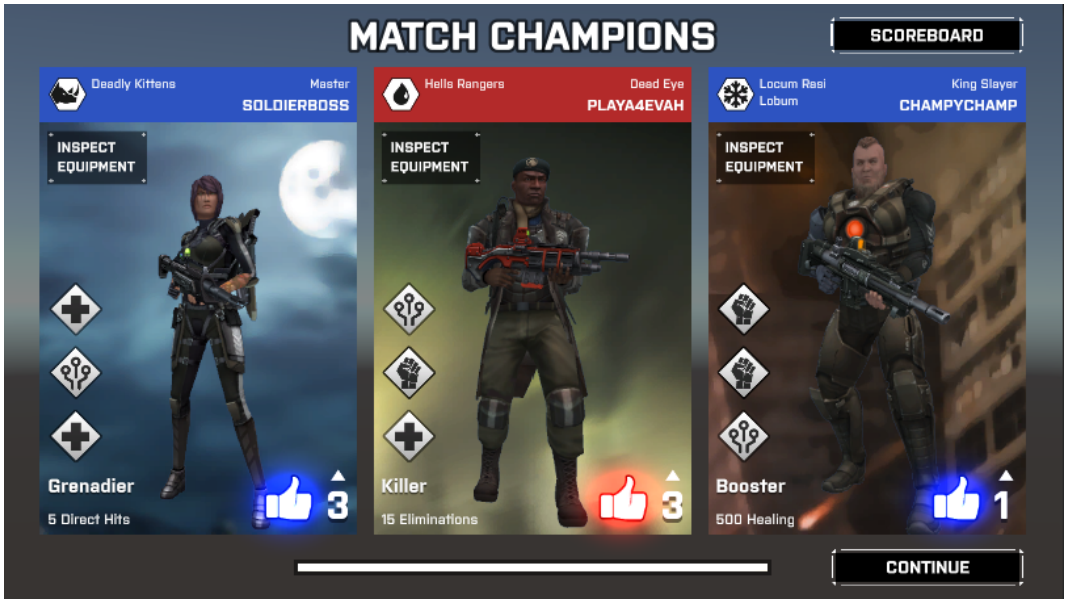


Figure 14: The first view in Unity.

**Card Back** A way to inspect a champions equipment was added through a button in the upper left corner of each card, see Figure 15. Pushing the button would display the card back which displayed the champion's equipment. The header displayed no personal information but player name and the text "Equipment". The champion's equipment was displayed in a grid consisting of item cards. The item cards included category name, item name, item level, image and rarity color.

The rarity of an item is a determinant for how good traits the item has. Grey color represents common items, blue is for rare, magenta is for epic and yellow is for legendary. The item cards resembled the looks of items in the "Loadout", which is the menu in EoC where a player can equip items.

Item cards could be clicked to display more detailed information in a popup window.

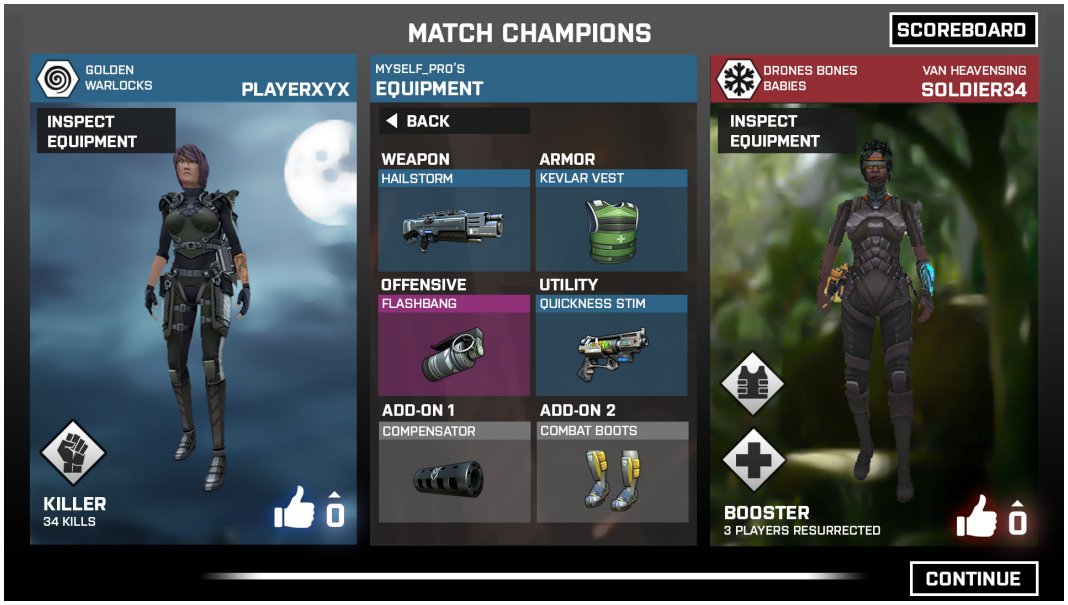


Figure 15: The card back displayed the champion's equipment in a grid consisting of item cards. Items could be clicked, and were then displayed in a popup with more detailed information.

