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ENHANCING THE EXPERIENCE OF ESPORTS SPECTATING: A DESIGN  
STUDY ON COMPETITIVE GAMING AND SPECTATOR INTERFACES

A THESIS SUBMITTED TO  
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES  
OF  
MIDDLE EAST TECHNICAL UNIVERSITY

BY  
OZAN AKSUN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF MASTER OF SCIENCE  
IN  
INDUSTRIAL DESIGN

FEBRUARY 2022



Approval of the thesis:

**ENHANCING THE EXPERIENCE OF ESPORTS SPECTATING: A  
DESIGN STUDY ON COMPETITIVE GAMING AND SPECTATOR  
INTERFACES**

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## **ABSTRACT**

### **ENHANCING THE EXPERIENCE OF ESPORTS SPECTATING: A DESIGN STUDY ON COMPETITIVE GAMING AND SPECTATOR INTERFACES**

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February 2022, 154 pages

Over the years, esports has become an industry with exponential growth. In terms of viewership, esports is closing the gap to regular sports every year. Similar to regular sports, esports are viewed through broadcasts, serviced by various platforms and websites. While the interest towards competitive gaming and broadcasting increases internationally, the interaction between spectators and spectating interfaces is a new subject to be explored. This study focuses on investigating the needs and expectations of spectators by considering their motivations and habits, to reach conclusions on how the experience of spectating competitive games can be enhanced. Among the vast number of games and genres available, the research focuses on the games League of Legends, Counter Strike: Global Offensive, and PlayerUnknown's Battlegrounds. These games are representative of three highly popular genres. First, the games are analysed based on their genre, gameplay, and spectating interface. Then, through user studies, the dimensions influencing the user experience of current interfaces are examined in detail, leading to recommendations for how to improve the spectating experience. The research includes a design

intervention – solutions for improved spectating interfaces – to put the recommendations into practice and to test their suitability with spectators. The research found interface improvements regarding personalization of interface, customization of user interface elements and control over camera views to be especially appreciated.

Keywords: Gaming, Interface Design, Motivation, Spectating Experience, User Experience



## ÖZ

### **ESPOR İZLEME DENEYİMİNİN GELİŞTİRİLMESİ: REKABETÇİ OYUNLAR VE İZLEYİCİ ARAYÜZLERİ ÜZERİNE BİR TASARIM ÇALIŞMASI**

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Şubat 2022, 154 sayfa

Yıllar geçtikçe, e-spor katlanarak büyüyen bir endüstri haline geldi. İzleyici açısından, espor her yıl geleneksel sporlarla arasındaki farkı kapatıyor. Geleneksel sporlara benzer şekilde, espor çeşitli platformlar ve web siteleri tarafından sunulan yayınlar aracılığıyla izlenir. Uluslararası alanda espora ve yayıncılığa olan ilgi artarken, izleyiciler ve izleyici arayüzleri arasındaki etkileşim, keşfedilmeyi bekleyen yeni bir konu olarak ortaya çıkmıştır. Bu çalışma, izleyicilerin motivasyon ve alışkanlıklarını göz önünde bulundurarak, ihtiyaç ve beklentilerini araştırmak, espor izleme deneyiminin nasıl geliştirilebileceğine dair sonuçlara ulaşmak üzerine odaklanmaktadır. Çok sayıda oyun ve tür arasından, araştırma League of Legends, Counter Strike: Global Offensive ve PlayerUnknown's Battlegrounds oyunlarına odaklanıyor. Bu oyunlar son derece popüler üç türü temsil ediyor. İlk olarak, oyunlar türlerine, oynanışlarına ve izleme arayüzlerine göre analiz edilmiştir. Ardından, kullanıcı çalışmaları ile mevcut arayüzlerin kullanıcı deneyimini etkileyen nitelikleri detaylı bir şekilde incelenmekte ve izleme deneyiminin nasıl iyileştirilebileceğine yönelik önerilere ulaşılmaktadır. Araştırma, önerileri uygulamaya koymak ve izleyiciler ile uygunluklarını test etmek için bir tasarım müdahalesi - iyileştirilmiş izleyici arayüzleri için çözümler - içeriyor. Araştırma, arayüzün kişiselleştirilmesi,

kullanıcı arayüzü öğelerinin özelleştirilmesi ve kamera kontrolü ile ilgili arayüz iyileştirmelerinin özellikle takdir edildiğini ortaya koymuştur.

Anahtar Kelimeler: Video Oyunu Oynama, Arayüz Tasarımı, Motivasyon, İzleyici Deneyimi, Kullanıcı Deneyimi

To my dear family and loved ones I have lost...

## ACKNOWLEDGEMENTS

First and the foremost, I would like to express my deepest gratitude to my thesis supervisor Prof. Dr. Owain Pedgley for being there for me all the time. This study would not have been possible without him. Whenever I felt lack of motivation, he always supported and guided me. Even in these exceptional times, he was always positive and inspirational. I feel very lucky to have a chance to work with him. Thank you for being my mentor and supervisor Owain Hocam.

I would also like to thank to the members of the thesis committee, Assist. Prof. Dr. Gülşen Töre Yargın and Assist. Prof. Dr. Aren Kurtgözü for their insightful comments and helpful feedback. I feel deep sense of gratitude to them for joining the committee and giving detailed feedback to my study.

I feel blessed to have Dilara beside me. Whenever I was overwhelmed, stressed or unmotivated, she was there with her pep talks and support. Knowing that she is always there for me made everything easier. I am thankful to Batuhan Şahin and Hilmi Peközkurt for their contribution to this study. I am thankful to Ecem Uluçay, Ege Balaban and Hasan Burak Barlas. Even though they are not by my side physically, I feel their warm support all the time. I would also like to thank all my participants for contributing to this study.

Finally, I can't thank enough to my dear mother Zühal Aksun and my father Murat Aksun for their support. They are the best parents anyone could ask for. Their endless love and understanding towards my decisions and opinions, made me the person who I am now. My beloved brother Arda, who is also a gamer, spectator and interested in esports, always shared his perspective on the subject and contributed as much as he could. I am very lucky to have my family, friends, colleagues, and instructors with me through this study.

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## **CHAPTER 1**

### **INTRODUCTION**

The Cambridge Dictionary defines esports as “the activity of playing computer games against other people on the internet, often for money, and often watched by other people using the internet, sometimes at special organized events.” While the definition of esports looks a lot similar to the definition of a regular sports event, it is still a debate whether it is actually a sport or not. Despite the fact that the debate splits the sports communities into half, according to Chikish, Carreras and Garci (2019), it is still one of the most growing industries in the world. Year by year esports become more and more popular among not only GenZ and Millennials but also the GenX. Well-known companies and sports teams are investing in this growing sector. Even some soccer teams have their own esports teams, such as PSG (Paris Saint Germain), Schalke 04, Galatasaray SK and many more. While Chikish et al. (2019) explain the economic side of esports, this research focuses on the spectators’ perspective. According to Newzoo’s Global Esports and Live Streaming Market Report (2021), the total size of the global esports audience is stated as 465.1 million. They also estimated that in the year 2024 it will grow to more than 577 million. When we put this number into context, it can be deduced that one in 16 people worldwide watched some kind of esports event in the year 2020.

While the numbers and the revenue of the sector grows day by day, the consumers of this giant industry are the spectators, who are sitting on their chairs behind their screens with an intention to enjoy themselves, educate themselves, or simply kill time by watching. The spectators’ static and passive involvement raises a question about their motivations, expectations and needs from esports. In other words, whether they are satisfied with the current way of spectating or not, and if there can

be improvements to the experiences they have. Apart from the personal observation, related studies on the subject also show that the interaction between the spectator and spectating interface is an area that needs to be investigated. Stahlke, Robb and Mirza-Babaei (2018) complements the idea of enhancing the experience of spectators with the addition of ‘interactive mechanics’ to interfaces. Charleer et al. (2018) mentioned in their paper that the spectators of esports are not a ‘passive audience’, rather they engage better with the broadcast if there is a chance of interactivity. Moreover, Carlsson and Pelling (2015) state that different from traditional sports, in competitive games spectators need to focus on more than one point to follow the game. This usually ends up with spectators’ effort to keep up with the game. Since competitive games are more elaborate with their characters and abilities, expecting a spectator, especially a newcomer, to understand and process the whole is impractical. Carlsson and Pelling (2015) also believe that more spectator focused user interfaces could solve the problem of cognitive load.

The starting point of the study was a personal interest towards games and spectatorship. Realization of a lack of interactivity on the spectating interface and curiosity about the motivations of the spectators in general along with the background information gathered from related studies were the main reasons for starting this research. This study focuses on investigating the expectations and motives of esports spectators. Furthermore, by designing and evaluating enhancements for the spectating experience, the study attempts to define preferable directions in which esports can develop to the satisfaction of spectators.

## **1.1 Scope of the Study**

This study focuses on the experience of spectators while watching esports and competitive tournaments especially on an international scale. To build up the research, three games from different genres were selected according to (i) their popularity among spectators, and (ii) whether they have established a local and international event or tournament structure with individual streaming interfaces.

These games are: League of Legends from the genre of MOBA (Multiplayer Online Battle Arena), Counter Strike: Global Offensive from the genre FPS (First Person Shooter) and lastly Player Unknown's Battlegrounds from the genre of Battle Royale. For this reason, all of the participants who feature in this research are spectators and followers of at least one of the mentioned games.

## **1.2 Aim of the Study and Objectives**

The aim of this study is to understand to what extent current spectating interfaces of esports meet the needs and expectations of spectators, and from thereon to determine design recommendations and to offer conceptual user interface designs intended to improve those interfaces for future spectating experiences. To accompany this aim, the following research objectives were defined.

- To investigate spectators' motivations behind watching esports.
- To analyse habits of users while spectating and probe the reasons behind those habits.
- To evaluate user experiences and user interfaces of current spectating services.
- To analyse what affects the users' spectating experience besides interface elements.
- To design and evaluate features that are likely to enhance the spectating experience for users.
- To offer recommendations for further research and development in the competitive gaming field.

## **1.3 Research Questions**

To guide the study, two main research questions were prepared. These questions were written in keeping with the aim and objectives. The sub-questions were

prepared to support and extend the scope of the main questions, which are stated below.

RQ1. Why do people watch competitive gaming and what do they focus on while spectating?

RQ1.1 What kind of motivations do they have for spectating esports?

RQ1.2 What do they achieve after watching?

RQ1.3 What kind of needs do they have based on their focus?

RQ2. What kind of features or changes could enhance the esports spectating experience?

RQ2.1 Which mediums (media) do they use for the spectating experience?

RQ2.2 What kind of features are offered to them by those media; are they appreciated; and what might be provided to improve the experience?

#### **1.4 Structure of the Thesis**

This thesis includes seven chapters, which describe the general flow of the research from its foundations, through the consecutive empirical investigations that were carried out, to the final discussion and conclusions. A brief explanation of each chapter is provided below.

Chapter 1, *Introduction*, gives brief information about the background of the study. The research aim, objectives, scope of the study as well as the research question are presented in this chapter.

Chapter 2, *Literature Review*, discusses principal ideas, concepts and related work found in the literature. The history of competitive gaming and an overview of selected games are discussed in this chapter. Moreover, people or parties who are related to the competitive gaming tournaments or events are analysed. Lastly, the



exploration of both regular sports and esports interfaces is made with special reference to user experience.

Chapter 3, *Methodology*, starts with an explanation of the design of the empirical investigations, which are carried out in three phases. Each phase – covering survey, interviews and focus group, are explained in the chapter, along with an introduction to the role of the concept user interface design that was carried out to embody research findings and provoke answers about possible preferred directions for esports spectating.

Chapter 4, *Empirical Investigation Phase 1: Survey*, presents and discusses the findings from a survey of esports spectators. Both qualitative and quantitative data are analysed and presented in this chapter. Insights from this phase were reflected upon to help build up the second phase of empirical investigation.

Chapter 5, *Empirical Investigation Phase 2: Interviews*, presents and discusses the findings from three sets of interviews focused on spectating experiences with three different genres of game (spanning a total of eleven participants). The findings from both the survey (phase 1) and interviews (phase 2) are used as a basis for generating design recommendations for improved spectator experiences.

Chapter 6, *Empirical Investigation Phase 3: Concept User Interface Design and Evaluation*, presents design concepts generated in response to the design recommendations of the previous chapter. The chapter includes the results of an evaluation of the design concepts with a focus group.

Chapter 7, *Discussion and Conclusions*, discusses the outcomes of the whole study (what was achieved, what was found out, what its implications are), whilst reaching conclusions and answers to the research questions that had been posed in Chapter 1. Moreover, the limitations of the study are mentioned and possible future avenues for research are discussed.

## 1.5 Definition of Terms

To help the reader become oriented in the study and to become familiar with some of the most important specialist terms and phrases in the world of esports, a ‘definition of terms’ is provided in Table 1.1. Many of these terms are not common outside the gaming community. They are used at various points throughout the thesis.

Table 1.1 Specialist terms and phrases used within esports

| Term / Phrase          | Definition   |
|------------------------|--|
| Brush                  | Designated areas that a player can become invisible to opposing team players.  |
| Buff / Nerf            | While the buff is used for a power or advantage increase to a particular character, item, or a weapon, a nerf is used for the opposite meaning.  |
| Build                  | Build is the term that is used for improvement of selected character by the items, abilities, or upgrades.   |
| Carry                  | Carry is both used as a verb or a noun. As a noun it is a player that is more powerful than his/her teammates. As a verb it is the action that said player does by being the most powerful and helping the team to win.                |
| Experience Points (XP) | Points or percentage that can be earned via defeating other enemies or doing missions or achievements in game. With earning experience points players can upgrade their level and unlock certain abilities. (Adams and Rollings, 2010) |

Table 1.1 Continued

| Term / Phrase              | Definition  |
|----------------------------|---|
| First Person Shooter (FPS) | In this type of game genre, players only have the control of one character. Player only sees through that character's eyes. FPS also known as POV (point of view) shooter. (Adams and Rollings, 2010)   |
| Flash                      | It has two meanings in two different genres, in MOBA or RPG (role playing game) flash is a form of movement in a short distance via disappearing one place and reappearing on another. On the other hand, flash is used as a bomb type that blinds the enemies for a couple of seconds in FPS or Battle Royale games. |
| Fog of War                 | The part of the map outside of vision. In other words, areas that cannot be seen without interaction. (Adams and Rollings, 2010)  |
| Gold Advantage             | Generally used by casters to explain which team has the most gold in a game. This comparison can be between opposing players or teams.  |
| Hit Points (HP)            | This indicates the health of a player. When it becomes %0, the player dies in the game.   |
| Inting                     | It is a short term for intentionally dying to opposing characters to lose the game.   |

Table 1.1 Continued

| Term / Phrase                          | Definition  |
|--|---|
| KDA                                    | Abbreviation of Kill, Death, Assist. It is the general statistics of a player in a certain game. KDA is calculated by addition of kill and assist divided by number of deaths.  |
| Maps                                   | Map is a place where the games are played. Mini-map is a version of the mentioned place, preferably small and less detailed.  |
| Meta or Metagame                       | Metagame or in short meta is used for describing the most powerful game related elements such as characters, items, or weapons. It is also used for explaining the trend in games that other players follow. (Boluk and Lemieux, 2017)            |
| Multiplayer Online Battle Arena (MOBA) | Similar to the FPS games, in this genre players also control only one character and teams up with other players to defeat opposing players' team. Usually, the objective is to eliminate opposing characters and destroy their base.              |
| Pick & Ban (Draft)                     | It defines the phase before the game starts, especially in MOBA games. In this phase, every player first bans a character just for that particular game, then picks a champion of his/her own. This whole phase is also called draft or drafting. |
| Shot caller                            | Shot caller is a player that decides what kind of plays or tactics are going to be used during the game.  |

Table 1.1 Continued

| Term / Phrase       | Definition   |
|---------------------|--|
| Smoke               | Using this ability/item players can limit the opposing players' vision.  |
| Statistics or Stats | General term that is used for the powerfulness of one player or a character. (Carlsson and Pelling, 2015)          |
| Ultimate            | The most powerful ability of a character. It usually takes more time to use again in a match than other abilities. |
| Vision              | Designated area that a player or team can see without any interaction.   |
| Wards               | Items that are used to gain vision in the fog of war.  |



## **CHAPTER 2**

### **LITERATURE REVIEW**

As mentioned in the previous chapter, this study aims to understand the needs and expectations of the spectators while watching an esports event, and why they are spectating esports in the first place. By doing so, whether the current interfaces are enough for their experience or not, will be discussed and there will be a set of recommendations for future interfaces. As the study focuses on the experience of users (spectators) on esports spectating and being a spectator, the study benefits from the literature in four separate areas of research.

The first area is a background and historical research, which includes the journey of competitive gaming through time and types of competitive games and their genre. By exploring the background and the types of games, the base of selecting the appropriate games for the study will be established. When the base is created, the selected games will be discussed in terms of the reasoning behind choosing them. This creates the second area of the research which is a comprehensive analysis of selected games. In the third part of the literature review, spectating will be analysed and discussed as a particular activity that people like to engage in. This part includes the stakeholders of the spectating experience as well as the tournaments that bring events to the spectators. As mentioned, the focus is on the experience of the spectators and the interaction between spectator interfaces and users. Therefore, the final part of the literature review looks at relevant aspects of user experience. Both user interfaces of regular sports and esports will be presented and discussed later in this chapter. For the esports section, user interfaces and diverse frameworks will be analysed and explored.

## **2.1 The History of Competitive Gaming**

In this part of the chapter, before paying attention to the spectators' perspective, to give background information and familiarity, the history of competitive gaming, how it has become popular, and an overview of the games involved, will be discussed.

The word 'game' itself brings the concept of competition. Players have been trying to be the best at a particular computer game for decades. It goes back to the late 60's when Tennis for Two, which is claimed to be the first video game, was created (Scholz, 2019). Despite these claims there is also evidence that the video game, Nim, was presented in 1940, which also had the competitive elements and first ever game tournament of its own with spectators that watched the games. After these two games, there were years of silence in the aspect of competitive gaming. After a long pause, the history of video game competition or competitive gaming continued with the event in 1972 at Stanford University with the game Spacewar. The university students played the games for the prize of a year's subscription to a well-known magazine (Rolling Stone) (Taylor, 2012). In 1980 and 1981 there were two different tournaments with contrasting stories. One was The First National Space Invaders which was popular among players with a high number of attendance (10,000 participants). It had regional qualifiers among the USA's big cities, Los Angeles, San Francisco, Chicago, New York City and Fort Worth (Ausretrogamer, 2015). Atari tried it the following year with the World Championship, and although it had \$50,000 prize money and an expected attendance of nearly 10,000 participants, they only had 174 contestants. This failure was the result of financial obstacles of the players, since they had to pay for all of their expenses themselves (Scholz, 2019).

At the beginning of the 90's, personal computers (PCs) became popular among the people, because they were both capable and affordable. With the emergence of the Internet, it has become increasingly easy to connect computers and consoles with each other. Migliore et al. (2021, pp.3) mention in their book that, "In the mid-1990s, local area network (LAN) parties emerged. The concept of a LAN party is simple. Bring your own PC or console, connect them together, and compete for prizes



ranging anywhere from bragging rights to large sums of cash”. Over the years, the attraction to competitive gaming increased. In the late 90’s, eastern and western countries had developed their own approaches to competitive gaming. While eastern countries more focused on the ‘Massively Multi-user Online Role-Playing Games’ (MMORPG), western countries mostly develop and played ‘First Person Shooting Games’ (FPS), for which the pioneers were Doom, released in 1993, and its follow-up Quake in 1996 (Wagner, 2006). In those years, many associations were founded. Moreover, the term esports, also known as electronic sports, was used in a press source, when the Online Gamers Association was established in 1999 (Wagner, 2006). However, the most solid attempt was in 2000. South Korea took a step and founded the Korean e-Sport Association under the regulations of the Ministry of Culture, Sport and Tourism.

Although for players it was easy to become online and connect with each other, spectating was still a physical activity. With the lack of audience, esports once again started to become unpopular and nearly forgotten. Since the spectatorship needed effort, the numbers of participants were extremely low compared to now. Sponsors started to pull their support and cash flow decreased dramatically (Messier, 2011). In his book, Tobias M. Scholz (2019) states three events that changed this dramatic environment. The first one was the release in 2010 of StarCraft, a Real-Time Strategy (RTS) game that will be discussed in the next part of the research. The second was the release of League of Legends (2009), a Multiplayer Online Battle Arena (MOBA) game that is one of the selected games for this research. The last event had the biggest impact on the popularity and future of esports and spectating, which was the founding of Twitch in 2013 (Taylor, 2018). Since Twitch solved the biggest obstacle, accessibility to competitive games through the Internet, from that point esports had an exponential growth. Not only for the streamers but also for the tournaments online streaming services offered a vast opportunity of viewership. With the increase of viewers, sponsors more and more invested in regional, national, and international tournaments or leagues. Nearly every game has its own tournament system with detailed infrastructures. In these tournaments or leagues, teams compete

with each other mostly for fame and the prize money. Each game has its own professional gaming rules, in some games players compete in 1-on-1 matches, some games are played with teams of 2, 3, 4 or 5 players. So, it is clear that competitive games need players (gamers) to be played. There was a general opinion about the personality of gamers that they are more socially distant or unpopular. However, with the said exponential growth in competitive gaming, there has been a cultural change in the public's opinion about gamers. These days, gamers are seen as talented people with ambition (Migliore et al., 2021). Details about gamers will be further discussed in the next parts of the literature research.