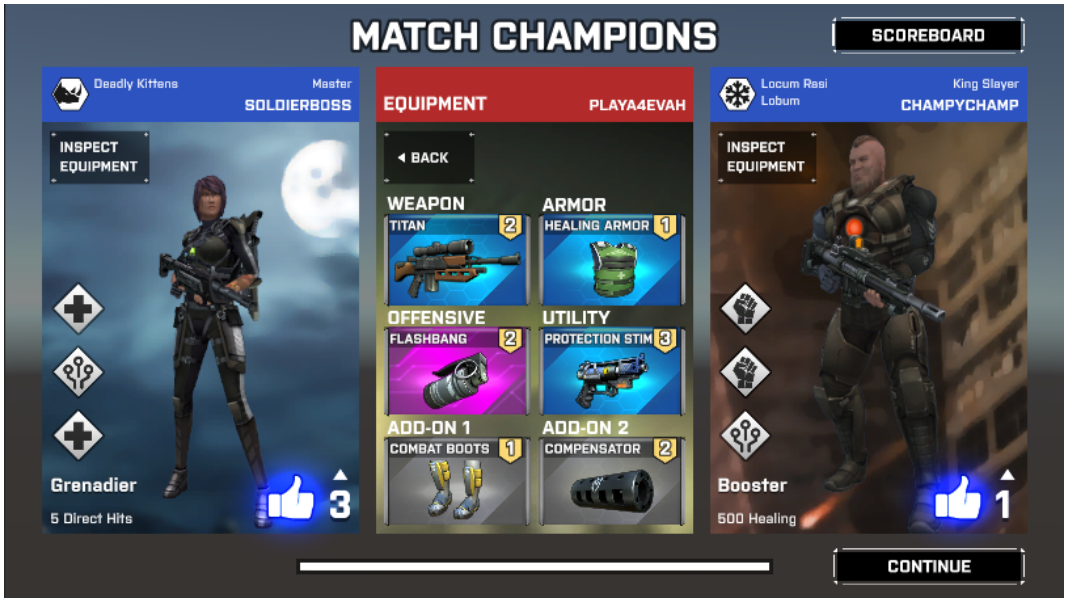


Figure 16: The second view in Unity.

**Popup** Specific information about each item was displayed in a pop-up window that would appear if an item was clicked, see Figure 17. Again, the information presented in the pop-up could also be found on the detailed item-cards in the Loadout. The popup displayed further information about one item at a time, the option to quickly browse through the equipment was also added through arrows.

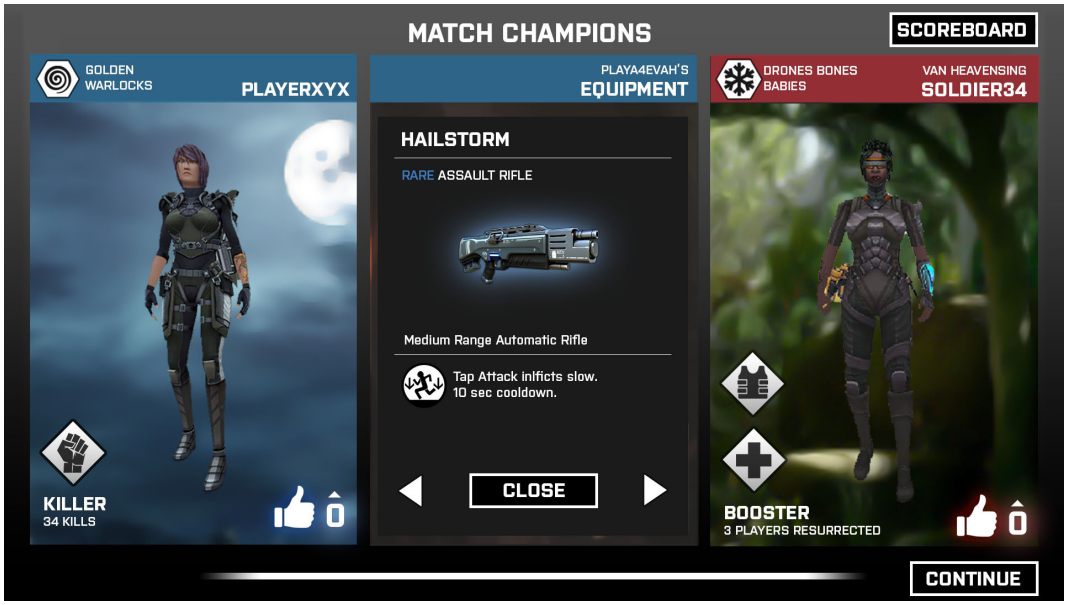


Figure 17: Detailed information about items was displayed one at a time.

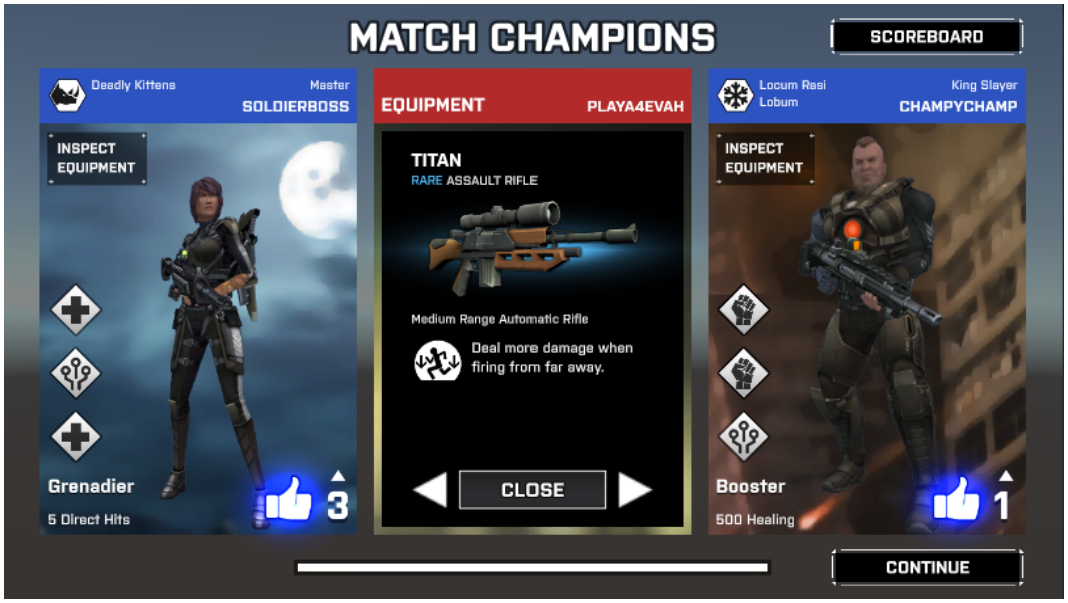


Figure 18: The third view in Unity.

### 9.2.2 Test Conclusions

This section summarizes what came forward from user testing the prototype. The first list contains conclusions of the usability test. The usability deficiencies are also mapped to experience with similar games. The second list is a more in-depth understanding of what value the prototype's function have to users depending on their motivations.

All male and female participants were interested in games and occasionally played games, but when asked to estimate their experience with the three core elements of EoC (multiplayer, shooter and character roles), female participants rated themselves lower than the male participants. It was clear that experience affected how well the UI and purpose of the screen was understood. What came forward from the usability tests are presented below.

- Everyone understood that the screen consisted of players from the match, and that those players had gotten positive feedback from other players.
- It was evident that navigating back and forth between the scoreboard and the accolade screen through buttons was awkward. Experienced users were more interested in the scoreboard screen than the accolade screen, and therefore the scoreboard would fit better as a mandatory part of the post game flow. But it should be optional to stay in both screens.
- Even experienced users had trouble grasping the meaning of the three badges on the left side of the cards. Since the icons were borrowed from another part of EoC (Skill Tree), users confused the icons with character abilities rather than achievements. The badges also looked clickable and users tried to interact with them. Since the test participants lacked a mental model of achievements when approaching them in the accolade screen, it was difficult to measure whether they would appreciate the badges. Explaining their purpose made users slightly disappointed though, and they were unsure if the accolade screen was an appropriate place to display achievements. Furthermore, an achievement system is not yet implemented in EoC, which makes it an unnecessary feature at this stage of the product implementation cycle.
- The same issue about measuring usability and value without the participants having a mental model about the feature was also the case with clan names, clan symbols and player titles. Clans will not be implemented in EoC at this stage either, and therefore, this part too was an excess.
- Another issue was that too much was going on in the UI. This created a cognitive overload that made users only pay attention to some things. What was detected varied between experience; Experienced users were immediately interested in the accolades, referring to performance in the match. However, beginners payed attention to details like titles and header text. It was clear that the UI had to be ”cleaned” in order to direct attention to the most valuable features.
- Users would not click the like-buttons, even though they verbally promoted the feature. The buttons should have a stronger affordance of clickability.
- Users would not click item-cards either. They also had to get increased affordance of being clickable.
- When a champion received many votes, some feedback that was missing should be added.

This list concludes how the feature was perceived and valued among users, and considers variations between Gamer Motivation Profiles and gender. Four of the male participants and one female participant was classified as ”target group”. One male and two female participants were classified as ”somewhat target group”. Two female participants were ”outside target group”.

- Since the study valued quality over quantity, not enough data was generated to get statistically valid information about gendered preferences. However, looking at the raw interview data suggested that there was no general difference in opinions between female and male players on the Accolade-feature itself.
- Three users from the target group, and all users except one from the two remaining groups would find the voting part useful for increasing motivation and team spirit. Empathising on positive feedback, up-vote, would contribute to a more pleasant gaming experience.
- The same users appreciated that accolades could be received for more things than Most Valuable Player (MVP), as it takes into account that players can have different playstyles. The main benefit was that it highlights individual performance.

- The main drawback was that detailed accolade stats were exclusive to the champions. Players were interested in their own stats and requested to have more detailed stats about their own performance.
- The Inspect-Equipment section was also appreciated by most users, and perceived as an opportunity to learn about equipment in close relation to recent match events.
- Despite the accolade screen being perceived as useful to most players, it was evident that it could not replace the scoreboard. 4 out of 5 of participants in the target group would prefer the scoreboard to the accolade screen if having to choose. This was because it contained statistics that they thought was necessary for evaluating their own performance, especially Kills/Deaths/Assists (K/D/A). The scoreboard also allowed them to compare everyone in the match, including themselves, to one another. They thought it would add to the overview if they got even more detailed statistics of their own performance foremost, but thought it could be interesting to compare others as well.
- Two very experienced players in the target group did not seem to care about the game acknowledging MVP or aspects connected to the community at all (voting, skins, clans and other similar things), because they believed that a game has no clue about who is the real MVP and they care mostly about long term statistics like Kills/Deaths (KD) over time. Power users were therefore neither interested in Accolades nor getting more detailed statistics in the Scoreboard, like damage done or healing done. Their primary goal would be to increase their Match Making Rating (MMR). However it was important to them that the scoreboard contained the most relevant statistics to specific game modes. Capture points would mean seconds should be displayed with individual statistics.
- The big take away from this was that the accolade screen would have value to some experienced players within the target group, but especially for players new to the game.

# 10 Prototype, Implement and Test – Iteration Three

This chapter includes the method and results from the third iteration of prototyping and testing. In this iteration, the last step of design thinking was also included, implementation. This enabled a scenario more similar to a real situation to be evaluated.

## 10.1 Method

The third iteration aimed to solve all usability issues that were discovered in user tests during the second iteration, and to make the prototype assimilate EoC in graphical style and expression. Another goal was to implement the prototype with code and real data from a match, and to connect the scene to the game so that it would be situated in a real match scenario, as a part of the post game flow. Finally, a validation test would measure whether including the screen in the post game flow would be favourable or not.