### **2.1.1 Competitive Games & Genres**

As mentioned in the previous section, esports growth was affected by several events. Usually, a blockbuster game had a major impact on the industry over the course of time. These games had unique features that became entertaining and exciting to the players and spectators. (Ma et al., 2021) This brings the research to the analyses and discussion of different genres and competitive games. While there can be many different aspects to cover in games and genres, this study focuses on only competitive genres and games. Therefore, in this chapter the following genres are analysed: Real-Time Strategy (RTS), First Person Shooter (FPS), Multiplayer Online Battle Arena (MOBA), Battle Royale (BR), Digital Collectible Card Games (CCG), and lastly Sports Simulations.

#### **2.1.1.1 Real-Time Strategy (RTS)**

Strategy based games usually consist of tactical thinking and making plans to defeat the opposing player. Real-time strategy (RTS) games are one of the most popular and oldest among competitive game genres. It is a subgenre of strategy games in which players play the game simultaneously in real time as opposed to taking turns. The most popular games of this genre are Warcraft and StarCraft.

Typically, an RTS game is played on a map that shows resources to gather and areas to create or deploy assets. In short, players of RTS games in a typical game gather their resources, build bases and buildings, develop these bases, and have control over their assets and characters (Figure 2.1). While playing an RTS game, players should have both micro- and macro-management of their game playing, meaning each asset needs a specific instruction to manage. Also, at the end, players try to build an army as well as a complex and well defended base to overcome their opponent. One side should complete the given objectives, to be victorious at the end of the game.



Figure 2.1. StarCraft II Gameplay (StarCraft, n.d.)

#### **2.1.1.2 First Person Shooter (FPS)**

As the name represents, First Person Shooter (FPS) games are played from the eyes of a selected character, with preferred kinds of weapons to combat in a particular environment which is usually selected beforehand. As opposed to third person games, in first person shooter games players cannot see the body of their character – only the visible part of the weapon or the hands (Figure 2.2).

FPS games are one of the most popular gaming genres. Moreover, despite it being debatable, it is believed that FPS provides to the players better cognitive flexibility, since the game is played at such speed and gamers need to change their task quickly (Colzato, 2010).

There are several different modes available in FPS games. The most frequent are “Deathmatch”, in which players get points for eliminating each enemy, and “Capture the Flag”, where one team tries to capture a designated area while the other team defends the area. Roles are swapped after a particular number of games (Migliore et al, 2021). The most popular games of this genre are Counter-Strike: Global Offensive, Call of Duty, Overwatch, Rainbow 6 Siege, and Valorant.



Figure 2.2. Overwatch Gameplay (Blizzard, n.d.)

### 2.1.1.3 Multiplayer Online Battle Arena (MOBA)

This genre started out as a subgenre of strategy games. However, after the undeniable success of two games (League of Legends, Defence of the Ancients), it has its own genre now. Different from other strategy games, in MOBA games players have



control over only one avatar from a selection of characters and in some cases the associated sub-characters. Generally (especially in competitive games) there are five players in each team, playing against each other on a map (symmetric). The main objective is to destroy the other team's base and towers before they destroy yours. To achieve the main goal, players try to eliminate opposing team players as well as the NPC (non-player characters) who spawn on the map. The map is designed in a way that creates three main lanes and areas that have NPCs, which are called "Jungle" (Figure 2.3). The lanes are named after their position on the map: Top Lane, Mid Lane, Bottom Lane. Each lane has its hero and champion(s) (specific names differ from game to game). Players see the game in a bird's eye view that is diagonal to the orientation of the map (Figure 2.4). As mentioned, the most popular games of this genre are League of Legends (LoL), Defence of the Ancients (DOTA) and Smite.

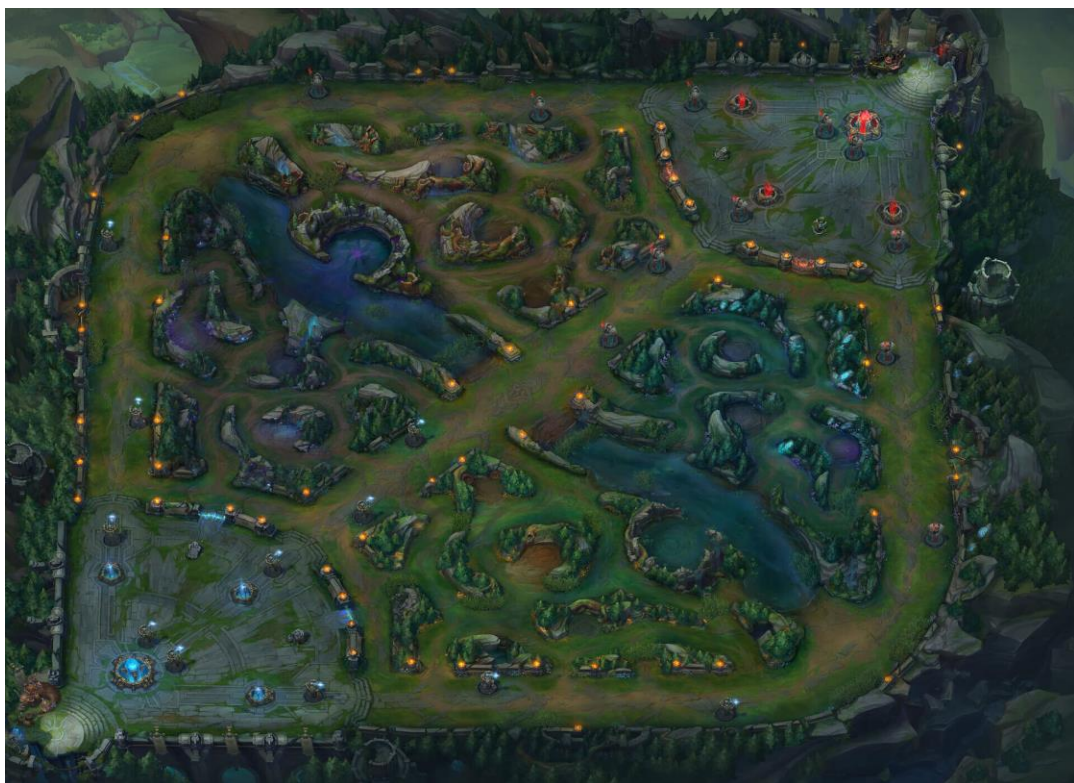


Figure 2.3. League of Legends Map (Nexus.leagueoflegends, n.d.)



Figure 2.4. DOTA Gameplay (Redbull, n.d.)

#### 2.1.1.4 Battle Royale (BR)

This genre has a similar context with survival games and movies. The origin of this genre comes from the Japanese novel and movie named *Battle Royale* (Fillari, 2019). Complementary to the *Battle Royale*, the book and movie series “The Hunger Games” has also created a base for games that are in the Battle Royale genre. Games of this genre have the certain characteristics of the said novels and movies.

Players (100 per game, but this reduces to 64 for competitive games) are dropped to a large, scaled map or randomly spawn on the map. After that, teams or players loot as much equipment, ammunition, defence, and weapons as possible to be the last player on the map. While gathering this loot, players also eliminate each other, when they come into contact on the map. Moreover, generally the map shrinks in time to gather players closer to each other and increase the chance of coming across each other.

To win a Battle Royale game, teams or players must be the last living team or player on the map. The type of gameplay differs from game to game. Some games are

played from a first-person point of view, some are played from a third-person point of view, while some games offer both views. This genre has a variety of games that have emerged in recent years: PlayerUnknown's Battlegrounds (PUBG), Call of Duty: Warzone, Fortnite, H1Z1, and Apex Legends.



Figure 2.5. Apex Legends Gameplay (Business Insider, n.d.)

#### 2.1.1.5 Digital Collectible Card Games (CCG)

Digital Collectible Card Games emerged alongside their physical counterparts (Magic the Gathering, Yu-Gi-Oh, Pokémon). The gameplay is almost the same as with physical collectible card games, with addition of graphics and animations.

Each player has a deck that was created beforehand according to the meta of the game and skills and abilities. Players battle each other in 1-on-1 duels. In each turn, players draw cards from their deck and use them to decrease the opponent's health, ultimately to a health value of zero to win the game. The most popular games in this genre are Legends of Runeterra, Hearthstone, Magic: The Gathering Arena.





Figure 2.6. Hearthstone Gameplay (The Guardian, 2015)

#### 2.1.1.6 Sports Simulation

As the name suggests, the Sports Simulation genre offers players sports-related games in general. As they simulate the sport, game developers each year try to get as realistic visuals as possible. Different from other games and genres, these games are generally renewed annually and mostly named after the specific Sports Associations that the game originates from and is related to, along with the year of release. For instance, basketball has the popular game NBA 2K series, soccer has both the FIFA and PES series, and American football has the MADDEN series (Petrullo, n.d.).

In these games, gamers control the players which are gamified versions of real athletes. These athletes are statistically coded to the game with a rating determined by their ability and skill set. As mentioned above, FIFA, PES, NBA 2K, NHL, MADDEN are the most common sports simulation games, except for Rocket League, where players control a car that can both drive and fly in a giant soccer arena.



## 2.2 Overview of Selected Games

When someone comes across the name ‘esports’, many different games and genres come to mind. Big or small, every competitive game has its audience, even the oldest games. Therefore, within the context of this research, how to decide on the games to include in the research was a challenge. Trends in the gaming world change quickly when a new genre appears. However, there are two games that have longevity and have become the most played games over the years. These games, as shown in Figure 2.7, are ‘Counter-Strike: Global Offensive’ and ‘League of Legends’. Another reason why these two games are selected for study is that they are the most watched games by hour on Twitch, according to the Newzoo’s Game Streaming Tracker (2020), which continuously tracks live viewing and streaming behaviour across Twitch. The third game is ‘PlayerUnknown’s Battlegrounds’ (PUBG). PUBG was released in 2017 and since its release has become an inspiration to many games, since it was one of the first games in the ‘battle royale’ genre.











| ESPORTS HOURS ▼ |   | MARCH 2020 ▼ |               |               |        |
|-----------------|---|--------------|---------------|---------------|--------|
|                 | Title   | Total Hours  | Esports Hours | Share Esports | Change |
| 1.              |  Counter-Strike: Global Offensive      | 66.5M        | 20.3M         | 30.6%         | -      |
| 2.              |  League of Legends                     | 123.2M       | 10.3M         | 8.4%          | -      |
| 3.              |  Dota 2                                | 41.7M        | 6.5M          | 15.5%         | 1 ▲    |
| 4.              |  Rocket League                         | 10.5M        | 4.8M          | 45.6%         | 1 ▲    |
| 5.              |  Age of Empires II: Definitive Edition | 3.7M         | 1.4M          | 37.6%         | 7 ▲    |
| 6.              |  Tom Clancy's Rainbow Six: Siege       | 13.0M        | 0.9M          | 6.9%          | 3 ▼    |
| 7.              |  StarCraft II                         | 4.2M         | 0.8M          | 18.7%         | -      |
| 8.              |  PLAYERUNKNOWN'S BATTLEGROUNDS       | 13.7M        | 0.6M          | 4.3%          | 3 ▲    |
| 9.              |  Warcraft III                        | 2.4M         | 0.5M          | 18.9%         | 4 ▲    |
| 10.             |  Teamfight Tactics                   | 13.6M        | 0.4M          | 3.0%          | 4 ▲    |

Figure 2.7. Most viewed streams on Twitch in 2020

### 2.2.1 League of Legends (LoL)

League of Legends is a Multiplayer Online Battle Arena (MOBA) game, released in 2009 by Riots Games. The game is inspired by another MOBA game, Dota. There are over 100 characters that can be selected by players to control in the game. Players control a character, alternatively known as a champion, in a certain role with unique abilities and battle against players from another team. All the professional matches are played on the same map, which is called 'Summoners Rift'. The role of the players is determined by which lane they are in. There are three main lanes (Top

lane, Mid lane, Bot Lane) and the areas besides these lanes include the NPC's (non-player character) which are called "Jungle" in the fog of war (Donaldson, 2015).

In competitive arenas, before the game there is a phase that is named from the action, 'pick & ban' phase, where players pick champions that they want to play, usually according to meta, and ban champions that they do not want to see in the match. This phase is preferably operated by the coach of the teams.

After the pick & ban phase, the game starts. The main goal to finish the game is to destroy the opponent team's 'Nexus', which is a structure

located in some kind of base with other protective structures (three towers in each lane along with two towers in front of the base). While trying to destroy the base, players have some subgoals such as eliminating the opposing players who defend the said 'Nexus' or slaying the NPC characters such as 'Drakes' and 'Baron Nashor'. By laning, killing enemy champions and killing NPCs, players' characters can level-up, upgrade their skills, earn gold, and buy items from the market similar to MMORPG games (Petrullo, n.d.).

### **2.2.2 Counter-Strike: Global Offensive (CS:GO)**

CS:GO (Counter-Strike: Global Offensive) is a first-person shooter game developed by Valve. It is the fourth game of the Counter-Strike series, the first Counter-Strike game being created as a different version of the well-known game Half-Life (Sasmoko, 2019). The game contains two teams: terrorists and counter-terrorists. Both teams' goal is to eliminate each other before they achieve a certain objective, which varies between game modes. There are several modes as follows: Competitive (which is used in competitive events and ranked matches), Casual Deathmatch, Demolition, Arms Race, Wingman, and Flying Scotsman (Counter-Strike: Global Offensive, n.d.).

The main objective of the game in competitive matches is either eliminating the enemy team entirely or completing a certain objective (plant/defuse the bomb) in a

round. Roles (terrorist, counterterrorist) are swapped between teams, when 15 rounds are played in a game (Carlsson & Pelling 2015). In the competitive arena, games are played across 30 rounds (each round takes a maximum of 1 min 55 sec). The team that wins 16 rounds wins the game. Matches are played usually in a best of five style, which means a team should win at least three games to the entire match. In each round, based on their success from the previous round, players are given money to spend on weapons, bombs, and defence (British Esports Association, 2021).

### **2.2.3 PlayerUnknown's Battlegrounds (PUBG)**

PUBG is a fairly new game (2017) compared to the games that have just been discussed. However, it has attracted a massive audience since it was released. As stated in the previous section, the game originated from the novel and movie *Battle Royale*. In this game, a player's or team's goal is to survive and be the last standing player or team in the map, onto which they have been dropped by aeroplane. After being dropped, players look for weapons, helmets, armour, ammunition, and healing items to prevent themselves from harm and eliminate others quickly. This gathering process is called looting (Moniaga, 2019). To gather players in an area, the map shrinks in periods with a transparent blue wall. Staying out of this blue wall reduces players' hp (hit points). If they do not get to the safe zone in time, they are eliminated from the game (Carter, 2017).

In PUBG there are different maps with separate terrain conditions, colour themes, and appearance. The maps are as follows; Erangel, Miramar, Sanhok, and Vikendi (Figure 2.8).



Figure 2.8. PUBG Erangel map (Pubgmap, n.d.)

In professional matches, there are different team formations. In Solo Mode, players perform individually; in Duo Mode, teams consist of two players; and in Squad Mode, teams are created with four players (Nunneley, 2017). Players must eliminate other players to win. After the match, teams get points by their ranking on the game. The last team on the map gets the highest points. Teams also earn points for kills.

### **2.3 Spectating as an Activity**

There is no necessity for games (both digital and physical) to be played with an audience. However, what makes games more alive, and entertaining is the presence of viewers. Furthermore, with an audience, advertisers and sponsors can find revenue or interest. Since there is more attention to those games, they become more and more popular (Cheung & Huang, 2011). Additionally, Ducheneaut et al. (2006) states that these gatherings (physical or digital) create a social environment for the spectators that benefits the spectating community. It is not possible to talk about esports spectating consumption without mentioning the traditional sports spectatorship.

Sports and esports have several common grounds, the first of which is creating a hyped environment for the viewers (Sun, 2017). Moreover, both of them present skilfulness and talent to the audience (Michaluk, 2012). However, it is natural that as technology develops it offers more and more opportunities and advantages to the sports media. Since esports is delivered through computerized broadcasts (such as Twitch, YouTube and Facebook), it is easier for their audience to access these media (Hamari & Sjöblom, 2017). Esports spectating activity is often described as a visually interactive activity. It is partly a correct argument – with the help of live chat, spectators can interact with commentators, streamers, and with other spectators (Qian, 2019). Interaction becomes more efficient in the case of individual streaming (Charleer, 2018), but in other cases such as tournaments or events it can become lagged. With the constant change in live feeds, it gets hard to get a track of what is written sometimes. Also, the interactivity is limited with live chat nowadays.

Another similarity between traditional sports and esports, which is the part of the scope of this study, is the motivation people have for spectating. Spectators of both forms of sports and games have similar, sometimes even the same, motive (Pizzo et al., 2018). There are several articles and studies about the motives of spectators, and this subject will be discussed further later on in the chapter. As introduced above, this section discusses the spectating activity along with the stakeholders involved.

### **2.3.1 Stakeholders**

Although esports are played by pro-gamers, there are several people or organizations involved with esports. These collaborators contribute to the esports in separate ways. For this study, four contributors were identified according to the relevance to the spectating experience and their varied roles (Bányai, 2018). Thus, the four roles assumed in competitive gaming can be identified as the main stakeholders for this research: (i) gamers, who create the experience and action in the first place on the screens of spectators, (ii) tournaments and their organisers, allowing people to view gamers and matches in an organized way, (iii) casters and observers, who are a bridge between gamers (or the game itself) and spectators, and finally (iv) spectators, who are individuals viewing the game, the gamers and the emerging play. The spectators and their spectating experiences are at the centre of this research. In this section, the stakeholders will be discussed in a way to highlight and investigate their contribution to the experience. Moreover, spectators will be analysed in a more in-depth manner to discuss their motivation to watch esports.

#### **2.3.1.1 Spectators**

While it has been an argument since competitive gaming became popular, whether it can be considered a sport or not, spectators of esports strongly argue that it should indeed be considered as a sport, which is discussed in the “History of Competitive Gaming” section. Here, the discussion is focused on spectators and the motives that made them impassioned fans of competitive gaming.

According to Henderson (n.d.) spectating a competitive game is similar to spectating a poker game. Since, as a spectator, you know the hand of both players and understand their strategy. However, the players of course know only their own strategy and must guess or predict that of the others. This is called information asymmetry, in which players and spectators have access to different sets of information. Spectators can easily predict where there will be upcoming action

where players will come across each other, but players do not have such privileges (Carlsson & Pelling, 2015). This tension brings spectators a joy of watching, as in poker or other kinds of sport. Henderson (n.d.) also mentions that the spectator must have a basic knowledge of what he/she is watching, not only to enjoy more but also to learn from the players. Moreover, Cheung and Huang (2011, p. 763-772) mention nine different personas who watch StarCraft (listed below). Spectators are said to be either clearly one of the personas or a mixture of multiple personas.

1. *The Bystander* can be identified as the least engaged one among spectators. They are generally either *uninformed* or *uninvested*. While *uninformed* has no experience on the game and does not understand the game mechanics, *uninvested* has brief information and experience about the game.
2. *The Curious* tries to give attention to the knowhow of the game. They tend to spectate games to learn more.
3. *The Inspired* are encouraged to play the game by spectating.
4. *The Pupil* has the characteristics of both curious and inspired. They tend to put their spectating experience to practice improving their gameplay.
5. *The Unsatisfied* prefers playing the game rather than spectating it. For them, spectating is a *weaker substitute* for their daily life activities.
6. *The Entertained* spectates to entertain themselves. It is like a hobby for them.
7. *The Assistant* focuses on giving suggestions and tips to the player. Rather than spectating a broadcast, their spectating experience is more physical.
8. *The Commentator* provides commentary and creates excitement (hyped environment) for the other spectators.
9. *The Crowd* prefers to watch the games with other spectators, similar to the regular sporting events. Spectatorship is a communal act for them.



As Cheung and Huang (2011) discuss the different personas, some of the definitions are correlated with several studies on the motivations of the viewers. Those intersections are beneficial for this study, as one of the focus points of this research is to investigate and understand the needs and expectations of the spectators by analysing their motives.

Esports streams and live broadcasting platforms are emerging day by day as a new form of media for esports. Furthermore, this emergence improves the esports industry that already is in a full growth pace (Qian, 2019). Consequently, to discover what makes these platforms popular, the motivation of the esports spectators is an area that is highly investigated. The subject is crucial in terms of understanding consumer behaviours (Ma et al., 2021). Therefore, there are several studies that offer solid results to understand the motives of spectators. The remainder of this chapter will discuss and compare the said studies and the results.