### 10.1.1 Implementing in Unity

As the prototyping in the second iteration resulted in a somewhat implemented version of the scene, the third iteration aimed to add real match data and enough functionality to give the scene a realistic impression. This meant adding functionality for retrieving objects related to the match, such as team information, player information, their equipment and score. This was then re-structured, and logic was added so that it was presented according to mockups and with desired functionality. In addition, animations were made with Unity Animator, and added to the like-buttons and the item list to increase the objects affordances of being clickable. Moreover, the scene was integrated in the post game flow, and loaded after receiving bonuses but before the scoreboard.

### 10.1.2 Validation Test

A validation test is performed late in the product development cycle to ensure the product standards before a release when the product implementation is closed to finished and it assimilates a working product. The test validates that no issues concerning usability or performance have evolved from fixing previous errors. A validation test has similarities to an assessment test but differs in how the benchmarks are set and the amount of meddling from the test moderator; which is practically nothing in a validation test.

This validation test was performed as a live ”game session” with a survey. Because previous tests had proved that the accolade screen had value to most players, this validation test was performed with participants that were employees at Level Eight, to ensure that the accolade screen would fit the game in general. The participants were male players and the majority were in the age span 25-44 years.

As the accolade screen had been integrated as a part of the post game flow in EoC, for the first time, it could be tested in its natural context; after an intense match. Eight employees participated, which were enough players to fill two teams in the game. The players got a device each with the version of the game installed, they connected to the same server and played a match together. They were then exposed to the post game flow, including the accolade screen, and everyone got the opportunity to explore the screen in their own pace.

After the game session, the participants were given a survey. The survey aimed to measure the usefulness of the first, second and third view of the accolade screen to see if all was equally important. This part was directed to the participants personal opinions. But questions about how the accolade screen would fit the game hoped to collect their professional viewpoints. The opportunity to ask for the experts opinions were also included through the whole process by giving options to specify and comment all answers.

The benchmarks of the test were to: validate that all usability issues had been eliminated, ensure that the accolade screen still had value, and to collect the opinions of the game’s creators.

## 10.2 Results

This section presents the results of the implementation and the validation test. The prototyping or implementation in the third iteration focused on functionality, hence nothing much in the layout was changed, but the feature was, and felt more real, when interacting with it. The validation test found that there was reason to incorporate the feature into the game.

### 10.2.1 Result Implementation

The first view looked quite similar to the solution from the second iteration, see figure 17. The layout was slightly changed and the players' account level was added. But the biggest transformation was how the data was set, which in previous versions was fake and "hard-coded". In this version, all data was set dynamically from real match events and user accounts. The characters were also in their idle animation poses and the thumbs had light animations.


Figure 19: The first view in Unity.

The back of the card also looked quite similar to the solution from the previous iteration, but the data was also set dynamically for each players' items, which had previously been "hard-coded", see figure 20.


Figure 20: The second view in Unity.

The last view also contained dynamically set data, see figure 21. Slight changes from the previous version was that Arrows were ”clickable” only if the previous or next item was available. A color tint was also added for the popups to separate the teams more.

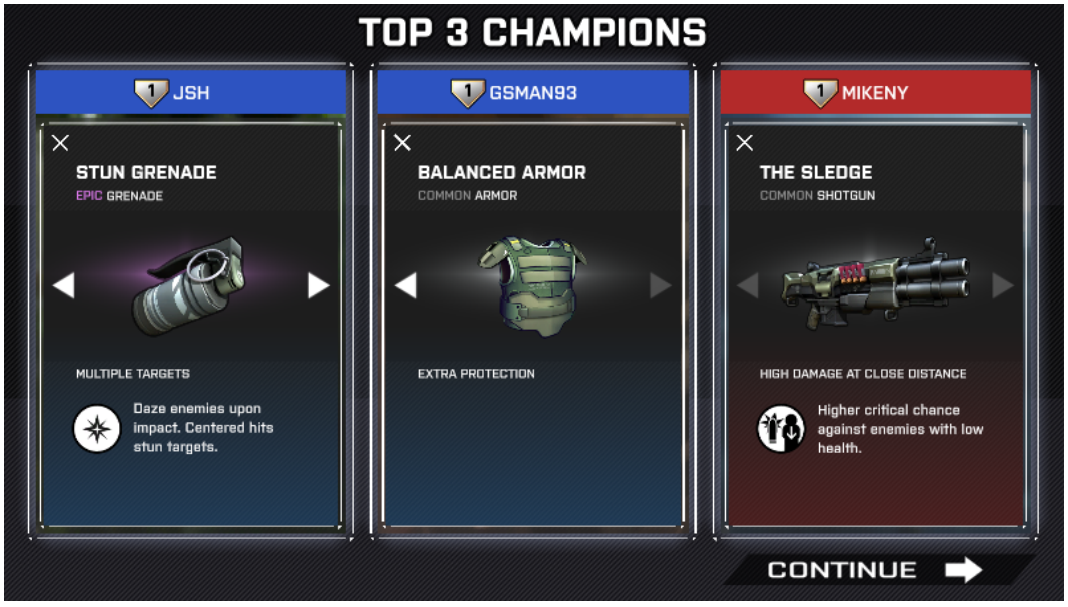


Figure 21: The third view in Unity.

### 10.2.2 Test Conclusions

This section presents the results from the survey that was filled out in conjunction with the play test session. Overall, the feature received positive response, see figure 22. The concept itself was appreciated, and the individual views as well. However, opinions were more split about the last view presenting item details. In addition to that, a few usability errors were discovered which made the product ”fail” the validation test. Further improvements would be needed before including the feature in the game.