The studies that were reviewed preferred to use the motivational scale for sport consumption (MSSC) alongside ‘uses and gratifications theory’ (Katz et al., 1973). MSSC is a tool which is used for measuring the motives of sports spectators (Trail, 2001), while uses and gratification theory (UGT) is used to find out the reasoning behind media consumption of spectators, by uncovering sets of needs that differ between individuals (Ma et al., 2021). According to MSSC, there are eight motives for spectating a sport event. In his manual, Galen Trail (2001, pp.108-127) offers a table of definitions for the various motives (Table 2.1).

Table 2.1 Motivations and Descriptions from ‘The Motivation Scale for Sport Consumption Manual’ (Trail, 2001, pp.108-127)

| Motive                                  | Description   |
|---|---|
| Vicarious Achievement                   | The need for social prestige, self-esteem and sense of empowerment that an individual can receive from their association with a successful team |
| Acquisition of Knowledge                | The need to learn about the team or players through interaction and media consumption   |
| Aesthetics                              | The artistic appreciation of the sport due to its inherent beauty   |
| Drama/eustress                          | The need to experience pleasurable stress or stimulation gained from the drama of the event   |
| Escape                                  | The need to find a diversion from work and the normal, unexciting activity of everyday life   |
| Physical attractiveness of the athletes | Watching sports because of the physical attractiveness or “sex appeal” of an individual athlete or group of athletes                            |
| Physical Skills of the participants     | The appreciation of the physical skill of the athletes or the well-executed performance of the team   |
| Social Interaction                      | The need to interact and socialize with others of like interests to achieve feelings that one is part of a group                                |

Combining Trail's, Cheung & Huang's, and Katz's studies, Hamari and Sjöblom (2017) presented ten hypotheses which are based on the motives in Trial's (2012) MSSC manual. They conducted a survey with 888 esports spectators to explore motivations of sports customers. From their study it was concluded that, escaping everyday life, acquiring knowledge from esports, novelty, and lastly the enjoyment of aggression was associated with the frequency of spectating competitive games. Furthermore, Banyai et al. (2018, pp.8-9) discuss a study of Lee et al. (2014), pointing out that findings "...demonstrated that esports viewers watched professional gaming because they enjoyed the drama that occurred during esports matches, as well as the recreation, game commentary, and skills displayed by the professional gamers. Furthermore, team attachment and game commentary strongly contributed to the satisfaction of esports viewing.". Since MSSC is mainly used for traditional sports, Pizzo et. al (2018) investigated the comparison between traditional sports and esports. Their study concluded that motivations to spectate traditional sports and esports mostly overlap with each other. With a similar approach, Qian et al. (2019) compared all the studies above and conducted research with a result of two different motives. They identified that skill improvement and vicarious sensations also affect the frequency of watching esports - thus, motivating the spectators as well.

Different from the aforementioned studies, very recent research has been conducted by Ma et al. (2021), where the authors aimed to investigate not only the motives of spectators but also how the game genres affect these motives. Five genres (Action, MOBA, Battle Royal, CCG and Sports Simulations) were investigated. They also deduced that 'vicarious achievements' and 'knowledge acquisitions' are the reason for spectating. Moreover, they found that CCG and Sport Simulations spectators are more motivated by knowledge gaining and aesthetics than other genres. On the other hand, spectators of the MOBA genre tend to spectate as a leisure time activity. As mentioned in the beginning of this section, investigating the motives of the spectators is essential to understand their behaviours. While the mentioned studies in this section focused on the behavioural and marketing related aspects, this study focuses on the expectations and needs tied to the spectating interfaces and creating an

enhanced conceptual user interface for further research. Therefore, this present research will take only considerations from previous studies about motivations of spectators, whilst the method to investigate spectators' motives will be empirical rather than theoretical.

### **2.3.1.2 Casters & Observers**

In regular sports there are usually two or three commentators. The roles and responsibilities are divided between the commentators. One type is well-informed about the background information and statistics and is called a 'colour commentator'. The other type is called a 'play-by-play analyst', who is responsible for describing the game and what happens in it (Cheung and Huang, 2011). Also, Cominsky et al. (1977) mention that although the commentators' only job is to report what is happening in the game, they create entertainment and enjoyment for the audience.

Similar to regular sports, when a competition is watched without commentators, it becomes a mundane event. Even the language of the commentator sometimes affects the watching experience. According to Rambusch, Taylor, and Susi (2017), Swedish spectators of esports mostly prefer English speaking commentators when they watch competitive games. Interestingly, viewers avoid Swedish broadcasting, because the translation of the game, in their words, is 'awkward' and decreases the enjoyment of the watching experience.

Commentators mostly use the asymmetric information, mentioned earlier in the chapter. As a type of spectator, commentators also can see where the action could be happening. Therefore, they usually help to build tension in the game.

Lastly, there is a hidden role in these broadcasts: a person who never speaks and is never seen by the cameras. The 'observers' role is to change between virtual cameras and different views to show the audience what is happening in the match. Stackoverflow (2013) describes the observer as equivalent to the camera man in

regular sports. In some cases, the observer doesn't have a substantial role, since the in-game camera is steady and does not move (Rambusch et al. 2017). However, mostly they must observe all the maps to make sure nothing is missed. In this case, split-screen views or changing the layout of the interface to show more action usually works. Yet, the control of these changes is in the observers' hand only. So, in other words, the spectators' experience is in the observers' or commentators' hands.

### **2.3.1.3 Professional Gamers**

Gamers are the core element of the esports industry. Since the industry is still in a stage of growth, there are always available positions in teams for amateur players to show their skills (Scholz, 2019). Yet, some studies state that getting into a team and playing in front of millions of viewers is getting harder and harder. Johnson & Woodcock (2021, pp.9-10) mention in their article, "It is not sufficient to simply be a top player in a particular game; that game must have a large community of players to ensure both that the required skill levels are genuinely extremely high (the top player in a game only a few people play is unlikely to be as skilled as the top player in a game played by millions) ...". Therefore, pure talent is not enough for them to be successful. Similar to traditional sports, players need practice. Most professional gamers spend half of the day training themselves by playing the game, practicing plays, and learning about the current meta along with the buffs and nerfs (Migliore, Mcgee & Moore, 2021). Furthermore, it is crucial for professional players to take care of their body and mental health. Gaming is generally a static activity for the body, but dynamic for the mind and eyes. Professional players sometimes have injuries related to the neck and spine, because of staying in the same position for a long duration. In addition to physical disorders, gamers sometimes face some mental struggles. Since most gamers switch to being professional at a young age (Scholz, 2019), adjusting to the fame, pressure and practices can be hard for them.

The economics of esports has its own models, rules, and regulations. Players usually make arrangements and contracts with the teams year-by-year (Haight, 2020).

Therefore, for gamers their livelihood is not steady, although the transfer system among the teams is well managed. Some researchers believe that professional gaming, and esports related occupations in general, are out of standard. Moreover, this non-standard job title can be seen better than traditional standard jobs (Kücklich, 2005). In terms of annual income, there are various numbers that change according to level of proficiency, game, genre, or team, starting from US \$55,000 and rising to around US \$3.7m (Esports Earnings, 2021).

As mentioned in previous sections, several motivations for spectating esports are linked to the gamers. For spectators, gamers can be a role model or a tutor. Even when a player retires from the professional arena, fans of that player continue to watch his/her personal streams. Therefore, this makes professional gamers more essential for the spectating experience.

#### **2.3.1.4 Tournaments & Events**

From the start of esports, tournaments were there to organize the competition between players, as stated in the ‘History of Competitive Gaming’ section. Furthermore, tournaments are at the heart of the economics in competitive gaming. Teams earn their income from sponsors that are invested in them and also tournaments or events mostly have their own prize pool for the top teams in the tournament. Therefore, like in any business, sponsors want to see the team that they are supporting in a big tournament with a big audience. In this way they can show their name. Teams and players compete in tournaments because of similar goals to regular sports players and teams: to win the trophy and money.

In 2019, the three games introduced in this chapter earned approximately US \$46.6m revenue just from staged events (Esports Earnings, 2020). Similar to the regular sports, every game has its own regional tournaments and one or two international tournaments to determine who is the best in the world.

These professional tournaments are arranged in determined cities or countries with a physical audience and simultaneously broadcast on various websites or applications. To give an example of these big tournaments, League of Legends World Championship 2016, which was held in four different cities of the United States (San Francisco, Chicago, New York, and Los Angeles), was watched live by 47,268 people, whereas online viewers totalled nearly 43 million (Lineups, 2019).

Since the COVID-19 pandemic affected all our lives, it affected the tournaments as well. In mid-2020, all the tournaments were postponed to a further date to be announced. Some were cancelled due to lack of sponsors, but some of the major leagues and tournaments were held online (Esports Earning, 2021). In the year 2021, the organization of tournaments and events started to go back to normal and gradually met with their audience again.

## **2.4 Exploration of User Experience**

In the previous sections, the history of esports was presented and the activity of spectating was discussed in detail. Moreover, types of spectators and their motives were highlighted. Since the aim of this study is to enhance these spectators' experience according to their expectations and needs, it is important to make an analysis and discussion of what that experience itself comprises. As stated in the previous section, traditional sports and esports have similarities in several aspects. Therefore, this section investigates the spectator experience in both traditional sports and esports.

In this section of the literature review, interface elements on various traditional sports broadcasts will be discussed with reference to the types and means of conveying information to the spectator. As these broadcasts are more familiar to the majority of the population, considerations and points will be taken from these interfaces to be used later in the research in a conceptual user interface design. The second part of

this section includes a review of the user interfaces (UIs) on esports broadcasts. Several models and frameworks will be analysed alongside the current interfaces.

#### **2.4.1 Spectator Interface on Sports**

Sports spectatorship goes back to the ancient Olympics, where people watched athletes in arenas (Cartwright, 2018). Until the invention of radio or television, spectatorship was a physical activity. With the help of live broadcasting, it became more universal. Since the number of traditional sports that broadcast both online and TV is over hundreds, the most popularly viewed sports were selected for analysis in this section. The top five popular sports around the world for viewing are: football (soccer), cricket, basketball, hockey, and tennis (Devano & Cline 2021). These sports were ranked by using fourteen criteria such as ‘viewership on TV’, ‘Sponsorship Deals’, Access to the ‘General Public’ and so on. Viewer UIs for these sports will be discussed one-by-one to gather foundational principles and ideas to support the remainder of the study. Although auto racing is not on the popularity risk, there will be an additional discussion of this sport (Formula 1 in particular) since the broadcasts have information-rich content and in terms of pace it is closer to esports.

Football (soccer) is undeniably the most popular sport around the world with nearly 3.4 billion viewers annually. Football also holds the position of being the richest sport in the world (Devano, Cline 2021). It has various broadcasts around the world with several different appearances, as the sport is popular among most of the population. Therefore, the analysis will focus - similar to the esports analyses – on the internationally accepted interfaces (The World Cup, 2018).

As observed from Figure 2.9, football interfaces are fairly clean and try to keep the focus on the game. Only the essential information is embedded into the broadcast throughout the game (scoreboard, top left corner). To provide detailed information (who scored the goals), sometimes a UI bar appears on the bottom of the broadcast (Figure 2.11). The latest technology-based innovation in football is VAR (Video



Assisted/Assistant Referee), which was tested in the 2018 World Cup for the first time (FIFA, 2018). PFSA (n.d.) describes VAR as follows: “Instead of just one person, a team of three people work together to review decisions made by the main referee. They do this by watching video footage of the relevant occurrences.”. The VAR UI (Figure 2.12) appears when it is used actively.



Figure 2.9. FIFA World Cup Final



Figure 2.10. FIFA World Cup Final Score UI



Figure 2.11. FIFA World Cup Final Detailed Score UI



Figure 2.12. FIFA World Cup Final VAR (Video Assisted Referee) UI

Cricket is a common sport especially in Asia and Australia. Therefore, countries such as India and Pakistan have a major impact on its popularity and high audience figures. On a regular cricket UI (Figure 2.13) there is a bar at the bottom of the screen that consists of the essential information about the game. Instead of separating the informational elements, they prefer to keep them together in a single strip.

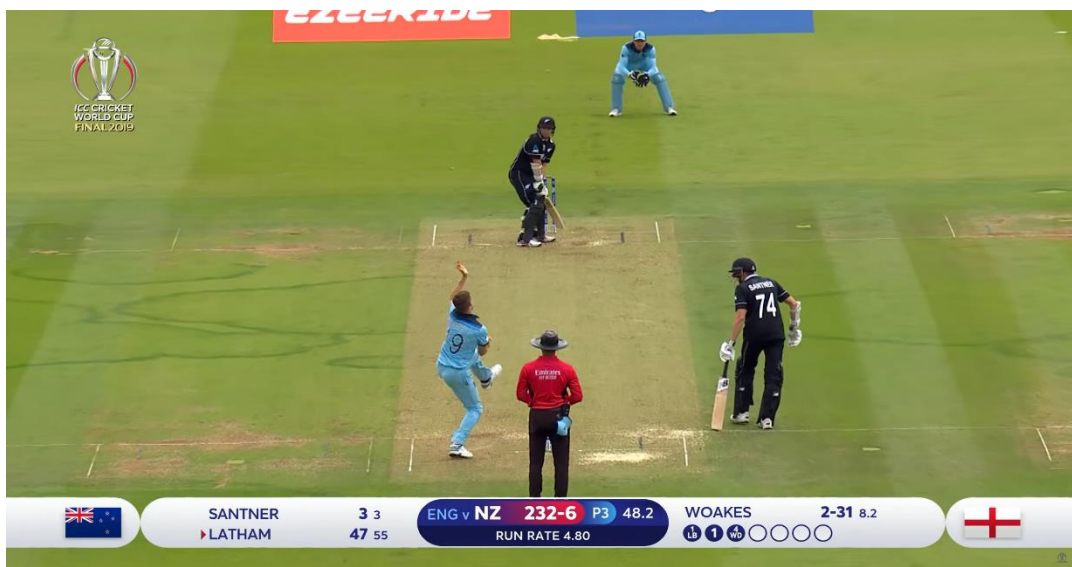


Figure 2.13. ICC Cricket World Cup 2019 Final

Basketball is the third most popular sport around the world. Approximately 2-3 billion people follow basketball around the world. Since the NBA is the most popular and seen as the best among others, NBA's UI will be discussed. Similar to football, basketball interfaces have only the crucial details on the screen throughout the game (Figure 2.14), while greater detail is given when the game stops or slows down.



Figure 2.14. NBA Finals 2021

Hockey is a different case among the others because it has two variations based on playing surface (field and ice). These variations in combination have nearly 2.2 billion viewers annually in the world. Compared to the rest, hockey (field) has one of the cleanest UIs. Only the UI element is placed on the bottom left corner of the screen. This clean look allows spectators to focus on the game more (Figure 2.15).





Figure 2.15. Men's Hockey World Cup 2018 Final

Tennis is the fifth most popularly viewed sport in the world. With the help of Grand Slams (four major international tournaments annually in the UK, USA, France, and Australia) tennis has a large annual audience of around 1 billion people. Similar to the hockey broadcasts, tennis has only the contestants' names and the current scores on screen (Figure 2.16). If necessary, at relevant intervals of play, details are given to spectators such as the ball speed on the serve, whether the ball is in or out, and so on.

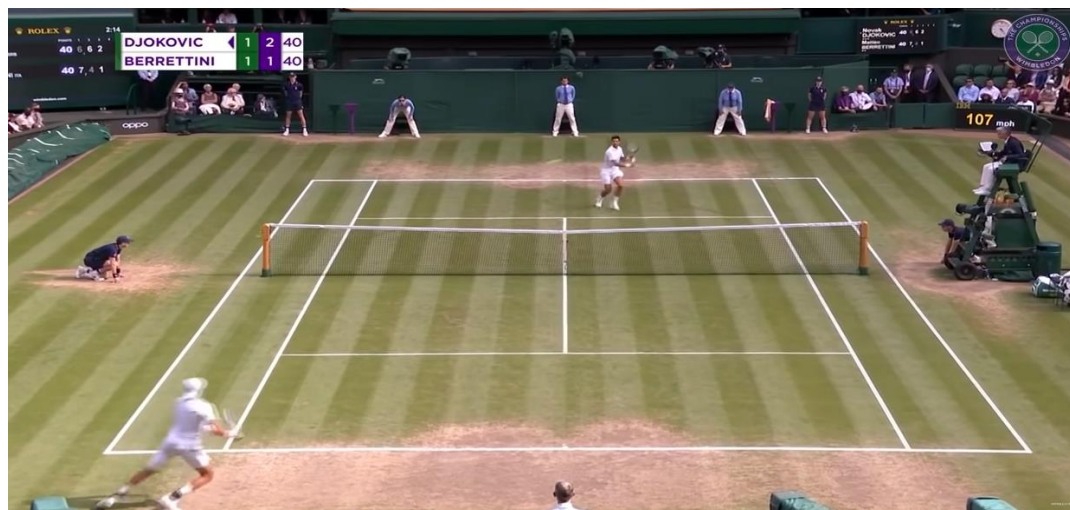


Figure 2.16. Wimbledon Men's Final 2021

Lastly, Formula 1 will be mentioned as a special case. Although it is the 11th most popular sport around the world, it has special relevance to this study because of its high pace and competitiveness. Formula 1's spectator interface is visually the most similar to an esports interface. It has one block element that generally stays throughout the race on the left-hand side of the screen, showing the live leader board and time behind the front runner (Figure 2.17).

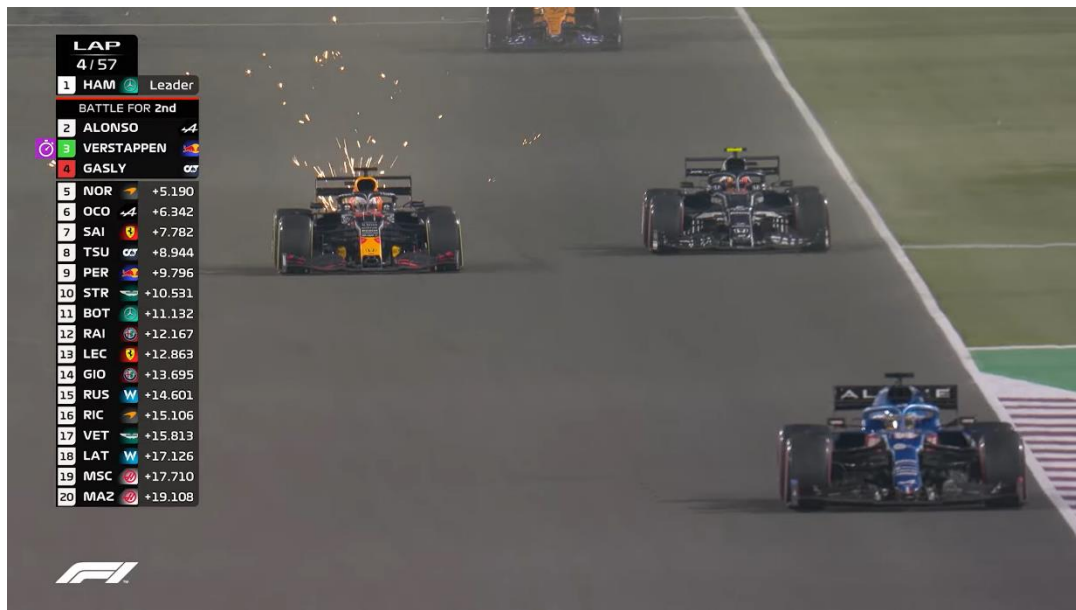


Figure 2.17. Formula 1 Qatar Grand Prix 2021

Other UI elements appear temporarily depending on what aspect of the race is currently being broadcast. For example, when a car goes into the pit, a timer pops up on the screen to show how many seconds the pit-stop took (Figure 2.18). Usually there is an infographic map of the circuit with dots (representing the cars) appearing when a racer does a pit-stop. The reason is to show where the other drivers are in the circuit, and whether exit from the pit stop is likely to involve a close race with another car. In addition, communication between a driver and team, fastest lap details, and comparison between two drivers are some of the frequently shown elements on the UI. As observed from the Formula 1 broadcast, the necessary details for following the race (the main block) easily stays on the broadcast all the time, whilst elements that are relevant in certain situations appear when needed.

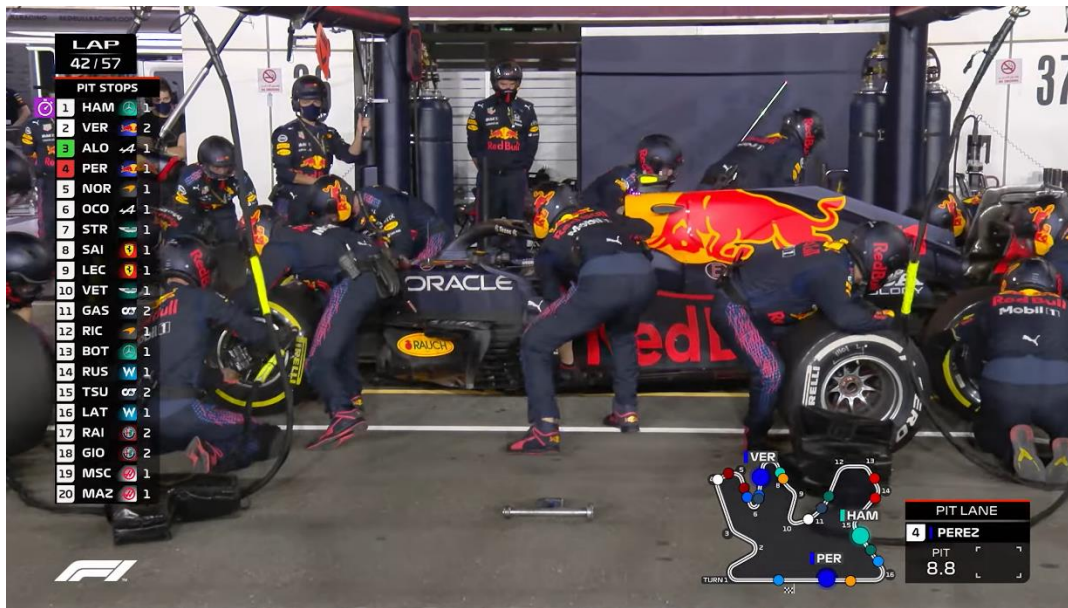


Figure 2.18. Formula 1 Qatar Grand Prix 2021 (Pit-Stop and Map UI)

Overall, UIs for sports broadcasts are intended to keep the focus of the spectator in the event rather than be overwhelmed with overlaid information. Information provision is contextual, being given when needed, so that these details do not crowd the interface (Carlsson & Pelling, 2015). On the contrary, esports interfaces tend to give all available information on-screen at once, which will be discussed further in the following chapters. As an initial consideration, it may be helpful to identify the most essential parts of esports UIs as a step towards giving spectators a better experience.

## 2.4.2 User Interface of Esports

This section of the literature review discusses the various studies on esports interfaces and the frameworks that these studies used or were inspired by. In addition, consideration is given to how these studies can shape this current research.

To propose a conceptual user interface design aiming to enhance the experience of spectators, some principles of perception and how it works are needed to be investigated (Ware, 2012). Carlsson and Pelling (2015) relate the elements in game

interfaces to Gestalt laws. It is important to place these elements at the most natural positions possible. They mention the proximity and similarity law provides insights to group elements, meanwhile symmetry helps to identify elements more easily. The Interaction Design Foundation (n.d.) describes the said laws as follows.

- Similarity (also known as Invariance). The human eye tends to build a relationship between similar elements within a design. Similarity can be achieved using basic elements such as shapes, colours, and size.
- Proximity (also known as Emergence). Simple shapes arranged together can create a more complex image.
- Symmetry and order. The design should be balanced and complete; otherwise, the user will spend time and effort trying to perceive an overall picture.

Not only the Gestalt laws, but also Ye's (2000) study on game design was presented. According to Ye (2000), games have the 'game core' which is basically the mechanics of the game. To use these mechanics, there must be an interface for the user. Both the software and the hardware are included in the UI. The UI is a bridge between the user and the game core. As mentioned in the previous section, Saunders & Novak (2013) also mentions that presenting all the information throughout the game is not always a wise choice, since all these interface elements could confuse the user. It is better to use hide/show toggles or create menus for those elements. With all this advice in mind, Carlsson and Pelling (2015, pp.90) generated design recommendations after several field studies and iterations. One recommendation stands out compared to others in terms of relevance to this study: "Hide Abundant Information and Provide Timely Updates when Relevant". It reinforced what was observable in the physical sports UIs, namely that keeping the most important information on the interface and somehow showing others when needed is both practical and meaningful.

Rambusch, Taylor and Susi (2017) made a review study on spectatorship and put forward a taxonomy of four design strategies for spectator experiences (Figure 2.19),

developed by Reeves et al. (2005). They believe that although Reeves et al. did not create a taxonomy for esports, it would be insightful to consider which parts of esports interfaces should be hidden or amplified for a good user experience.

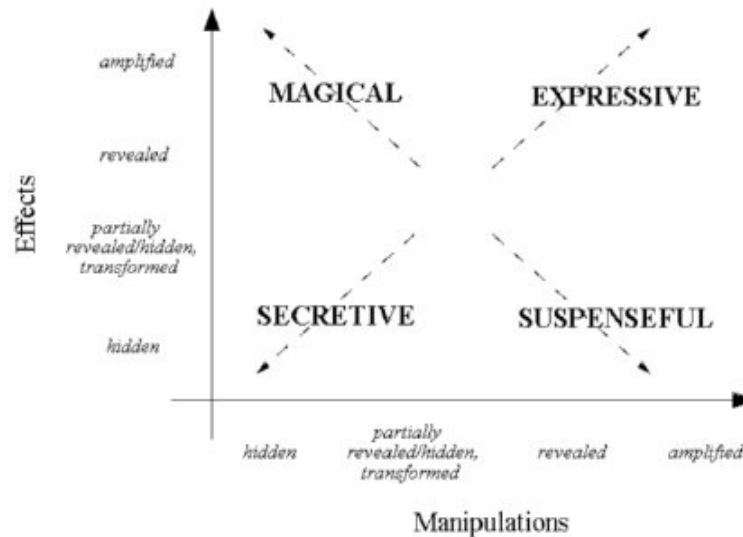


Figure 2.19. Taxonomy of four design strategies according to Reeves et al. (2005, pp. 746)

Furthermore, Rambusch, Taylor & Susi (2017) discuss the three facets of UX (Hasenzahl & Tractinsky, 2006) to understand and investigate user experiences with interactive spectator interfaces. These three facets are ‘beyond the instrumental’, which is more related to the aesthetics rather than tasks and functionality, ‘emotion and affect’, covering positive effects towards the designed item, and lastly ‘the experiential’, with highlights being dynamic, unique and situated.



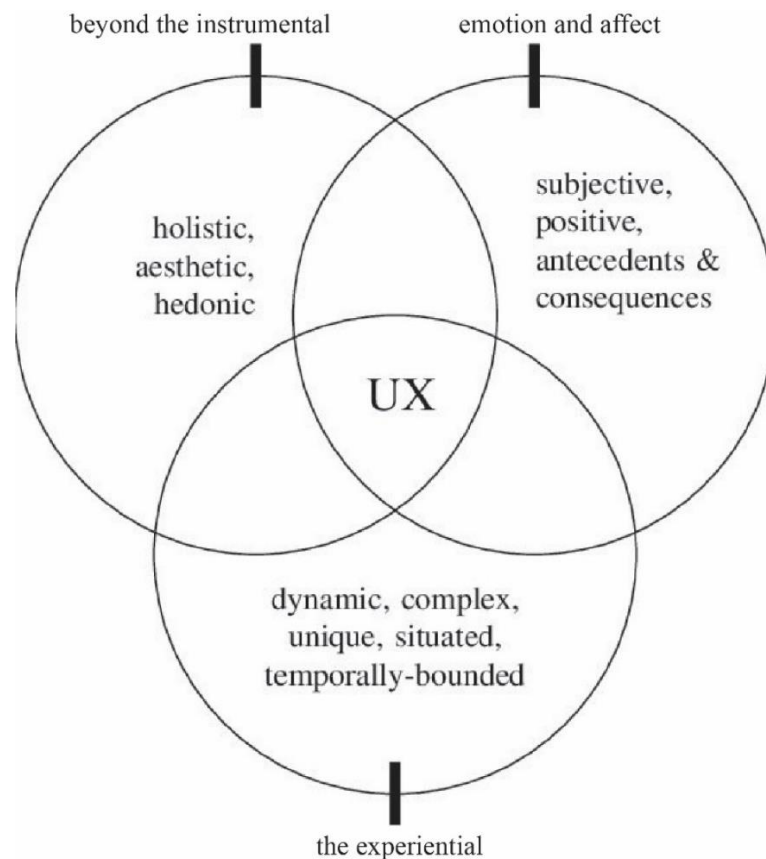


Figure 2.20. Three facets of UX (Hassenzahl & Tractinsky, 2006)

From their study, several guidelines and recommendations were identified. Similar to the outcomes of other studies, the relevant recommendations were as follows (Rambusch, Taylor & Susi, 2017, p.9).

- Provide overview of game and player statistics during matches.
- Have clear visual and auditory feedback for important game events.
- Design for spectator mode in which the spectator or caster can control the in-game camera themselves. The spectator mode should have default settings, such as being able to follow a specific player or team, and transitions between different camera modes should be smooth.

- Avoid hidden and illogical game events – spectators need to perceive aspects of the game that players might hide for one another.
- Design for commentary by adding pauses, re-plays and less eventful (but not boring) gameplay.
- Facilitate learning for novice spectators by adding (optional) tutorials that explain the goal of the game, prizes, points, rankings, and other useful information from a spectator perspective.

Lastly, Charleer et al. (2018) conducted their research to support esports spectating. In their study, Bowman et al.'s (2012) classifications for visualization of game designs were discussed. Charleer et al. (2018) provide a framework, visualization in games, containing Bowman et al.'s (2012) five categories, as follows. The 'primary purpose' is where there is a reason to add a visualisation technique, in other words an 'intended use'. 'Target audience' refers to an intended group of users. 'Temporal usage' covers continuous feedback to the user via the UI (health, scoreboard etc.). 'Visual complexity' is about the level of complexity of the visuals that are embedded in the game. Finally, 'Immersion/integration' includes the visuals that are embedded to the game interface (in spectating's case, the broadcast). With this information in mind, Charleer et al. (2018) designed a dashboard for League of Legends and Counter-Strike: Global Offensive, as a support to current interfaces. After evaluating the designs with eye tracking technology, they deduced several results which they named themes. Overall, users tended to look for the most useful visuals or components. Moreover, users were confused when they came across complex visuals and data. Therefore, information provision should be 'lightweight' and somewhat flexible. Lastly, dashboards related to spectating are designed with careful considerations and aligned with the specific gaming genre's characteristics (Charleer et al., 2018). These findings from the literature were foundational for the development of design recommendations and proposals reported later in the thesis.

## **2.5 Conclusion**

In this chapter, a review of relevant literature has been analysed and discussed. In the first part, the history of esports has been covered along with the competitive game genres which led the study to its main games to work on. Spectatorship and activity of spectating is explored, including the stakeholders of this activity and most importantly spectators' motivation. Investigating the different approaches to the analysis of motives behind spectating, helped to create a solid base for the next phase of the study (empirical investigation). Lastly, exploration of user experience and user interfaces has been made both in traditional sports and esports, for the purpose of making connections between the two. While considerations have been taken from the sports interfaces and the experience of spectating, various models and frameworks have been discussed to take inspiration for the remainder of the study and the presented conceptual user interface design.



## **CHAPTER 3**

### **METHODOLOGY**

Having examined previous research and the lack of interactivity in the Literature Review chapter, it was decided that proposing and evaluating a conceptual user interface design of a spectating platform would be a valuable way to decide how the spectating experience could be improved. The mentioned proposal would need to show improvements in comparison to the current interfaces or broadcasting platforms such as YouTube and Twitch, which are the main two platforms that the majority of spectators prefer. Proposing an interactive and informative platform is logical and the most favourable, since current interfaces offer only watching what is shown.

In this chapter of the thesis, several techniques are outlined for gathering data from spectators and gamers. Information that is gathered from the literature review is utilized for planning three phases of an empirical investigation, which leads to finding out key points for the design proposal. The empirical investigation is designed in a way that each phase complements and supports the next. By doing so, at the end of the empirical investigations, solid and reasoned results are obtained.

#### **3.1 Design of the Study**

As mentioned in the introduction chapter, this thesis aims to investigate and enhance the experience of watching competitive gaming. To do so, two main research questions, each with supporting questions, were posed (see Chapter 1, Introduction).

The research questions were useful as guides for planning a three-phase empirical investigation. The first phase comprised a survey, which was conducted to collect

information on motivations, habits, mediums of spectating and usage of current interfaces from the participants. The survey targeted both gamers and spectators, in other words two important stakeholders in competitive gaming. The reasoning was to have a general knowledge and understanding about people's habits and rituals of watching rather than their game-specific needs and motives. In this way, the empirical research created its baseline and prepared the groundwork for the second phase. The data gathered from the first phase was analysed and clustered to create a direction for the second phase (interviews). In other words, the survey results were used to help prepare appropriate interview questions. The aim of the second phase of the empirical investigation was to obtain deeper and game-specific data from the spectators. Interviews were conducted with spectators of each of the three game genres (League of Legends, Counter-Strike: Global Offensive and PlayerUnknown's Battlegrounds). Game-specific interviews created a more focused and to-the-point data set. All the data gathered from the survey and interviews were analysed from the potential to determine design recommendations. In the third phase of the empirical investigation, an interface design task was carried out. In alignment with the data from the previous phases and the stated design recommendations, a conceptual user interface design was proposed. Finally, the proposed design was presented to a focus group with the aim of getting feedback and gaining insights for further improvements (Figure 3.1).

Both qualitative and quantitative data were gathered through the empirical investigation. Quantitative data has been analysed and presented in the form of charts and graphs, which will be further discussed in the survey analysis chapter. A quantitative approach is used to understand spectators' focus on current interfaces. Also, possible correlations between participants' demographics and the frequency of watching and playing esports are analysed. On the other hand, a qualitative approach was used to investigate the participants' needs and desires for spectating interfaces. Moreover, participants' habits and ways of spectating, as well as their underlying reasons, were analysed.

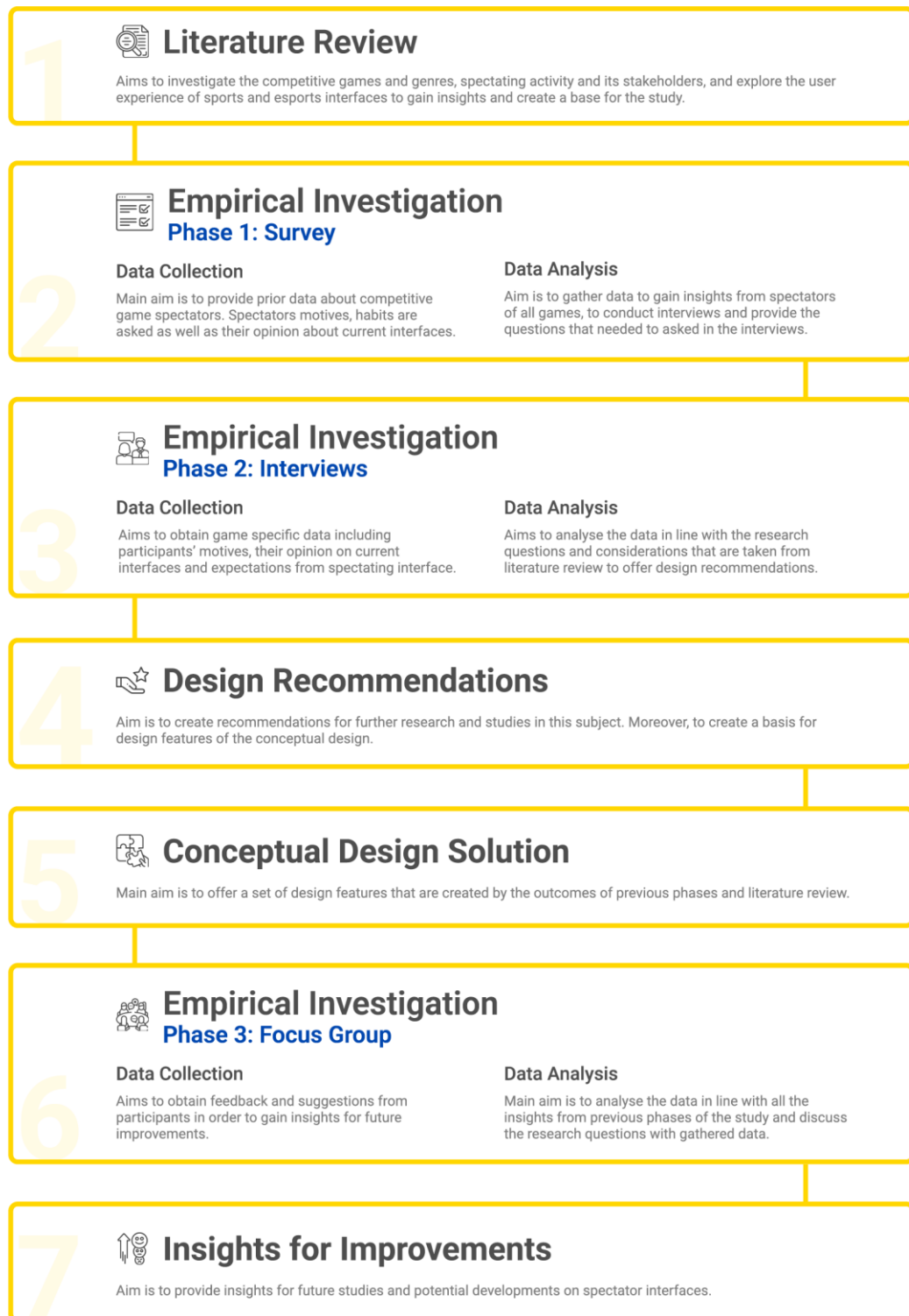


Figure 3.1. Overview of the study

### **3.1.1 Sampling and Recruitment**

Sampling was performed in similar ways for all the phases of the empirical investigations. Availability sampling method was used to determine who should be the participants of both the interviews and the survey. In his article, Schutt (2008) refers to availability sampling as non-probability sampling in which participants of the study are selected for their convenience to participate at the time.

Since the survey was prepared and published in an online platform, it was logical to reach participants through online mediums. Closed Facebook groups of games, some teams' followers, and the esports society of METU were used to publish the survey. Moreover, the survey was published on the closed Discord group of TU Delft esports society (DSEA), coinciding with the researcher's Erasmus exchange visit. For the interviews, a similar approach was taken, along with snowballing and personal connections. To recruit interviewees, announcements were made in particular games' Facebook groups as well. Since gaming societies are growing trends, especially in Turkey, finding interviewees through personal connections was a reasonable strategy. Lastly, the participants of the focus group for the third phase of the empirical investigation were selected from a subset of the interviewees. As a sampling method, Murairwa's (2015) voluntary sampling method was used. Voluntary sampling can be explained as a non-probability sampling that is done by participants who voluntarily participate in the study. Since the interviewees already had familiarity and curiosity towards the research, all the participants of the second phase were invited to participate in the last phase. The focus group was conducted with participants who were available at the same time.

### **3.1.2 Medium of Empirical Investigations**

The COVID-19 pandemic had a major impact on daily life of people on a global scale. Consequently, this study has been affected by the environment that was created by the pandemic. Due to the pandemic restrictions, none of the empirical studies was



conducted face-to-face. Therefore, surveys, interviews and lastly the focus group was organized online. The survey was delivered by Google Forms. The interviews and focus group were held through an online meeting tool, Zoom. Zoom was selected due to its popularity and familiarity among participants, screen sharing capabilities, and recording features. Meetings were recorded as audio-visual data so that transcriptions could be made for subsequent analysis. Before the recording started, consent of the participants was taken (Appendix A).

### **3.2 Survey**

The survey consisted of 24 questions (in English) which were separated into four stages. The first stage included the demographics questions (age, gender, occupation). The second stage includes general information about their spectatorship and games (frequency of watching and playing). Data for this phase of the empirical investigation was collected through mostly multiple-choice questions.

At the third stage, the purpose was to gather data about the habits of spectators while watching and reasons behind it. Moreover, their motivation behind spectating was investigated. In order to understand participants' habits of spectating the following questions were asked.

- Which of the following method(s) do you prefer to watch competitive gaming?
- Which of the following way(s) do you watch competitive gaming?
- Which of these platform(s) do you prefer to watch esports events?

After each question there was a follow-up question to understand the reason behind their answer. These questions were open ended, to encourage participants to write freely.

Since the survey's goal was getting prior information about competitive game spectators, one of the questions asked about their motives behind watching. The answers were directed to the second phase of the empirical investigation.

Lastly, the fourth stage was more related to the current interface's aspects. Most important parts of the current interface have been asked to the participants. Participants were helped with images placed to the questions. Also, participants' needs, and desires have been asked at this stage. As mentioned before, open-ended questions were used to help participants express their opinion without any word limitations. The last question of the fourth phase was one of them, as follows.

- What would you do as a spectator if you had the control of the interface?

The responses to this question were the most elaborate amongst the whole survey. Therefore, the question was asked in the interviews in the same way.

Google Forms was used as a platform to prepare the survey. Since it is a popular and widely used platform, participants did not encounter any problem with the survey. It was posted on the social media groups of games and esports societies via Discord and Facebook. A decision was taken to open the survey for two weeks to collect responses. In total, 83 participants contributed.

### **3.3 Interview with Spectators**

Eleven spectators of the games chosen for the research (LoL, CS:GO and PUBG) participated in semi-structured interviews. Given the issues imposed by the pandemic, interviews were changed to mixed international audiences rather than two sets of interviews with Turkish and European spectators (which was originally intended to reveal cross-comparisons). Instead, three sets of interviews were conducted with five people who are watching LoL, four people who are watching CS:GO and lastly 2 people who are watching PUBG regularly. For the same reason, all the interviews except one were conducted online using Zoom. This issue of changing the interviewee sample will be further discussed in the final chapter of the thesis.