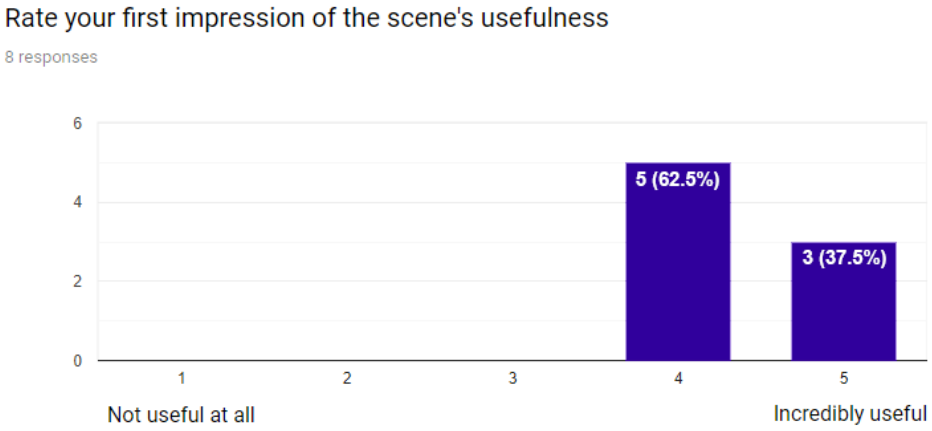


Figure 22: The third view in Unity.

The first view also scored quite high on usefulness, see figure 23. The feature received many positive comments, one comment capturing the notion of the scene being fun rather than useful, and thereby valuable. The voting feature was valued high as well among the feature to become champion of the match.

Usability issues were that the ”Inspect Equipment”-button was not visible enough, that it was difficult to spot a difference between other players and self, that it was not immediately clear why the three players had been chosen and that the accolades were among the last things on the screen to be noticed.

Two more concerning issues were the lack of statistics about self performance, and that the scoreboard which contained individual score was too far away.

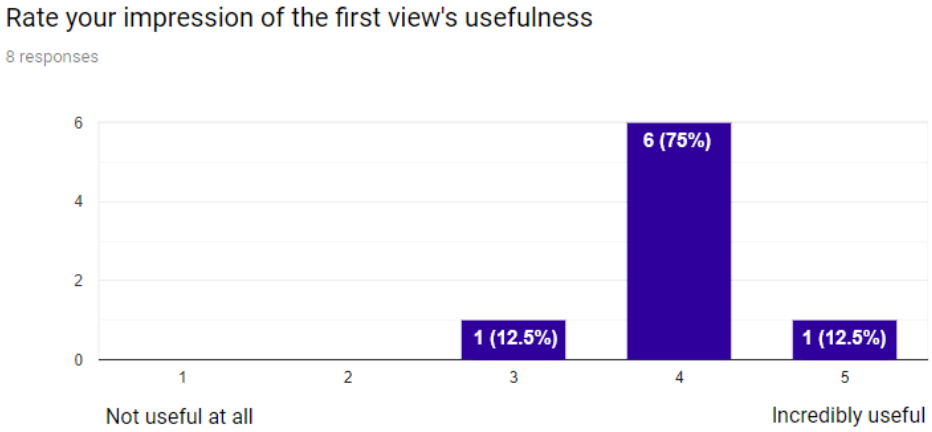


Figure 23: The third view in Unity.

The second view had the highest score on usefulness, see figure 24. One comment that captured the essence was that this view made a transition from fun to useful, with prior

knowledge of what these items were, it was a good way to get a quick overview of other players' items . The option to compare between players could also give insight to what items the best players were using. Two comments included the word "easy" which is valuable from a usability viewpoint.

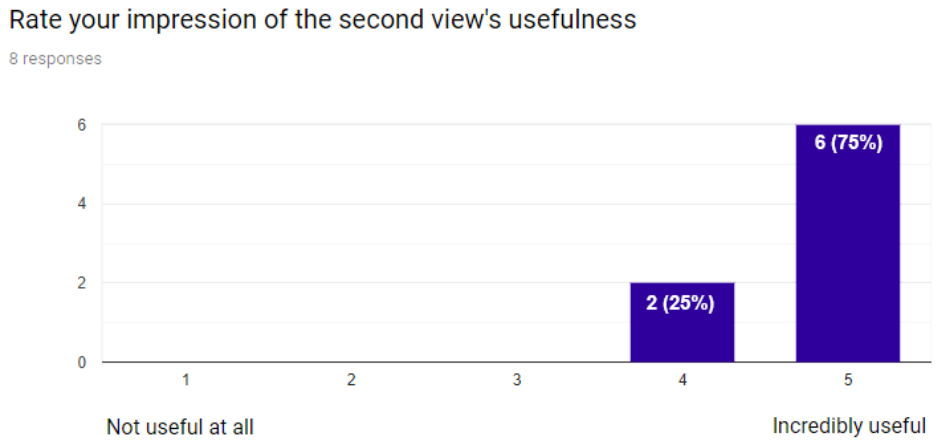


Figure 24: The third view in Unity.

Opinions regarding the third view were divided, still they were leaning more towards useful than not useful. The possibility to view item specifics was good, because a user might be more interested in trying to understand why a player performed well at this stage in the game rather than when checking items in the normal loadout. But the concerning part might be that the group of beginners that sincerely want to learn is a small subset of players. Another concern was that checking item specifics was off-topic from the screen. Usability issues was that item level and in depth equipment stats was missing. Something that came forward from reading the comments was that the participants had referred to themselves in previous questions, but answered from the perspective of "the users" or "the players" on this question, which implies that they thought that there was nothing wrong with the idea, but nonetheless not necessarily something they would have used themselves.

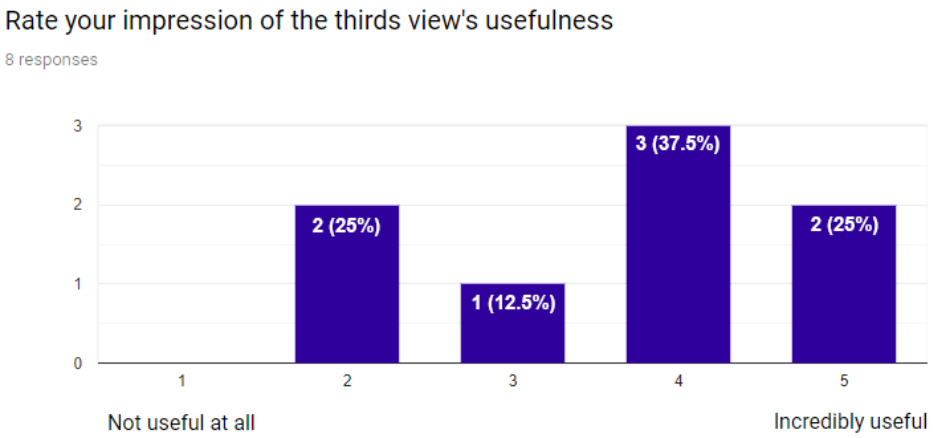


Figure 25: The third view in Unity.

Most participants thought they would be quite likely to engage with some of the content in the accolade screen. When asked what features they were most likely to use, seven out of eight wanted to check weapon overview and vote, six wanted to check skins, four wanted to check weapon details and three wanted to check the accolade stats.

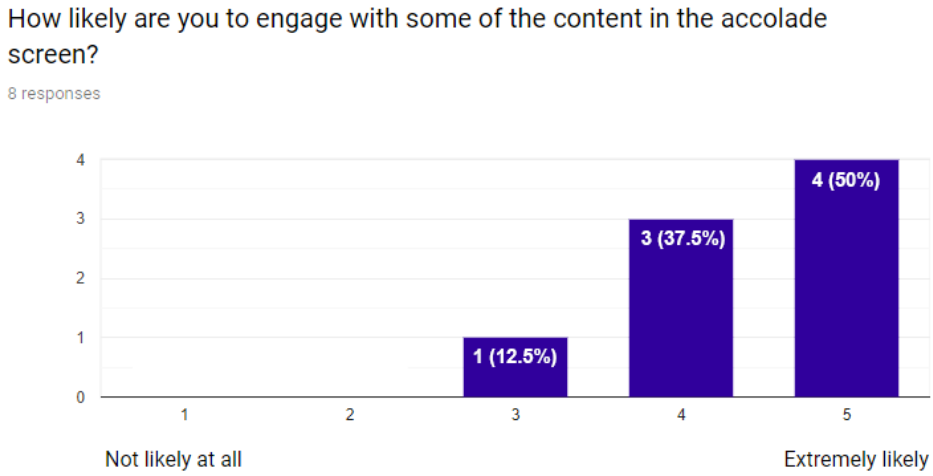


Figure 26: The third view in Unity.

A clear majority, seven out of eight, thought that the scene would fit EoC. Only one thought it would maybe fit. Comments regarding how the scene had value were how it gave personality to otherwise anonymous players, that it is an interesting way to interact with other players after a game, that it will increase the feeling of multiplayer and that it will elevate the wins and explain away the losses which is a win/win scenario, and the voting part was also fun and also an habitual action. One participant said the he tried to recall someone who did something nice after the match, and that it felt good to reward it to someone. One participant who did not place the cards said it felt like an achievement to be there. Another

participant thought the inspection of items and finding their trait descriptions was great, the screen would also help showcase items and gear, thus hopefully sparking interest among players and encourage them to keep playing.

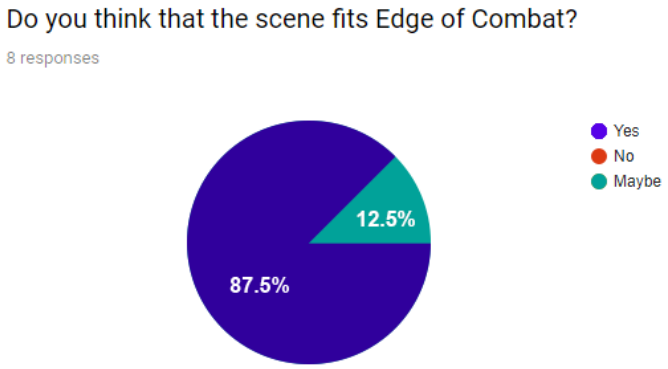


Figure 27: The third view in Unity.

Usability issues, or overall concerns was that, just as in previous test, some participants was more focused on their own performance and felt that for one, the player who is ”self” should be highlighted, and second, that there should be possible to see one’s own performance. One comment about the same issue suggested that the K/D/A should be visible, and that the entire scoreboard should be easily accessable so it can be glanced at before continuing. Basically having the scoreboard as a second step felt clunky, it should be readily available in the same screen.

Additionally, the lack of a transition to the accolade screen from the loading screen after a match is noticeable, the sudden switch from one screen to the next without any transition animation is disturbing. Something to animate the elements to build more anticipation would be nice. Suggestions were the player cards coming in from left, right or above could make it more satisfying, or presenting one player at a time, then displaying their titles in turn. Simply making the scene feel more alive as its presented. Furthermore, characters could be animated with menu intro animations, making them more interesting and alive.

Another idea about the whole feature was to consider cutting the per-item inspection and, perhaps, change the behavior of the inspection button so that you’d press and hold it to inspect, and release it to revert to the character view.

One usability issue was how the thumb icons behaved after being interacted with, as the icons still looked clickable. One suggestion was to shrink their size, and remove the up-arrow after voting. Despite the ”up” action not being available anymore, it still gives the impression of still being able ”up” someone. Perhaps since the thumb icon was still present on screen.