For preparation, two pilot interviews were made. One of the interviewees was a spectator of CS:GO and the other was a spectator of LoL. Since the interviews were

made remotely, the tools and processes of the interviews needed to be tested. Also, the flow of the questions was controlled in the pilot interviews. At the end of both interviews, a feedback session was made with both interviewees since they were interested in gaming and user research and provided commentary on the combination.

The pilot interviews went well and fixed some minor problems with screen sharing while recording on Zoom. Subsequently, the main interviews were conducted, with each interview taking approximately 30 minutes. Three interviews were conducted in English, remaining eight were in Turkish. Interview includes eleven questions with two parts. The first part of the interview had the same questions in each set. The second part was specific to the game being investigated and the participant's interests.

The questions asked in the final phase of the survey were repeated in the interviews, since they had been especially diverse and detailed, and therefore considered ideal for gathering a greater quantity of data, or personal and detailed data, that would reveal many design-related insights. Clusters related to users' motives, habits and remarks on current interfaces which were deducted from the third phase of the survey were used to help construct interview questions and were transferred directly for interview analysis, since there was a similarity in the topics of discussion. Moreover, in the interviews, these clusters were used to give examples to the participants when needed.

In the first half of the interview, information was gathered on the participants' background with spectating. Similar to the survey, questions about how they spectate and their motivation for spectating were asked. The first part of the interview was carried out as below.

1. Do you play the game? How long have you played the game?
2. What is the frequency of your spectatorship? Why do you think it is? Why not less or more frequently?

3. How do you spectate it? In terms of environment, company(?) who you are with, mediums(devices). Can you explain why you prefer these?
4. Which aspects of watching eSports are in your interest? (What motivates you to watch esports, e.g., leisure time activity). Can you explain why?
5. What do you think about commentators' contribution? Is it helpful? What could be added?

After the fifth question, an image of the current interface of the game that participants follow was shown. This helped participants to give a reference for what they were talking about and also reminded them of some details about the current interface. Moreover, participants were asked to mark on the image those parts of the interface that they found beneficial and those that were not that important for their experience. The questions continued below, for the second part of the interview.

6. What do you think about the existing interface of spectating mode? (Colours, icons, anything)
7. Is it satisfying to only watch, or do you prefer to have control of what you are watching? Either way, why?
8. What are the features that you find beneficial for your experience (spectating experience, watching) in current interfaces? Why?
9. What are the features that you find not that important for your experience in current interfaces? Why?
10. What would you do as a spectator if you had the control of the current interface?
11. What are your dreams and expectations in this topic?

These questions that were asked gave some directions to determine design recommendations and, in turn, the features of design solutions to enhance the spectating experience.

### **3.4 Concept User Interface Design**

For the final phase of the empirical investigation, design recommendations for interface improvements and directions for further research were proposed. A total of eleven recommendations were generated, split into three categories. The first category includes background improvements, which are mainly focused on the structure and additional features of the suggested platform. The second category includes camera views and interactivity between the cameras and spectators. The third category consists of interface-related improvements that aim to enhance the spectating experience of the spectators. Each recommendation was explained and supported with the help of clustered results from the previous phases of the empirical investigation, as well as insights from the literature review.

With all the data in mind from the literature review, empirical investigations, and design recommendations, four new design features for spectating were created. The proposed designs and their details will be further discussed later in the thesis.

### **3.5 Focus Group**

As the data analysis from the survey and interviews led the research to design recommendations and new interface design features for spectating, a final round of data collection was required to gain feedback and insights for the new designs. A focus group was selected as an appropriate data collection method, since the intention was to ignite discussions on how to evaluate and improve the design features. In that matter, Massey (2011) states that conducting focus groups as evaluative purposes were shown to be practical and competent in terms of gaining various range of data from participants especially in social contexts. Furthermore, focus groups were proven suitable for evaluating a visual element by Mazza (2006), since they provide useful data and expose potential problems. In focus groups, rather than asking questions and getting answers one by one as feedback, creating discussion, and sharing ideas is the principal aim (Kitzinger &Barbour, 2001).

Acocella (2012) mentions that in focus groups, the answers of participants create a mixture of opinions that inevitably create a discussion. With this information in mind, a generative focus group was conducted with the aim of evaluating and providing further design improvements for esports spectating.

The focus group was conducted via Zoom with the participation of five people (4 participants and 1 facilitator). It lasted approximately 75 minutes. Every game had its representative. Details about the session will be discussed later.

### **3.6 Design Improvements**

The data gathered from the focus group was analysed and presented. The evaluated design features created a path for improvements by the comments and critics of the participants. Therefore, the insights to those design improvements were presented as a guide for further development.

## **CHAPTER 4**

### **EMPIRICAL INVESTIGATION PHASE 1: SURVEY**

The survey made with the spectators of esports and the semi structured interviews made with spectators of LoL, CS:GO and PUBG produced plentiful data that deserved analysis separately for each question. First phase of the empirical investigation, the survey, was filled by 83 spectators via the Internet and will be discussed question by question through the answers obtained. The survey consisted of four sections by its context. The first section consisted of three questions aiming to gather data about the demographics of the participants. The second mainly included eight multiple choice questions. The questions' context was about game playing and spectating. In the third section, the motivations and habits of the spectators were explored with two multiple choice questions and three open ended questions, following-up on previous questions. The fourth and final section included eight open-ended and multiple-choice questions about current interfaces, elements of interfaces and expectations of participants.

#### **4.1 Findings from Survey**

As mentioned before, the survey results were used as a preliminary study to inform the interviews that would follow. There were two separate approaches to analyse the survey results. Firstly, quantitative data analysis created charts and graphs from answers. Moreover, with the help of a data visualization program, Microsoft Power BI, multiple pairs of question responses could be compared. In this way, it has become easy to understand whether there is a correlation between the responses to different questions or not. Given that, the graphs can be analysed independently or in pairs.

Secondly, qualitative data analysis was carried out, by transferring the text answers to questions into Excel sheets. These answers were coded into clusters. By doing so, each question had its own cluster of answers, with the count of unique participants who mentioned them. Therefore, the design recommendations proposed later in the thesis had their basis in the results clusters from the survey (and, later, the interviews). The method of coding will be further explained in the Section 4.1.3 Reasons for Spectating.

#### 4.1.1 Demographics

Demographics of the spectators shows that the majority are male and between the age of 18 and 24 (see Figures 4.1, 4.2 and 4.3). It was stated in the literature review chapter that esports are considered as a male dominated field. We can observe that from the data combined with the knowledge from literature search, that most of the competitive players and spectators are male. Since spectating a game online started only in recent years, it is logical to see a younger audience in majority.

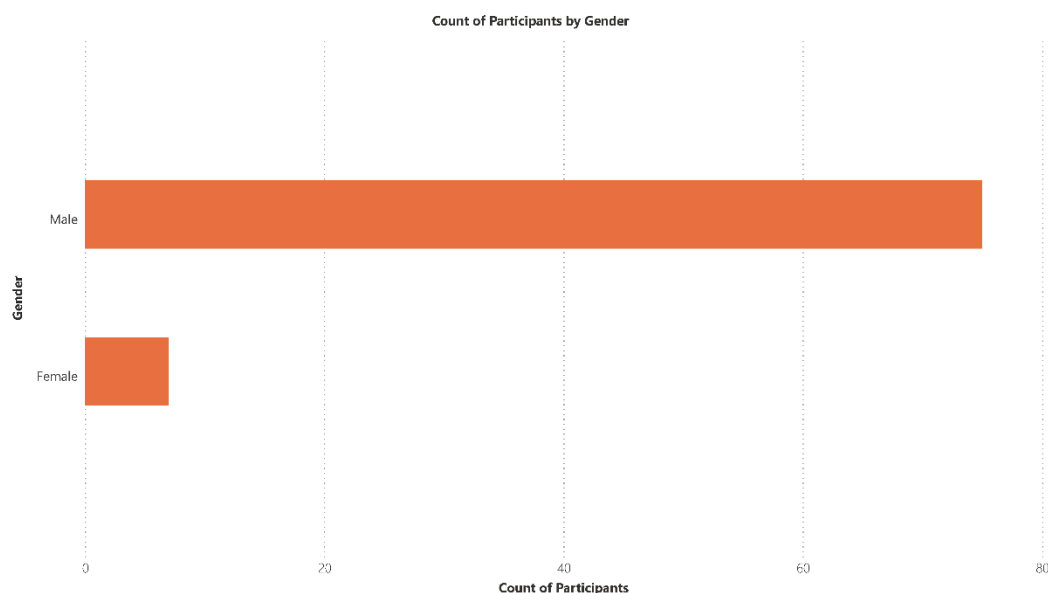


Figure 4.1. Gender distribution



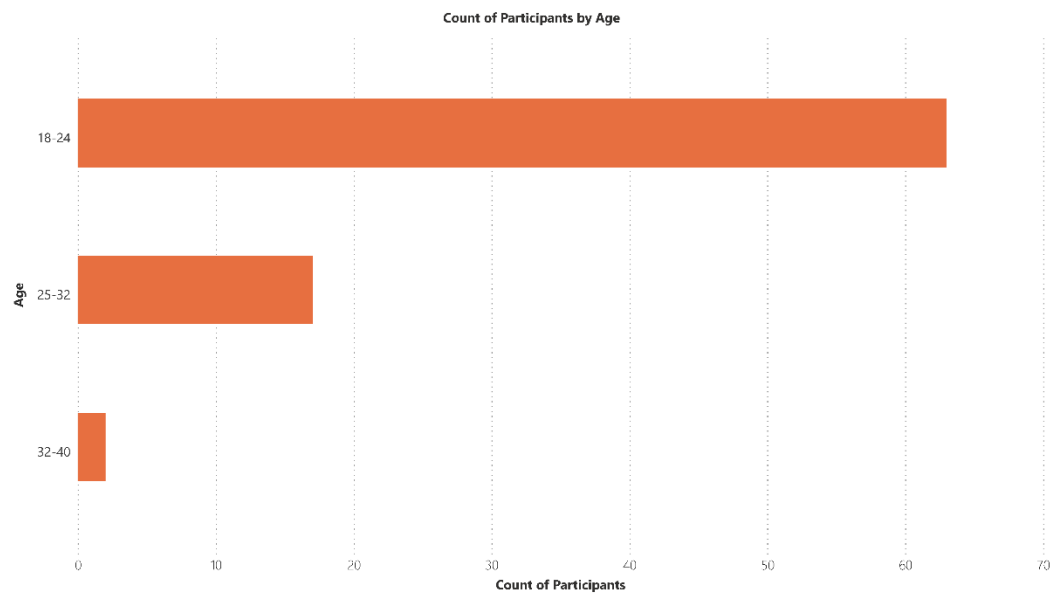


Figure 4.2. Age range distribution

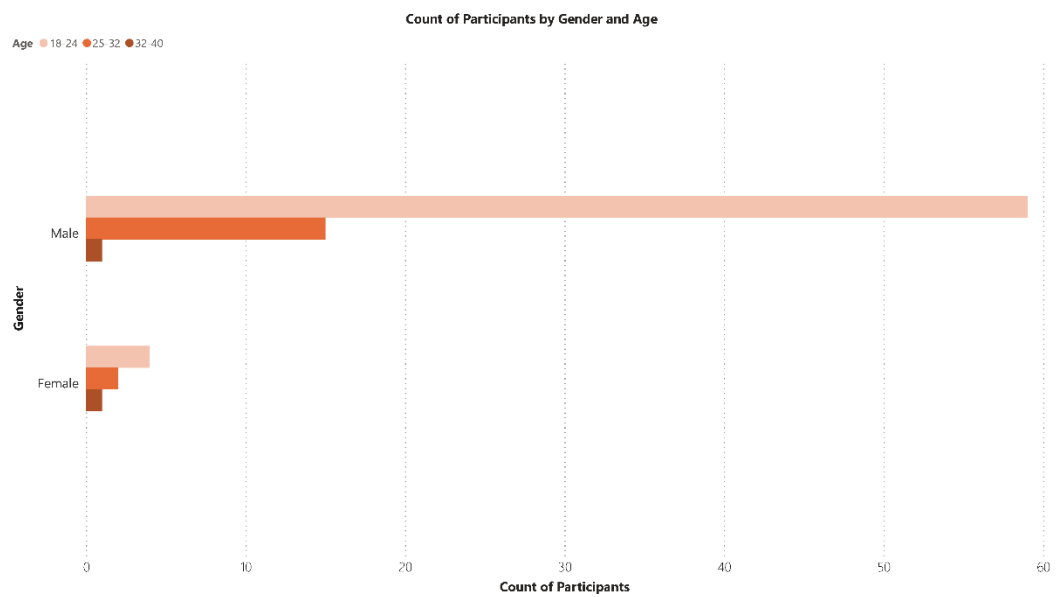


Figure 4.3. Count of age by gender and age

#### **4.1.2 Game Playing and Spectating**

Data from the following six questions were combined with the age of the participants in Figures 4.4, 4.5 and 4.6.

- How long have you played PUBG?
- How long have you played LoL?
- How long have you played CS:GO?
- How often do you watch LoL esports events and tournaments?
- How often do you watch CS:GO esports events and tournaments?
- How often do you watch PUBG esports events and tournaments?

Since the genre and the game (Battle Royale, PUBG) is fairly new, it is understandable that the data is not as varied as the other games. However, it is interesting to see that the youngest participants mostly play League of Legends and Counter Strike: Global Offensive the longest. This could be caused by having the opportunity of approaching games in early ages.

With a similar approach, the correlation between the frequency of their spectating a game and how long they have played the game was analysed. Irrespective of how long a spectator has been playing PUBG and CS:GO, participants mostly prefer to follow only big events or tournaments. On the other hand, people who are playing LoL the longest are also the most frequent spectators. As the years of playing decrease, the frequency of watching LoL decreases as well.

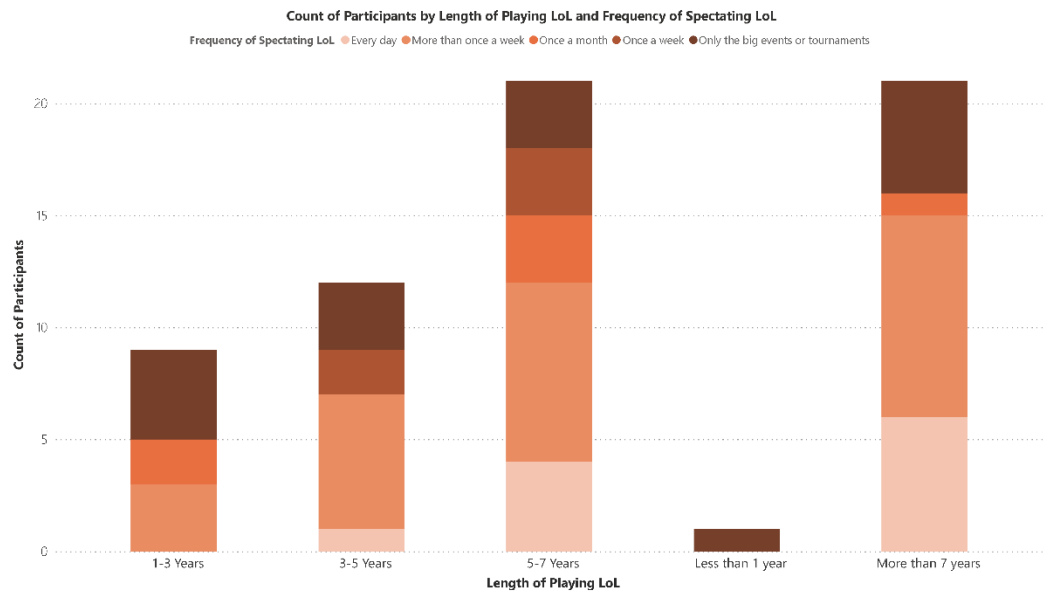


Figure 4.4. Count of frequency of spectatorship by duration of spectators playing League of Legends

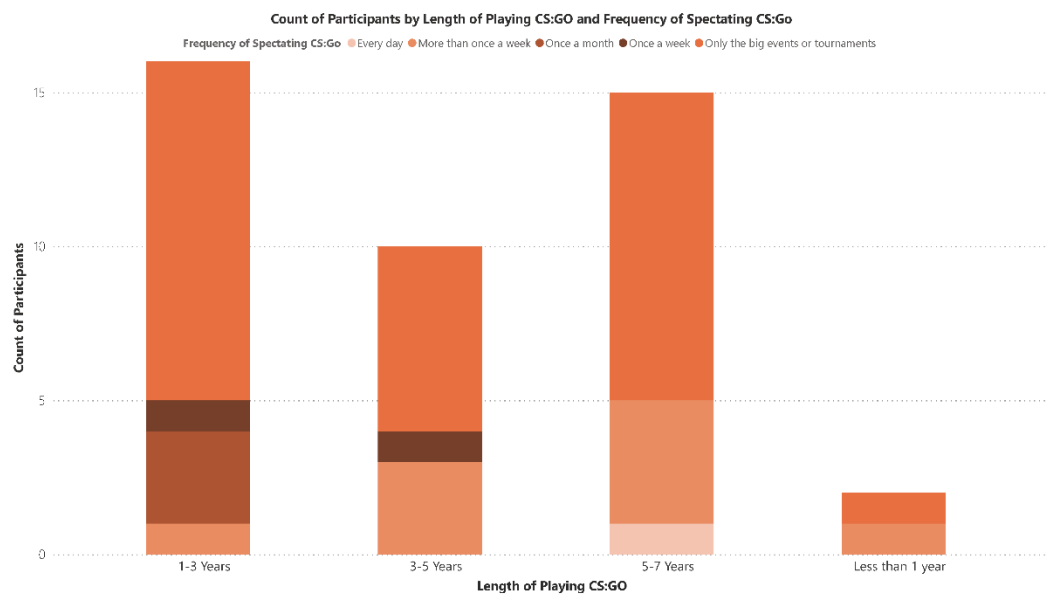


Figure 4.5. Count of frequency of spectatorship by duration of spectators playing Counter Strike: Global Offensive

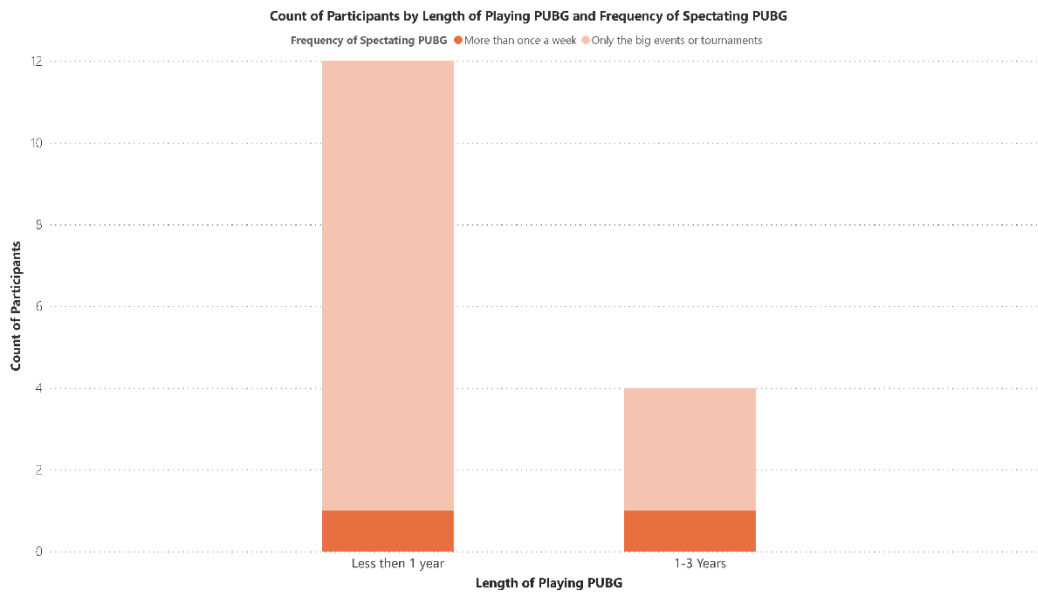


Figure 4.6. Count of frequency of spectatorship by duration of spectators playing Player Unknown's Battlegrounds

#### 4.1.3 Reasons for Spectating

As stated previously, the first part of the survey was also to investigate spectators' habits while watching. Different from the demographics and background questions, the following three questions also had a follow-up question to understand the reasons behind participants' answers.

- Which of the following method(s) do you prefer to watch competitive gaming?
  - Why do you prefer such method?
- Which of the following way(s) do you watch competitive gaming?
  - Why do you prefer such method?
- Which of these platform(s) do you prefer to watch esports events?
  - Why do you prefer such platform(s)?

The follow-up questions were analysed by following a three-level coding procedure (Miles & Huberman, 1994), allowing the raw data to be managed and separated under certain clusters and keywords.

In an Excel sheet, raw data (text questionnaire responses) were placed in the first column. Then raw data were processed at Level 0, which provides a summary (paraphrase) of the raw data. The Level 0 paraphrases were analysed and turned into Level 1 codes, which are words/phrases created by extracting the main meaning from the paraphrase – with potential to be adjusted later once further paraphrases were coded. This iterative process is typical of ‘open coding’ of textual data. Lastly, conceptually related Level 1 codes were identified and assigned Level 2 codes, which are cluster words/phrases representing the highest level of abstraction of the raw data (Table 4.1).

Clustering is a tactic that can be applied at many levels to qualitative data: at the level of events or acts, of individual actors, of processes, of settings/locales, of sites or cases as wholes. In all instances, we are trying to understand a phenomenon better by grouping and conceptualizing objects that have similar patterns or characteristics. (Miles & Huberman, 1994, pp. 249)

Code frequencies, defined as the number of unique participants whose survey responses were given a particular code one or more times, formed the basis for quantitative analysis. However, when we analyse the quantitative data for each question in isolation, it shows only limited results. For instance, Figure 4.7 shows that most of the participants prefer to watch live. However, since participants were able to choose more than one answer in this question there are some crossings of results. Instead, if the analysis is made based on clusters rather than individual question results, people’s preferences for viewing in different ways become clearer. The clusters and the number of repetitions is as follows for Table 4.1.

Table 4.1 Examples of three-level coding

| <b>Participant Number</b> | <b>Response to Previous Question</b> | <b>Raw Data (Transcript)</b>   | <b>Level 0 (Paraphrase)</b>                          | <b>Level 1 (Main Meaning)</b>                | <b>Level 2 (Cluster)</b>          |
|---------------------------|--------------------------------------|--|--|--|-----------------------------------|
| Participant 73            | Highlights                           | I watch it as Highlights because the original form of the matches is too long        | Highlights is shorter than the live view             | Watching highlights saves time               | Time efficiency of the highlights |
| Participant 9             | Live                                 | I want to have that immersive feeling when watching with my friends around the world | Feeling immersive                                    | Spectators feel inside of the game with live | Live takes people inside the game |
| Participant 51            | Live, Highlights                     | It is easier to discuss with people and you feel more hyped when you watch it live   | Discussing with other people and feel the excitement | Sense of community among spectators          | Sense of community spectatorship  |

Which of the following method(s) do you prefer to watch competitive gaming?

83 responses

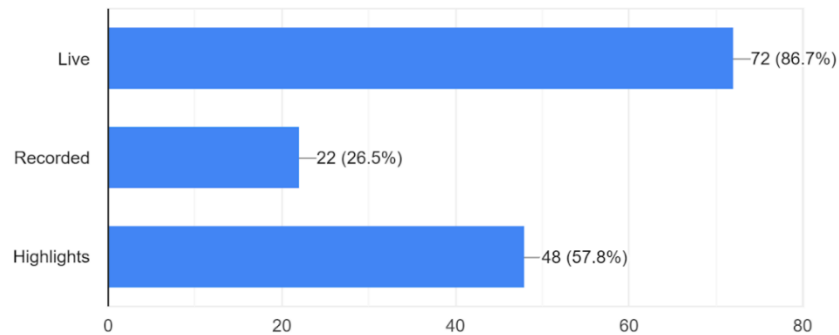


Figure 4.7. Spectators' preferred method of watching

Table 4.2 provides a summary of the reasons people prefer to watch live. As observed from the clusters, live view was preferred because of its excitement to bring spectators into the game. Also, a few participants mentioned that live view creates a sense of community spectatorship, and it helps spectators to learn the game.

Table 4.2 Level 2 clusters related to spectators' preferred methods of watching

|   |    |
|---|----|
| Excitement of watching live                         | 21 |
| Time efficiency of the highlights                   | 9  |
| Sense of community spectatorship                    | 8  |
| Depends on the time and the excitement of the match | 7  |
| Live doesn't show the end result                    | 6  |
| Live takes people inside the game                   | 5  |
| It is easier to learn with a live view              | 3  |

Figure 4.8 shows that participants who spectate games alone are predominant. The main reason for watching alone is lack of a potential companion, as deduced from the clusters (Table 4.3). Moreover, some participants spectate as a group because they discuss the match together while watching. A few participants mentioned that either method was chosen because of convenience.

Which of the following way(s) do you watch competitive gaming?  
79 responses

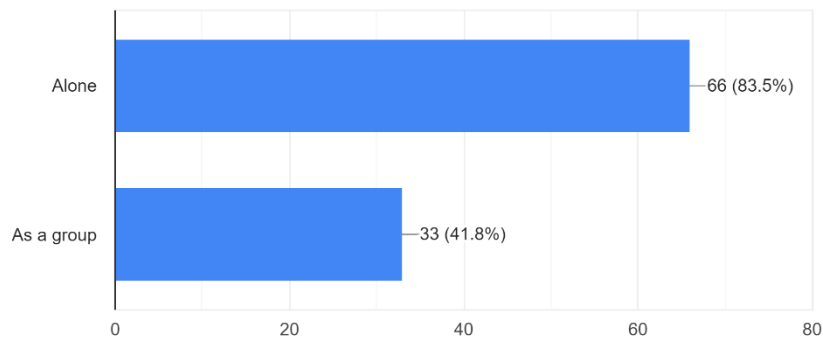


Figure 4.8. Spectators' preference on watching with company

Table 4.3 Level 2 clusters related to spectators' preference of company while watching

|                                   |    |
|-----------------------------------|----|
| Lack of companion                 | 22 |
| Discussing the match together     | 5  |
| Convenience                       | 8  |
| Excitement of watching as a group | 3  |

In Figure 4.9, the platform that the participants use to watch is shown. We can observe that YouTube and Twitch platforms are highly popular among participants.



Clusters (in Table 4.4) show that most of the participants use these platforms because of the benefits that the platform offers such as chat or general user interface benefits. Another major reason is accessibility to the platforms and their popularity.

Which of these platform(s) do you prefer to watch e-sports events?

77 responses

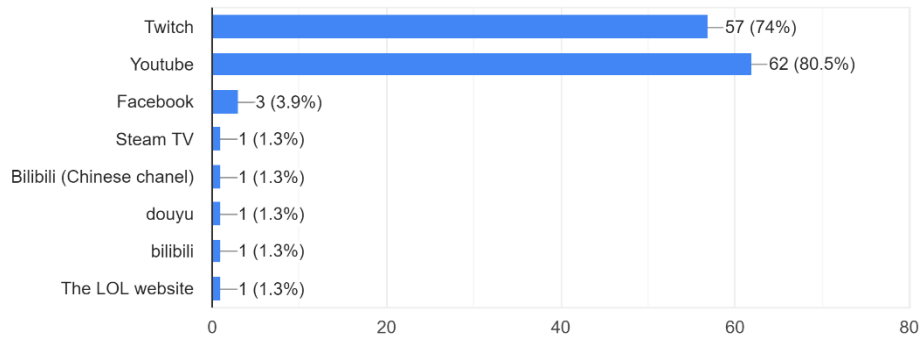


Figure 4.9. Spectators' preference on platform

Table 4.4 Level 2 clusters related to spectators' preference on platform

|                                       |    |
|---------------------------------------|----|
| Convenience in terms of accessibility | 13 |
| User interface benefits               | 13 |
| Chat community                        | 10 |
| Stream quality                        | 9  |
| Habituation                           | 9  |
| Popularity of the platform            | 6  |
| Richness in terms of content          | 5  |
| User-friendliness                     | 3  |
| Trust in the platform                 | 2  |

To gather brief information about participants' motivation behind watching and following competitive games, a multiple-choice question was asked. Results (Figure 4.10) show that the majority of the participants spectate these events for leisure time activity and entertainment. Moreover, a significant number of participants stated that spectating competitive games could be used as a tool to improve themselves in game play. From Figure 4.10 it can be seen that supporting a team or player has the least effect on participants' motivation towards spectating.

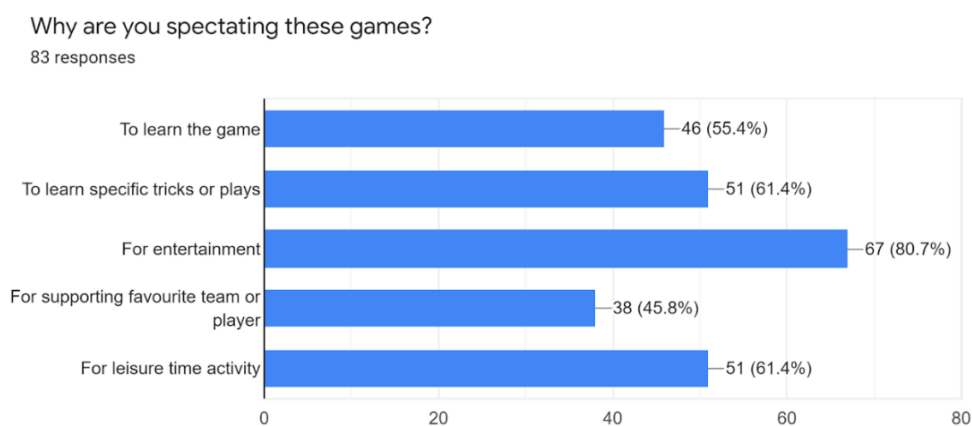


Figure 4.10. Spectators' motivation

#### 4.1.4 Evaluation of Current User Interfaces

As stated before, the survey consisted of three phases. In the last phase, current spectating interfaces and their features were presented to participants for their comments. Firstly, there were game-specific questions which asked the relevance and importance of items on the interface. Each question had its own image to analyse. When the data from Figures 4.11, 4.12 and 4.13 are analysed together, some similarities can be observed. For instance, in every game that was investigated, the webcam view of the player was the least wanted item on the interface, while other parts of the spectator interface were highly desired and important for participants.

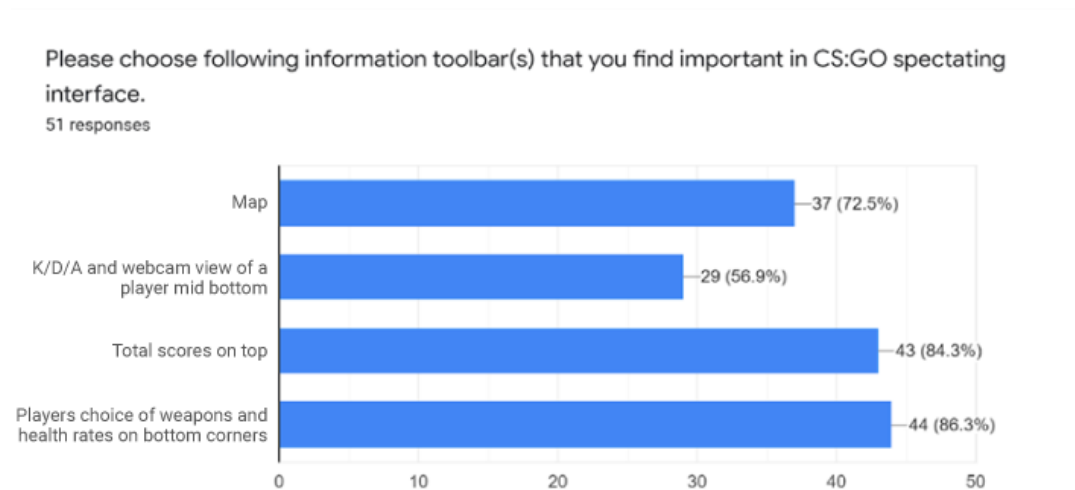


Figure 4.11. Count of spectators by the importance of certain interface elements in Counter Strike: Global Offensive spectating interface

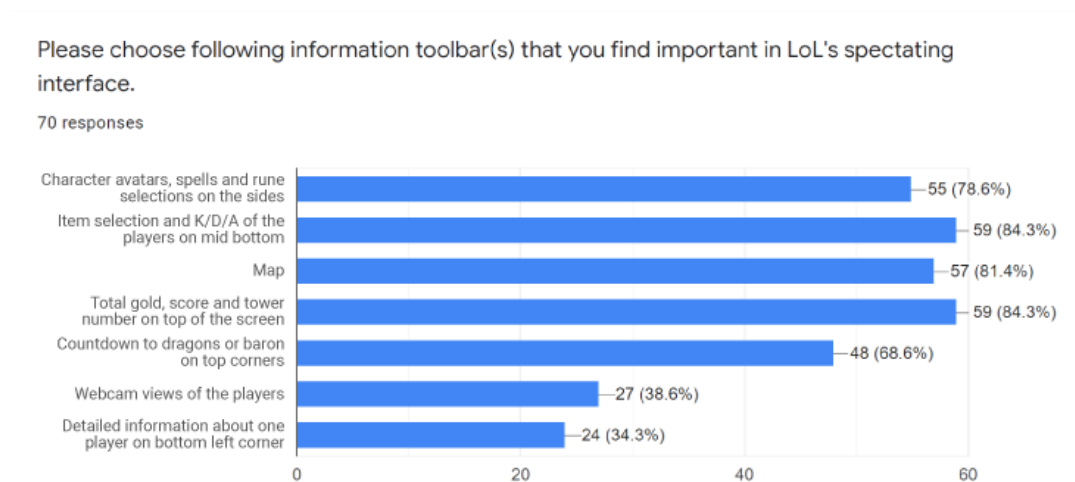


Figure 4.12. Count of spectators by the importance of certain interface elements in League of Legends spectating interface

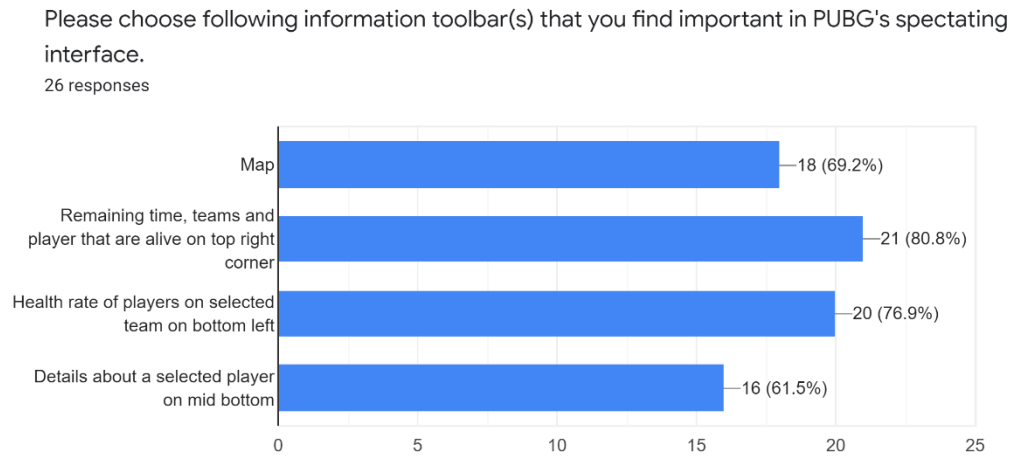


Figure 4.13. Count of spectators by the importance of certain interface elements in Player Unknown's Battlegrounds spectating interface

Aside from the quantitative data, qualitative data were also gathered in the third phase of the survey. The last question of the survey was as follows:

- What would you do as a spectator if you had the control of the interface?

Responses to this question were the most diverse and detailed (Table 4.5) and were chosen for follow-up during the interviews. As observed from the table, participants suggested control over the observer's viewpoint along with improvements on the UI.

Table 4.5 Level 2 clusters related to participants' desires if they had the control of the interface

|  |    |
|--|----|
| Controlling the observer's viewpoint     | 14 |
| Improvements on details of UI            | 12 |
| Adding relevant information to UI        | 5  |
| Seeing multiple actions at the same time | 4  |
| Chat screen interaction                  | 2  |
| Irrelevance of webcam view               | 2  |

## **CHAPTER 5**

### **EMPIRICAL INVESTIGATION PHASE 2: INTERVIEWS**

In the second phase of the empirical investigation, semi-structured interviews were conducted with 11 participants, who were spectators of LoL, CS:GO or PUBG. All interviews (except one) were conducted via Zoom. Since all the interviews were recorded, after completion the interview audio files were transcribed (Appendix E). Each interview was analysed question-by-question for each game. Since the questions asked did not change between games, the responses are compared and discussed together.

#### **5.1 Findings from Interviews**

Taking a similar approach to the survey data analysis, the interview data were also coded with a 3-level coding method. First, the raw data (transcript) for each participant was transferred to an Excel sheet, with a row provided for each question. Instead of analysing and coding the data participant-by-participant, a question-by-question approach was taken so that answers to a particular question from all participants could be seen together. With this approach, bringing the Level 1 codes together into Level 2 clusters at the end would be more concrete and united.

After putting all the raw data (transcribed answers) into the Excel sheet, an online collaboration service called Airtable was used to divide the questions/answers for three individual games and into their own tables (Figure 5.1). After that, the Level 0, 1 and 2 processing was carried out. However, this time Level 1 (codes) and Level 2 (clusters) were also colour coded. Since the number of participants and hence



5.1). Participants mainly care about the ease of reach to the platforms and sizes of events. It is understood that most of the participants generally tune-in for bigger events rather than regional leagues or small sized tournaments. Since the popular players and teams participate in major tournaments, the gameplay is consequently better than regional tournaments, meaning participants mostly prefer to watch major events.

Table 5.1 Level 2 clusters related to reasons for spectating frequency

| <b>League of Legends</b>                  | <b>Counter Strike: Global Offensive</b>              | <b>Player Unknown's Battlegrounds</b>                               |
|---|--|---|
| Bigger tournaments have bigger audiences. | Ease of reach key factor on selecting platform       | Size and popularity of the tournament effects spectators' decisions |
|   | Recommendation of other videos encourage spectators  | Rooting for a particular player or team                             |
|   | Spectating is an activity that is done in spare time |   |

The third question was asked to investigate participants' habits and rituals while watching, such as platform selection, company etc. As observed from Table 5.2, convenience and ease of reach have affected participants' choices of platform. Also, most of the participants mentioned that spectating a match with friends or people who have a common interest brings enjoyment and excitement. Moreover, while watching they can discuss the game with others.

Table 5.2 Level 2 clusters related to participants' habits and rituals while watching

| <b>League of Legends</b>  | <b>Counter Strike: Global Offensive</b>                             | <b>Player Unknown's Battlegrounds</b>                                |
|---|---|--|
| Sense of community and spectatorship brings excitement and enjoyment. | Ease of reach key factor on selecting platform                      | Convenience, reliability, and ease of use effects platform selection |
| Spectators' selection of platforms differs for personal reasons.      | Selecting the type of broadcast depends on the time spectators have | Sense of community in spectatorship                                  |
|   | Spectating is an activity that is done in spare time                |  |
|   | Recommendation of other videos encourage spectators                 |  |

As discussed earlier in the thesis, spectators' motivations are one of the key points of the research. Therefore, in the second phase of the empirical investigations, motives behind spectating were also asked to the participants. Table 5.3 shows that motivations of participants of the three games intersect with each other. For instance, most of the spectators watch the games to learn tricks and gameplay from professional players. One other highly mentioned motivation is following a particular player or team and a desire to see their success. Moreover, seeing something that they cannot do is the other reason participants mentioned.



Table 5.3 Level 2 clusters related to spectators' motivation behind watching

| <b>League of Legends</b>                                | <b>Counter Strike:<br/>Global Offensive</b>             | <b>Player Unknown's<br/>Battlegrounds</b>  |
|---|---|--|
| Learning while spectating and implementing what is seen | Spectators learn from players while watching            | Educating themselves about the gameplay and tactics                              |
| Admiration towards a professional and better player     | Entertainment and excitement are a factor on spectating | Rooting for a particular player and team makes spectators excited about the game |
| Killing time or doing it as a background activity       | Following a particular team or a player                 |  |
| Seeing something exciting and dynamic                   |   |  |
| Following a particular team of player                   |   |  |

After the survey, it was clear that participants had something to say about casters' (commentators') contribution to the spectating experience. Therefore, a question was posed in the interview as follows.

- What do you think about commentators' contribution to your experience? Is it helpful? What could be added?

It can be seen from Table 5.4 that participants dwell on two main contributions of casters. One is about their knowledge level and providing information about the game. The other is keeping spectators in the game.

Despite the fact that genres and the gameplay of the three games are different, casters had a similar contribution to the spectating experience. Similar to regular sports, casters of esports are people who have know-how and experience on the subject. One participant commented that; *“I think it's a really difficult position to be in, especially in the video game industry, because it's really a niche environment, but especially in league (League of Legends). I think they do a wonderful job analysing and giving out comments about the plays.”* Therefore, casters not only have the knowledge and experience, but they are informative while casting.

On the other hand, the majority of participants mentioned that casters provide focus and excitement towards the game. Participants commented that, with the hyped comments and loud voices, commentators always try to keep spectators' excitement alive. However, there were a few opposed comments on this issue. Since they are loud sometimes, some participants think that casters draw focus away from the game and their excitement distracts them. Also, while good casting can increase the excitement to the game, many participants stated that bad casting can kill the hype of a good game.