# 11 Discussion

This chapter contains discussions about the results in relation to the theoretical framework. This includes the findings of what it meant to be a female player, what made Overwatch and Fortnite more diverse games and if the accolade screen were a preferred design for female and male players.

## 11.1 A Conversation About Gender

Analysing games from a gender perspective involves multidisciplinary research. It was not without ambiguity that some of these issues were observed, especially since feminist discussions are constantly evolving and there was limited up-to-date research on the subject of gender and games. It was also complicated to analyse the research that portrayed girls as one homogeneous group, which was mainly the issue investigated in the third wave of gender and games discussions [33]. As gender only defines a part of a persons complete identity, and identity essentially is what determines how people act in the world, it was complicated to draw any conclusions about female gamers as one group; what "they" like or dislike, behave and general conclusions about previous experience in games. This was the single most difficult issue to work around during this thesis. It was a field where trying to determine what something was, conflicted with why that was. It was important to know that there was a difference, but that it was mainly a social construct due to the change over time in gamer audiences. In this research, both the what and the why were relevant to figure out how to tackle the issue and which solution to apply. If it was not accepted that differences do exist between genders, then there would really be nothing to do. Knowing the reasons behind differences made it easier to accept the situation and that it could be changed.

## 11.2 "What Female Players Do"

Nevertheless, one thing that was common for many female players, regardless of gaming experience, was being careful with social engagement in voice chat with random team mates. This was something that came forward from the initial interviews. Many participants would wait until they heard that others using the voice chat seemed reasonable before joining in on the conversation. It was also common to only speak when teaming up with at least one friend. Many had also migrated to Overwatch and Fortnite because of a toxic environment in other games, for example League of Legends. While this seemed like a common pattern, it was not necessarily only true for female players. One quote from one of the earliest interviews was "In League, it does not matter if you are female, if you play bad – you deserve to die (opinions from team mates), and people will target you in whatever way they can. It is not like that in Overwatch, maybe in the beginning but I think those players have left the community and gone back to their previous games". This suggests that the problem is not limited to female players but that it also affects other minorities in the gaming community. Critique itself may often be justified, but if the approach to deliver the critique is unrelated to performance, but targets something about the players identity, its discrimination. Since identity is comprised of many attributes like gender, age and nationality among others, this means that female players receive hate for their gender, young people are discriminated for their age, and for example, Russians for their nationality. In that sense, the problem lies where power resides. People with power is usually the most normative people, in classical shooters this has been the white male person.

## 11.3 Why Overwatch and Fortnite Succeeded in Reaching a Diverse Audience - Connections to the Theory of Planned Behvaior

Who the normative player is, can be the one thing that Overwatch and Fortnite counters exceptionally well. Not only do they have quite diverse representation which is a great way to counter for example implicit biases [33] (Overwatch has multi faceted heroes and Fortnite has playful skins) but with all design elements combined, like graphics, story telling, marketing

and more, they have also rewritten the rules for what a shooter is. Even though Blizzard and Epic Games were not the inventors of the games' respective genre, they have inherently changed the norms in the games. Female players, and surely many other minority groups in gaming, therefore have access to two shooters where traditional norms do not comply to the same extent as in other games within the genre. That might have been just enough to stir the power balance, and to get a more diverse community.

Relating this to the theory of planned behavior can explain what effect this has for new players. Firstly, the attitude towards the games changes. If the game is not a classic shooter, then it is something else, which means that previous attitudes might no longer have the same ground. The subjective norm also changes. By not applying the values of a classic shooter, the social expectancy to avoid the game reduces. Lastly, both Overwatch's and Fortnite's graphics increases the perceived behavioral control by lowering expectations of difficulty by adding juvenile friendly designs, which was something that came forward from empathizing with users.

## 11.4 Did the Accolade Screen Work?

The design behind the accolade screen derived from the interview material which showed that female players seemed to value alternative ways of being acknowledged as a good player, and that female players seemed to appraise character personalization and a pleasant community.

It is important to note that while the design emanated from interviewing female players, it proved to add value for male players too. The value was for beginners and some core players, but not for the most engaged core players. This meant that rather then gender being a determinant for preference about the screen, it was the skill and engagement level of the player, which is in line with previous research [13]. A reason why the accolade screen would be more attractive to beginners than experienced players was that gamification increases intrinsic motivation to participate in a certain behavior [42], but players who already are very motivated to gaming do not need additional accelerants to increase their motivation in the same way as beginners do. Players who have less experience in gaming will therefore be more susceptible to gamification and rewards like mvp, voting for the best player, item recommendations or accolade titles. It can be argued that the screen was extra favourable for female casual players, as this group was less experienced than male casual players [13].

The accolade screen was transforming a traditional scoreboard by adding layers of meaningful gamification. But while the solution successfully increased motivation, it anticipated that a player who would need increased motivation was already on-board the game. It assumes that the general behavior for female players is to download the game but quit after playing for a while. The more probable situation is that a large group of female players do not even download the game because of implicit biases, which is the strong negative opinion about something [33]. To some extent, the game builds on stereotypes to what a multiplayer/action/shooter game is which can trigger implicit biases. Because the screen is post-game and only a part of the whole experience, the solution with accolades probably fails to fix "Day 1 retention" for female players. Despite the fact that gamification can create incentive towards behavior [24], gamifying elements does not address the core issue, which is what norms the game is incorporating and reflecting.

It was argued that both Fortnite and Overwatch target all aspects of the theory of planned behavior, to get a more diverse audience to play the games. Applying TPB to Edge of Combat, suggests that the solution does little to affect the attitude or the subjective norm. Gamification will however change the perceived behavioral control [24], as it will be quite easy to be acknowledged for individual performance and it takes other parameters than K/D/A into account which opens up for more diverse playstyles.