Table 5.4 Level 2 clusters related to casters contribution to the spectating experience

| <b>League of Legends</b>  | <b>Counter Strike: Global Offensive</b>             | <b>Player Unknown's Battlegrounds</b>                                    |
|---|---|--|
| Casters play a major role on spectators' motivation and enjoyment | Casters have the ability of making a game enjoyable | Explanatory comments help spectators catch-up with the game              |
| Casters helps spectators learn the game                           | Casters could draw focus from the game              | Commentating helps spectators to focus on the game while getting excited |
|   | Knowledge on the subject is high                    | Casters have the adequate know-how and knowledge on the subject          |

### 5.1.2 Current User Interfaces & Expectations

From the sixth question, participants were asked to discuss and criticize the current interfaces and comment about their expectations from them. It was surprising to see that despite the fact that the three games' genre and interfaces are different, the comments on the interfaces overlapped with each other (Table 5.5). A majority of the participants commented that some parts of the interfaces are not needed for their experience, yet they are obligated to watch with them. On this subject one participant who follows PUBG commented that; *“Well, it's you know, it's important to see as much space in the game as possible. When I play, I also, you know, adjust the interface size as smoothly as possible so I can focus on the game.”* Even though the question about having control over the interface was asked, participants mentioned about customizing the UI elements and controlling the interface by themselves.

Table 5.5 Level 2 clusters related to the evaluation of current interface

| League of Legends                     | Counter Strike: Global Offensive                                 | Player Unknown's Battlegrounds                              |
|---------------------------------------|--|---|
| Current UI lacks details              | Some parts of the interface are not necessary for the experience | Customization the UI elements to get more focus to the game |
| Having control over UI elements       | Webcam view of the players is not needed                         | Adding pop ups to current interface when needed             |
| UI is crowded with data for newcomers | Control over the parts of UI                                     |   |

After discussing the current interface, participants were asked whether they would prefer to control what they are watching rather than remaining passive in what is watched. Responses were similar to the previous question (Table 5.6). Moreover, participants commented not only about the UI but also the control of the cameras (by observers). Participants from each game mentioned that sometimes they miss out on action because of the choices made by observers. Also, it is not possible to spectate only one player through a game broadcast.

Table 5.6 Level 2 clusters related to preferences on having control over the interface

| <b>League of Legends</b>                     | <b>Counter Strike: Global Offensive</b>                  | <b>Player Unknown's Battlegrounds</b>                 |
|--|--|---|
| Control over the observer's camera           | Customizing the elements on the interface simultaneously | Having control of what to see partially or completely |
| Interactivity and control on the UI elements | Having the control of cameras during game                | Personalization of the interface                      |
|  | UI is sufficient enough for watching                     |   |

When questions eight and nine were asked, a screenshot from the game interface was shared with participants via Zoom. First, participants were asked to mark green pen areas on the interface that they found important for their spectator experience. Then with a red pen they were asked to mark areas that they found not that important for

their spectating experience. The reason behind these questions and interactivity was to remind the interfaces to the participants and let them be analysed whilst under observation of the researcher. The marking-up in pen via Zoom also helped reveal which parts of the UI are needed or not needed for enhanced interface design proposals. An example of the process can be seen in Figure 5.2.

Participants suggested that advertisements could be shown in another way. For instance, in Figure 5.2 there is a brand logo that is embedded into the game rather than the spectating UI. Moreover, when there is a sponsor logo or an advertisement on the UI, they mention that it draws focus from the game and blocks the view mostly. While there were common parts of the UI that all the participants thought needed, such as Baron and Drake counts on the League of Legends interface, or the opposite that they found not that important, such as webcam view of the players, there were contradictory opinions about certain UI elements. Some participants suggested that the UI could be customizable during the game and spectators could select what they want to see.



Figure 5.2. Screenshot from interview with participant 5

The final two questions were analysed together since the responses to both questions intersected. The questions were as follows.

- What would you do as a spectator if you had the control of the current interface?
- What are your dreams and expectations in this topic?

The first question was asked in the same way as in the survey, but for the interview the aim was to gather more detailed and game-specific responses. Once again it was surprising to get similar responses from participants who play and spectate different games. A majority of participants mentioned that they are not happy about observers' camera control, and instead they wished to control the cameras themselves. One of the participants answered the first question as; *“Yeah, I would definitely like that. I would really like to switch between first person shots of different players. And if I want to lock onto one player, I would really be able to lock that player and watch him or her.”* Therefore, it is important for the participants to not only control the cameras but also to have the ability to focus on one player uninterruptedly.

Moreover, many participants suggested a selection of layouts that contain customized or predetermined interfaces. On the other hand, some participants mentioned simultaneous control over the interface. For instance, changing the sizes of certain elements on the UI, or closing and opening them while watching. Furthermore, participants repeated the comments about advertisements and sponsor logos and how they take too much space on the interface.

Table 5.7 Level 2 clusters related to participants' expectations and suggestions on controllable spectator interface

| <b>League of Legends</b>                              | <b>Counter Strike: Global Offensive</b>                     | <b>Player Unknown's Battlegrounds</b>   |
|---|---|---|
| Different UI modes and templates for different usages | Customizing and personalizing the UI simultaneously         | Participants needs to personalize or customize the UI elements                |
| Controlling the observer's camera.                    | Advertisements not needed on the UI                         | Participants wants to control the cameras freely                              |
| Interactivity between UI and spectator                | Camera views changed by spectators                          | Participants wishing for a more interactive interface with feeling of control |
| Ads can be embedded to the game                       | Personalization by different types of lay-outs on interface | Different viewing options instead of screens                                  |

Overall, it can be said from the responses of both the survey and the interviews that spectators wish to have increased interactivity for the spectating mode. Whether it is the UI or the observer's camera, spectators need to somehow interact with what they are watching. These clusters are the bases of design recommendations for enhancing the spectator experience through UI design, on which a conceptual user interface design proposal is offered in the next chapter.

## 5.2 Design Recommendations

In this section, the clusters from the survey and semi-structured interviews are discussed and turned into design considerations for the conceptual user interface design, as well as avenues for further research. As discussed in the previous section, the clusters from each game intersected with each other. Therefore, the design recommendations are presented as a whole and not on a game-by-game basis. However, in the conceptual designs that follow, each game is provided its own UI design proposal, since the information that is given on the UI is different for each game. The recommendations are organized into three sections of related content: background improvements, camera related improvements, and interface related improvements. Each recommendation is provided a number, and each section has its own clusters for explanation and reasoning.

### 5.2.1 Background Improvements

The following recommendations are made in relation to the general set-up for spectating.

*1. Spectators shouldn't be obligated to sign-up to the platform for spectating.* As discussed in the previous sections, platform selection of the spectators is highly affected by ease of reach to the platform and convenience of the platform during use (Table 4.4). Moreover, as Tables 5.1 and 5.2 show, participants prefer platforms which are convenient in terms of accessibility in a short amount of time and easily. Therefore, similar to the popular streaming services such as YouTube and Twitch, design solutions should offer spectating of games without any membership or procedure beforehand. In other words, spectators can open the platform and spectate immediately.

*2. Spectators should have the option of spectating the live broadcast, recorded or only highlights.* There is no certain preference of the spectators' method of watching. Table 5.1 showed that participants have different reasons for choosing different



viewing options. While most of the participants agreed that live view is exciting to watch, some participants mentioned that live view takes too much time and highlights are more time efficient. On the other hand, recorded views help participants who missed the live broadcast. Therefore, it is sensible that the platform should have viewing options of live, recorded and highlights. In this way, spectators have the option to choose as they like according to their needs and preferences.

*3. The platform should have a direct connection with Discord or have its own communication channels.* The empirical investigations showed that participants who are spectating with their friends use Discord channels to discuss the game. This discussion, as they commented, gives an opportunity to share the experience and excitement together. Moreover, (Table 5.2) a lack of companionship is the main reason spectators watch the game alone. With the recommendation of an integrated communication channel, spectators could discuss the game with someone (even a stranger) while watching, even though they don't have any friends who are watching the game.

*4. Live chat should be optional and supervised.* Live chat is one of the most contradicting parts of the broadcast. Participants were split half about live chat and whether it is needed or not. Current broadcasting platforms have a simple solution for this issue. There is an option to open and close the live chat. However, participants mentioned that it is not a good solution because sometimes, information is needed and live chat needs to stay open, but since all the spectators can contribute it is too fast to follow and usually there are misleading and disturbing comments. Thus, the live chat comments should be supervised (moderated) and/or organized to provide a better experience and avoid overload or irrelevant comments before publishing.

*5. Informative replays and pop-ups should be added to the broadcasts.* While the empirical investigation results showed that the major motivation behind spectating is entertainment, and the fact that spectating esports seen as a leisure time activity, participants also mentioned that they learn gameplay and tricks, taking position in

the game, while spectating. This learning mainly comes from casters and seeing the actual gameplay. In this regard, some informative texts and replays should be added to the platform to help spectators who seek to learn the game by watching professionals, since they are ‘the best players in the world’ in participants' words.

*6. Separating casters' voices and the game audio.* Although the casters have mostly positive effects on the spectating experience (Table 5.4), some of the participants are not happy with the casters' excitement. Therefore, the casters voice should be separable from the game broadcast, with the option to separate under the control of spectators. When they don't like the casters' comments, spectators could easily lower the offending caster's volume to focus more on the game itself.

### **5.2.2 Camera Related Improvements**

The next recommendations are related to the camera and what exactly spectators see during the broadcasts. The camera views were highly mentioned in both the survey and interviews, with the complexity of the responses showing that it would not be realistic to suggest just one recommendation. Therefore, two recommendations about the observers' camera view are provided.

*7. Spectators should have control over observers' cameras.* When a game is watched from platforms outside of the game itself, it is impossible to choose what to watch. Spectators constantly mentioned that they miss out action and important plays because of the observers. Moreover, although the observer's camera is always fixed onto one view, participants commented that they would instead prefer to spectate from different angles. In the game's own spectating interface, games offer free cameras that spectators can move around freely without fixed first person or third person views. Taking this approach further, spectators should have the control of what they are seeing by the cameras and assume part of the observer's role.

*8. There should be a selection of viewing options categorized by the players' point of view.* Participants raised an important second topic. One of the motivations behind

spectating is following a particular player or a team (Table 5.7). With a different approach, spectators should be offered multiple camera views to choose from. In this way, spectators should be able to lock onto one player that they follow and spectate only him/her for as long as they like.

### **5.2.3 Interface Related Improvements**

The other highly debated topic is the user interface itself and its elements. As discussed in the previous sections, control over the interface was brought up by participants even when no question about controlling the interface had been asked. It was an issue on spectators' minds. Interactivity of the spectating interface was discussed in the Literature Review chapter and has been supplemented by the participants' comments. Similar to recommendations about the cameras, separate but somehow connected recommendations about the user interface design and interactivity can be defined.

*9. The platform should have multiple UI layout options for spectators to choose amongst.* While the current interface was sufficient for some participants, there were some comments about different layouts of interfaces designed by the platform. These layouts should be distinguished from each other by levels of expertise of the spectator (beginner to expert) or levels of crowdedness on the interface (crowded to minimal).

*10. User interface items should be customized by the spectator, while watching.* Personalization of the interface was a vastly mentioned topic in relation to control over the user interface. Spectators should be able to open-close, minimize-maximize or move the position of UI elements to enhance their spectating experience and focus more on the game however they want. While some parts of the interface are not needed for some spectators, others disagree and need them for their spectating experience. Thus, a customizable user interface should solve the issue for all.

*11. Advertisements, event logo, and sponsor logo placements should be embedded in the game.* As stated in the previous chapters, advertisement placement should be achieved in different ways, with the help of advancements in AI technologies. Furthermore, placing an advertisement or a sponsor logo onto the UI congests it and becomes counterproductive. Participants of both the survey and interviews mentioned that the advertisement on the UI disturbs the spectating experience and draws focus away from the game. In this regard, following the special insight of one participant, advertisements and logos should be embedded into the game itself, to be more visible to everyone but specifically unobtrusive to spectators.

## **CHAPTER 6**

### **EMPIRICAL INVESTIGATION PHASE 3: CONCEPT USER INTERFACE DESIGN AND EVALUATION**

In this chapter, details of the third phase of the empirical investigation are discussed and presented. The phase includes: (i) the analysis of current spectating interfaces of LoL, CS:GO and PUBG, (ii) proposed design features with accompanying visuals, based on the design recommendations stated at the end of Chapter 5, (iii) the focus group session and analysis of participants' feedback and comments, and lastly (iv) insights to those feedbacks as improvements to the design features.

#### **6.1 Analysis of the Current Interfaces**

To commence the chapter, the current interfaces of League of Legends, Counter Strike: Global Offensive and Player Unknown's Battlegrounds will be analysed and discussed. Interfaces can differ not only based on a game genre but also based on the region in which the broadcast is made. Most of the regions for these games have different colour schemes and visuals on their broadcasts. Figure 6.1 illustrates two different regional interfaces for League of Legends. The upper half of the figure is from the North America region and the bottom half is from Turkey. Although the interfaces seem visually different from each other, the context and the given information is the same for both. Similarly, CS:GO interfaces and PUBG interfaces can differ based on the tournament and region, but the context is again the same. While usage of different interfaces could bring difficulty and complexity to the analysis, on major (international) events all the regions use the same interfaces for their broadcasts. Therefore, in this chapter the internationally used interfaces will be discussed. Furthermore, since the participants of both the survey and the interviews

answered questions while viewing the internationally used interfaces, it was logical to continue with enhancing the interface used for major tournaments. The interfaces for the three games will be discussed separately in their own section, since as explained in previous chapters, their genre and gameplay are different from each other. The figures provided in the chapter are from the broadcasts shown via YouTube. Each figure was created as a screenshot of the recorded form of the live broadcasts.



Figure 6.1. Comparison of League of Legends North America Regional Interface and Turkish Regional Interface

### **6.1.1 Analysis of League of Legends Spectating Interface**

League of Legends is a MOBA (Multiplayer Online Battle Arena) game that is played with 10 players. Two teams formed with five players battle with each other on the arena called Summoners Rift. Each player has a role to play throughout the game: these roles are determined by the areas and lanes in the Rift. The spectating interface has the same view as the actual gameplay view. Therefore, it is impossible to see all the lanes at once. Figure 6.2 shows a capture from the MSI (Mid-Season Invitational) 2021 Grand Final. As observed from the figure, elements of the UI are distributed to the sides of the screen to maximize the spectating area. At the top centre there is information about the total number of golds, kills and towers for both teams, along with team logos, abbreviated names and – since this is a best of five playoff match – the wins of the teams from previous games with each other are marked with circles. Lastly there are the icons of drakes that teams killed. The top left and right corners indicate the countdowns to Baron (left) and Drake (right). These were the most mentioned and found important elements on the interface by participants in the interviews. On the left- and right-hand side there are the avatars of the champions that are picked by players. Furthermore, these parts also include the basic information about the champions as well, such as health, mana/energy/anger bars, rune selections, summoner spell selections and lastly the names of the players. When a champion is killed or completes an item, the avatar is replaced by the countdown to its return or the image of the item that is completed. Lastly the bottom block is designated for detailed information about the champions (centre), webcam view of the players, detailed view of features of selected players and mini map. The bottom left corner has the detailed view of a player that is selected by observers, and there the rest is used for sponsors' logos. The centre part has the most data about the game. It contains the images of items that players bought, K/D/A's (Kill/Death/Assist), minion count of each player. The mini map is placed on the bottom right corner, containing the simultaneous placement of the players with their avatars.



Figure 6.2. League of Legends Mid-Season Invitational 2021 Finals

In recent years, observers started to manipulate the UI by opening and closing some on-screen elements (Figure 6.3). If there is a team fight, especially near the end of the game, and the camera view is not enough to show all the action, the bottom part of the UI, except for the mini-map and sponsor logos, is closed. As shown in Figure 6.3, there is then more space available to focus on the team fights.

Moreover, if the action happens on the opposite sides of the Rift, observers split the screen diagonally and remove all the elements, except mini-map, players webcam view (team) and avatars of the players (Figure 6.4). While these improvements help to enhance the spectator's experience of spectating, the UI still lacks responsiveness.





Figure 6.3. League of Legends Mid-Season Invitational 2021 Finals Wide View



Figure 6.4. League of Legends LEC Spring Split Fnatic vs G2 (2019), Split Screen View

The League of Legends Esports website has made some leaps over the last year (2020-21) and now offer spectators more informative viewing options external from

the broadcast (Figure 6.5). Furthermore, in their article Riot Games (2021) mentions that two POV viewing options parallel to the game will be available in LCS (North America Regional League). However, the improvements are only for one region and require a premium subscription, costing \$6.99/month, according to the article.

Overall, even though the current interface and the broadcasts are not informative and interactive enough, League of Legends and Riot Games make moves to improve the spectating experience.

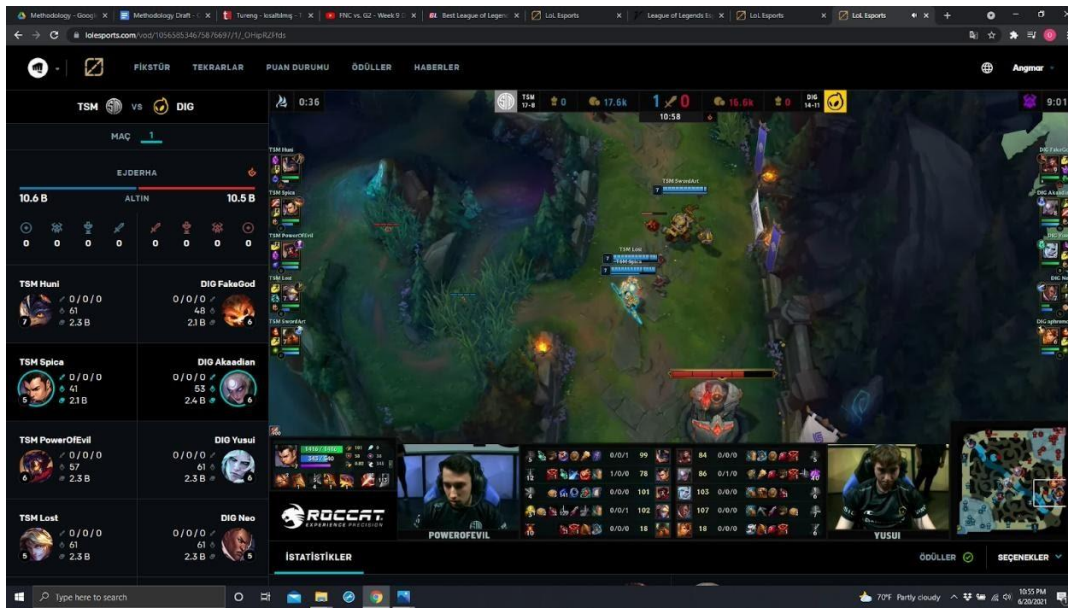


Figure 6.5. LCS Spring Season TSM vs DIG (2020), Pro View

### 6.1.2 Analysis of Counter-Strike: Global Offensive Spectating Interface

CS:GO, in competitive arenas, is played with five players in each team. In each round, teams either try to eliminate the other team's players completely or complete a certain objective in a given time. The first team that wins 16 rounds, wins a game. Matches are generally played in the best of five style. Therefore, whoever wins three games wins the whole match. Games are played in designated areas called maps. While players play the game from their own point of view, broadcasts can show different angles via free cameras (allowing observers to move around freely on the

map without any restriction). Therefore, it gives the spectators more angles to catch the gameplay.

Similar to LoL, there are certain UI elements for CS:GO's spectators as well (Figure 6.6). Each tournament has its own interface style. However, information that is given is almost the same, with slightly different visuals.

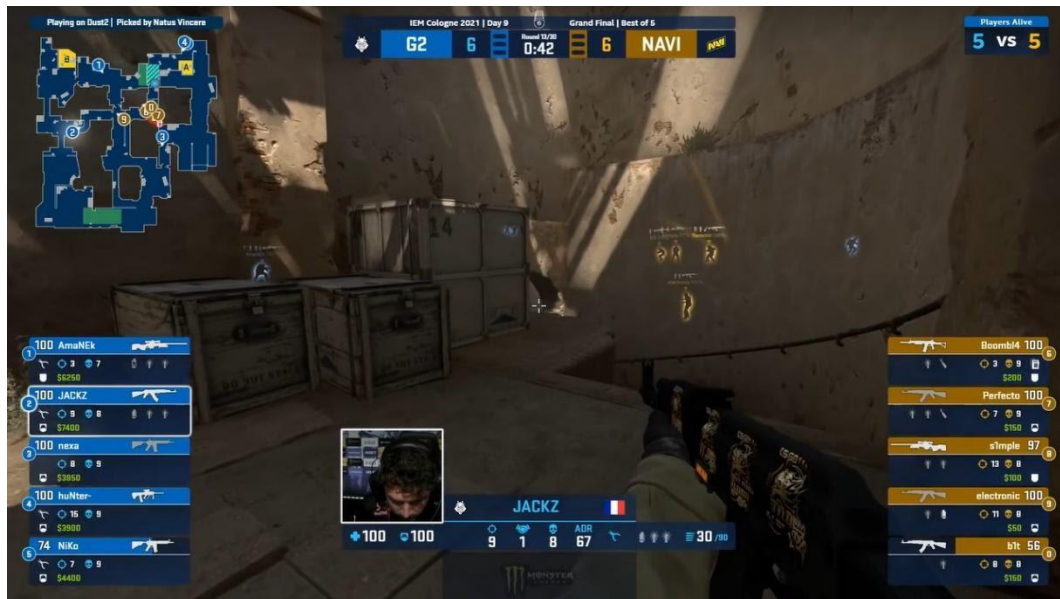


Figure 6.6. IEM Cologne 2021 Finals G2 vs NAVI

Similar to the League of Legends spectating interface elements, the CS:GO spectating interface elements are placed on the sides and corners of the screen. On the top right corner there is a panel that shows the number of alive players in each team. This element is mostly found not practical by the participants of the interviews, since it is possible to understand how many players are alive from the bottom corner panels. The said panels include the general status of each player. On the bottom centre, there is a panel that changes by the observer's view. In other words, there is further information about a player that is selected by observers along with the webcam view of the player. At the top left corner is the designated space for the mini map. The mini map is usually shaped as the map itself. Players and areas are indicated on the mini map interactively. Lastly, at the top centre there is a panel that



serves the same purpose as League of Legends top centre panel, providing a general status of the rounds such as time remaining and scores. As mentioned earlier in this section, observers generally use the FPS cameras to show gameplay. During occasions such as bomb diffusion and beginning of the rounds, observers switch the view to free camera mode where spectators can see the game in a different angle (Figure 6.7).