Edge of Combat is close to a complete intellectual property. It was therefore difficult to change core designs, and since Level Eight had already repealed "Fortnitification", adding one screen to the game was a good solution in regard of the circumstances, but perhaps not the best overall. A better solution would be something that could affect the attitudes and the subjective norm towards the game. Such a solution would have been very expensive, as a lot of content would have to be re-made. The accolade screen was not a solution that

fixed the issue of female players in core games, including Edge of Combat, but it was a step in the right direction. In order to really make a game available for everyone, the core values of diversity and equity had to be integrated to the game from the very start of the design process.

# 12 Future Work

In this thesis, the group of female players in Fortnite and Overwatch which were the subjects of the very first phase of empathizing were also investigated in isolation from other groups within the same games, and therefore the insights were without perspective. Hence, improvements in the process could have been made!

One very good source for the project was found a bit late in the process, but future work could originate from the findings in the book Diversifying Barbie and Mortal Kombat. One thing that it introduced was the concept Implicit Bias. It was the single most blocking factor for minority groups to participate in gaming. But it did also provide guidelines to how it could countered.

It also delve into the subject of masculinity. Recent feminist conversations have shifted from solely focusing on women in relation to the patriarchate, to mens' relation to the patriarchate. If gender is part of complex identities where diversity in femininity is celebrated, then the same must be true about masculinity. This suggests that the problem to be solved in games is perhaps not to focus on how to attract women or make female players want what is presented, but to change how masculinity in games is defined. Stereotypes do not only harm female players but also male players, and that nourishes the toxic and hostile environment that is unfortunately prominent in many games. Hence, it would be interesting for future work to flip the coin and to examine norms in games from a male perspective; how are male players affected by norms in games.

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# A Appendix

## Interview - Part I

1. **How old are you?**

2. **Do you play Fortnite or Overwatch?**

3. **For how long have you been playing core games?**
    a. For how long have you been playing F/OW?

4. **What is your experience from multiplayer and/or shooter games?**
   **Current** **Previous**

5. **What events led you to first picking up F/OW?**

   **"Friend/Relative/Partner"**
   5.1 Was there something about the game apart that you found interesting apart from someone you knew recommended it?

   **"Seemed fun"**
   5.2 Why?

6. **What was the biggest challenges as a beginner?**
    a. How did you handle them?

    b. You mentioned playing <other game> before, did you recognize elements from there?

7. **What do you like the most about F/OW?**

8. **How do you feel about telling friends and family about your gaming habits?**

    a. What is your experience about how people that are not part of the gaming community percieve you and your interests?

Figure 28

## Interview- Part II

*The upcoming part is about how you experienced different parameters of the game as a beginner. Therefore, try to remember your earliest experiences.*

**Perception of Violence**
What was your perception of the in game violence?

**Complexity**
What was your perception of the difficulty?

**Sexual Representation**
What was your perception of the representation among characters?

**Avatar Customization**
What was your perception of opportunities to change appearances in characters?

**Game Setting**
What was your perception of the graphics, environment and game setting?

**Social Interaction**
What was your perception of social interactions?

**Narrative Elements**
What was your perception of story?

Is there something that you would like to add or talk more about?

Figure 29

## Scenario

**Since this game is quite difficult to master, I will read a game scenario to you!**

*Pick a character! You choose Jackhammer, Tank, Shield*

*You do not have much damage power but you are strong and can protect other teammates with your body or barrier-shield.*

*You know that keeping your teammates alive is essential to win, so you choose to focus on tanking.*

*You therefore equip healing armor for yourself, and one defensive utility gadget - a heeling field that can be applied to your teammates if they run low on health.*

*Battle Starts - Team Deathmatch - The team with most kills win*

*You play and do great. You are putting up the most perfect shield barrier to block the opponents fire just before one of your teammates get killed. But… The teammate runs back into the fight, with low health… and dies. Arrgh.*

*The enemy team is in the lead. You manage to finnish of a few opponents with help from the player controlling the Warbird character. But what are the two other team-mates up to? They seem to be feeding the enemy team with easy kills...*

*You join up with your teammates and focus on protecting them. You are good. Throwing healing fields, stunning enemies and making 200 IQ moves with your shield-barrier, blocking enemy fire, saving your teammates, time after time.*

*And … the score is tied. You finally win, with 20 kills to 19.*

Figure 30

## Usability Test

*Imagine you were in the match, now enters this scene, what do you feel about the result?*

*What features grab your attention?*

*Feel free to explore!*

***Usability walk-through***

1. *Vote for the champion you think deserves a like.*
2. *Playa4evah killed you many times, you want to know what powerful stuff he or she equiped. Where would you click to find out?*
3. *Now find detailed information about the utility gadget Playa4evah used?*
4. *You want to find more detailed information about your stats.*

*What do you understand about this scene, what does it do?*

*What parts, concept, image or text do you not understand?*

Figure 31

### Player Interviews

*How old are you?*

*What do you like about this scene?*

*Why?*

*What do you dislike?*

*Why?*

*Is there some parts that seem useful to you?*

*Is there some parts that do not seem useful to you?*

*Do you want to know something about how the match went that is not available on this screen?*

*Do you want to know something about how the match went that is not available on the scoreboard screen?*

*How would you rate your experience with multiplayer games?*
*(Poor, Fair, Good, Very Good, Excellent)*

*How would you rate your experience with shooters?*
*(Poor, Fair, Good, Very Good, Excellent)*

*How would you rate your experience with ability/role based games?*
*(Poor, Fair, Good, Very Good, Excellent)*

*Which of the Accolade Screen and the Scoreboard Screen would give you more value?*

*Why?*

*What advantages/disadvantages do you see in each solution?*

*If you could change the way a game presents winners, how would you do it?*

*Is there something else you thought about that you would like to add to add?*

Figure 32