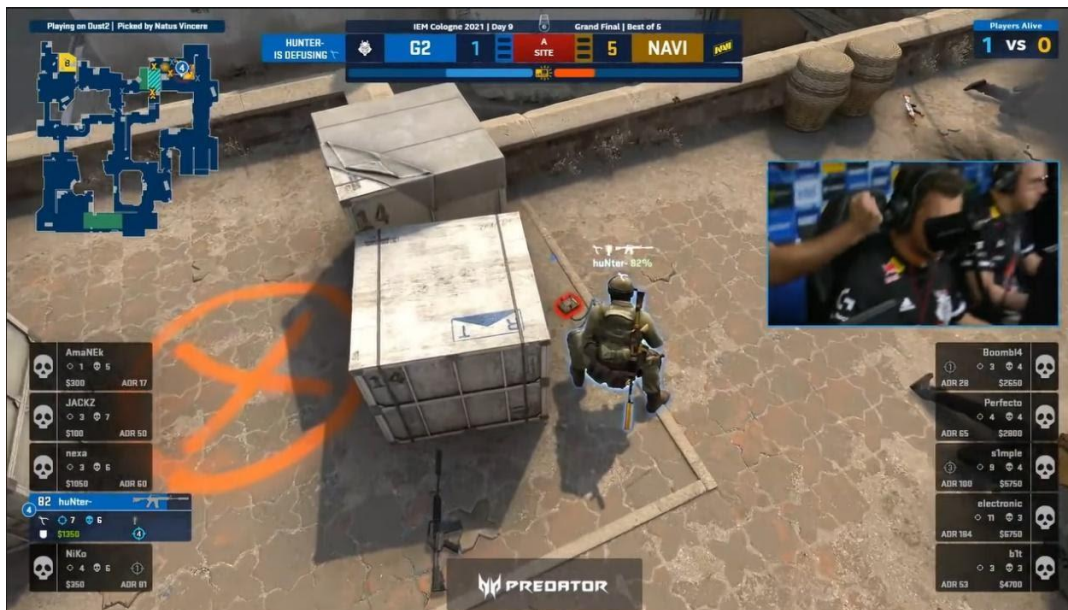


Figure 6.7. IEM Cologne 2021 Finals G2 vs NAVI, Free Camera View

### 6.1.3 Analysis of PlayerUnknown's Battlegrounds Spectating Interface

PUBG is a game in the Battle Royale genre, being a mixture of FPS games and survival games. In competitive gaming, depending on the game type, players or teams try to be the last one standing on the map. In international tournaments, squad mode games are played (with 4 players in each team), and 64 players in total across 16 teams. Compared to other games in this research, PUBG is the newest. Therefore, its tournament structure is also new and developing. Moreover, the spectator interface of the broadcast differs from each other depending on the region and tournament. Since this research aims to enhance the spectating interface on a global

scale, it was logical to analyse the interface of PUBG used for international tournaments or events. Figure 6.8 presents the broadcast of PUBG Global Championship 2021.



Figure 6.8. PUBG Global Championship 2021 Week 1 Match 1

As seen in Figure 6.8, the PUBG spectator interface is slightly different from other games. The most common item on the interface is the mini map at the bottom right corner. At the top right corner there is general information about the match, which was found useful by the participants of the interviews. If the view is on an FPS camera which is the POV of the player, two panels appear at the bottom left and centre. One has the team details such as names, health, whether they are dead or alive, and whether they are in a car or not. Other one shows the details about the selected player by the observers. These details are their armour and health status, ammunition and weapons, number of kills and lastly the name of both player and team. These panels are similar to the CS:GO interface, since they convey the same message with similar visuals. Lastly, at the top left corner there are two panels. One is on the top that shows the information about the tournament and which game is played. The other panel is highly debated on the interviews, it shows the overall scores of teams along with the kills and deaths in the game. To always show the

status of the tournament during matches is quite a different approach to the broadcasts of other games.

As the number of players are high, especially at the beginning of the game, observers often change the view between players and also to a free camera mode (Figure 6.9). While in free camera, all the players have their nametag on them (this feature is specific to the spectators' interface – the game does not have such a feature). Moreover, panels that show details about selected players are closed, since the view is not focused on one player.

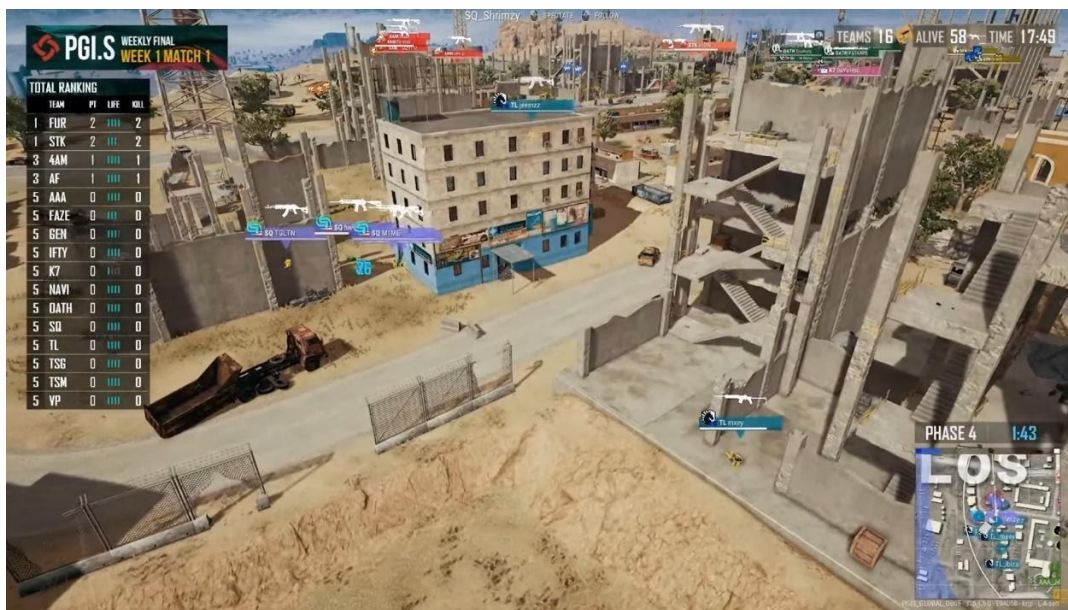


Figure 6.9. PUBG Global Championship 2021 Week 1 Match 1, Free Camera View

There are several different modes of the interface applied in different contexts. One is split screen with the gameplay and bigger version of the map (Figure 6.10). The reason behind this is that the map is larger than most competitive games and especially when the map is shrinking, observers show the map bigger for spectators to see the new area. This view also gives the chance of adding sponsor logos or advertisements to the interface for a short amount of time. Another mode is a variation of the standard viewing mode. Sometimes one team is selected by observers and their performance is highlighted along with the webcam views (Figure 6.11).





Figure 6.10. PUBG Global Championship 2021 Week 1 Match 2, Split Screen



Figure 6.11. PUBG Global Championship 2021 Week 1 Match 3, NAVI team highlighted

## **6.2 User Interface Design Proposal**

As the end point of the first (survey) and second (interview) phases of the empirical investigation, design recommendations were presented. From the design recommendations, aligned with the considerations from literature and previous studies on the subject, new features of spectating interfaces were designed. Proposed screens are presented in the forms of wireframe. Therefore, colour choices and visual decisions are not finalized for this study. The purpose was to enhance the experience of spectators of the three studied games, through use of a desktop application interface. Each of the design features are presented and explained in the following section.

### **6.2.1 Design Feature 1: Control Panel**

As almost all streaming platforms and broadcasting tools have their own control panel, the proposed design has one also. However, according to the design recommendation 10 (see Section 5.2.3), a lack of interactivity and not having control over the interface were the most frequently mentioned topics. Therefore, to enhance the users' experience, offering control over the interface and a possibility for interactivity was the main focus. With the help of panel improvements and additions, which will be discussed in this chapter, the problems will be addressed.





Figure 6.12. Illustration of Design Feature 1, Control Panel

Figure 6.12 shows the proposed design with the bottom panel highlighted. In this panel, spectators can find not only the standard video manipulation tools (play-pause, live, full screen, quality settings) but additional features. As a design recommendation (6, see Section 5.2.1), changing the caster volume and game volume separately was discussed. While several participants mentioned casters have the greatest impact to the game in terms of hype and knowledge, some participants mentioned that casters can be loud and over excited for no reason, and it distracts them from the game. Therefore, having separated volume options could satisfy both the users who want to focus on the game more and the users who enjoy the hype of the casters. The control is designed in a way to give users familiarity to the standard volume changing UIs. The panel also has a camera icon that provides the user to change to the free camera. Once the icon is activated, a pop up appears as the shape of a joystick around the cursor controlling the camera with mouse clicks (Figure 6.13), as the design recommendations (7 and 8, see Section 5.2.2) suggest that

participants insisted on having total control over the cameras. The solution enables users to change the view of what they are watching with the same logic of the games' own spectating interfaces.



Figure 6.13. Illustration of Design Feature 1, Control Panel with free camera mode

## 6.2.2 Design Feature 2: Widget Panel

In their article Conner et al. (1992, pp.184) describes widgets as: “...an encapsulation of geometry and behaviour used to control or display information about application objects.” Moreover, Apple (2021) suggests in their Human Interface Guideline that usage of widgets can have a positive effect on users' behaviour towards a device or platform. Therefore, usage of widgets not only brings familiarity, since the popularity of widgets has increased over the years, but also encourages the user to interact with the platform. To achieve the most efficient outcome, the following

design recommendations (3, 4, 5, 6, 7, 8 and 10, see Section 5.2) were analysed and addressed with the widget panel.

*3. The platform should have a direct connection with Discord or have its own communication channels.*

*4. Live chat should be optional and supervised.*

*5. Informative replays and pop-ups should be added to the broadcasts.*

*6. Separating casters' voices and the game audio.*

*7. Spectators should have control over observers' cameras.*

*8. There should be a selection of viewing options categorized by the players' point of view.*

*10. User interface items should be customized by the spectator, while watching.*

With these in mind, the proposed Widget Panel gathers all the needs in one location to be presented to the user. Considerations that are taken from literature research and the interviews, directed the design to create a side panel with all the information that is needed (Figure 6.14).



Figure 6.14. Illustration of Design Feature 2, Widget Panel

Enhancements that this panel offers will be discussed by addressing the related design recommendations. Figure 6.15 shows all the widgets that the platform has, with the numbers provided to match with the explanation of them. Participants of the study mentioned that some parts of spectated matches can be missed because of replays, so the proposed design offers a replay widget on the side panel to allow repeated watching. Users can decide whether to watch it on the screen, in the pop up or even not watch it. This widget (1) offers the users freedom of choice in terms of watching replays. The feature (2), changing the volume separately, is not only available on the control panel but also in the widgets panel. Live chat is a highly debated subject from the research survey and interviews. Users can filter the chat, for example from curse words, and also with the help of popular keywords they can find the answers in their mind such as who won the previous match (3). As stated throughout the study, spectatorship is a strong community. Therefore, it is important for several users to communicate with either their friends or other people who are

watching the same game as themselves. With the voice channel widget (4), the platform has its own voice channel system that offers users to connect with each other in an audio base. Control over cameras is the most mentioned subject along with interactivity. Thus, the camera widget (5) presents the different players POVs and a free camera option which has the same function as provided in the control panel. Lastly, game panel widget (6) offers a variety of interface elements that are normally embedded into the broadcast. While the next section explains the customizing feature in detail, the widget simply offers to drag and drop the elements to any position on the screen.



Figure 6.15. Illustration of widgets

### **6.2.3 Design Feature 3: Customizing the Elements**

The third feature aims to address problems on the matters of interactivity, personalization, and having control over the interface. Since survey and interview participants both mentioned customizable user interfaces, and arranging the interface elements according to their choices, the platform includes different layout choices of game panels in terms of positioning, as well as customization (move, maximize-minimize, delete, add). 9th and 10th design recommendations (see Section 5.2.3) were considered on the Design Feature 3. Layout options were decided based on the comments in interviews and considerations that were taken from the studies on this subject. The proposed options are ‘focus’ (clean and focused to the gameplay), ‘standard’ (involves only needed information), and ‘professional’ (all the details added). Since the broadcast and the spectating interface are separated, the opportunity arises for the user to control the game panels (interface elements). Figure 6.16 presents the maximizing and minimizing feature. All of the items that are on the spectating interface can be bigger or smaller according to the choice of the user. By double clicking an item, the user can easily toggle between the sizes of the items.



Figure 6.16. Illustration of changing the size of spectating interface elements on the platform

Furthermore, users can move a panel of their choice to the screen at any time of the broadcast by drag and drop motion with their mouse (Figure 6.17 and 6.18). This allows users to personalize their own spectator interface. Each panel has its own widget, and the user sees the visual of the panel on the widget before moving. If there are multiple layers of items such as webcam views, the user needs to find the one that he/she wants by clicking the arrow next to the visual. Figure 6.17 and 6.18 demonstrates placement of an item onto the broadcast. Once the widget passes to the screen, the size and shape are adjusted to standard automatically.



Figure 6.17. Illustration of placing a panel in front of the broadcast (part 1)



Figure 6.18. Illustration of placing a panel in front of the broadcast (part 2)



#### **6.2.4 Design Feature 4: Changing Cameras**

The final design feature focuses on the camera views provided to spectators, which have a major impact on the users' experience of spectating according to the design recommendations 7 and 8 (see Section 5.2.2). Some participants of the interviews mentioned that they wanted to focus on one player in a game. However, others stated that while watching one player (selected by the observers), they can miss other parts of the game. Therefore, in the proposed design, a camera widget is offered to users. On this widget users can select a particular player to watch based on their POV and they can change it any time (Figure 6.19). Since the number of players changes game to game, the layout of the widget changes also. Games such as LoL and CS:GO have 10 players in a game and all the visuals can fit into a widget. However, in a competitive PUBG game there are 64 players at the beginning of the game. Thus, the layout was organized accordingly to accommodate such a large number of players. There are different pages on the widget to find and select the preferred player's POV.

With the same approach stated for the control panel feature, the camera widget also has a free camera button. When it is pressed, the user can move around the map, as the free camera mode offers. Since it is a separate feature from POV selection, the button is separated and aligned to the midpoint of the widget.



Figure 6.19. Illustration of Camera changing UI

### 6.3 Focus Group Session

The final work carried out for the empirical investigation was a focus group session conducted with the help of online platforms. From amongst the participants of the interviews, four were selected to participate in the focus group. These participants had knowledge and spectating experience for all three games. Therefore, they were asked to comment on all the proposed designs. At the beginning of the session, the design features were introduced to the participants via a Miro board (Figure 6.20). The focus group was originally planned as two separate phases: evaluation and generation (with discussion held after each phase). However, in the evaluation phase participants spontaneously started to generate ideas about the design features. Therefore, the two planned phases were combined into one, with evaluated and generated ideas written on post-its with different colours on the Miro board (Figure 6.21). The discussions about the feedback and generated ideas were made at the end of the session.

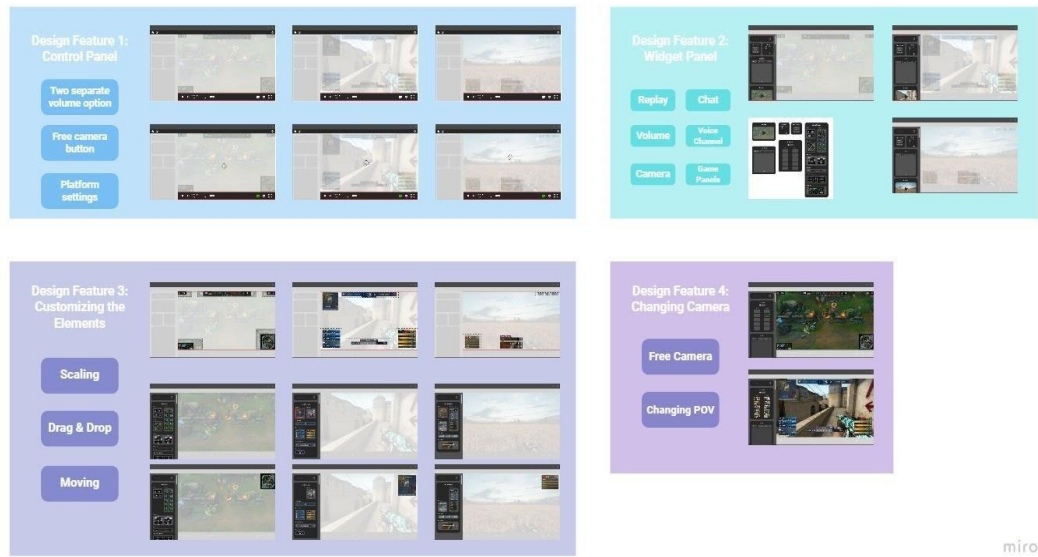


Figure 6.20. Screenshot of Miro board presentation design features

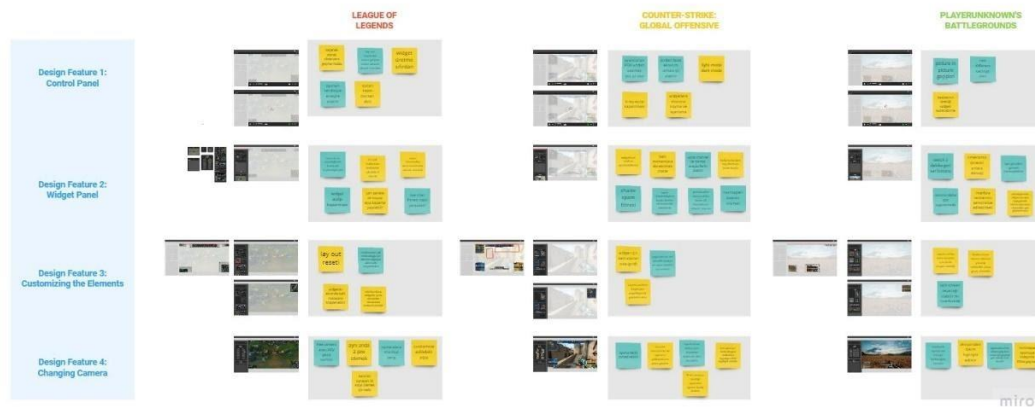


Figure 6.21. Screenshot of Miro board evaluation and generation about design features

### 6.3.1 Evaluation & Generation

The feedback from the evaluation of the presented design features, and the creative responses of the participants, are gathered together here on a feature-by-feature basis.

#### **6.3.1.1 Design Feature 1: Control Panel**

Design Feature 1 is about the control panel placed on the top and the bottom of the interface. Since the control panel has the profile and settings icons, participants commented that personalization of the interface is important for them to feel ownership and control over the interface. Therefore, they suggested different colouring options along with dark and light theme preferences. Also, the top panel used as a hub for personal settings such as turning back to observers' mode (regular spectating), saving layouts, and choosing them while watching, adding tabs similar to web browsers for spectating different POV's, and lastly assigning keyboard shortcuts for widgets, cameras and more. One participant mentioned that they already use their keyboard for shortcuts or skills in games, so it is logical to assign letters to actions in the interface as well. There were plenty of discussions about the free camera button and its function. Some participants stated that switching to free camera mode while spectating could create confusion, since spectators need to both control and spectate. On the other hand, others mentioned that free camera mode could be controlled differently depending on the game being spectated. Thus, it could solve the confusion or difficulty of multitasking. This discussion will be raised again for Design Feature 4. Overall, the control panel is seen as a personalization and settings hub by the participants. So, the suggestions for developments were more about refinement on what was already offered rather than new features.

#### **6.3.1.2 Design Feature 2: Widget Panel**

This section covers the comments and suggestions about the widget panel and its components. Participants had a positive reaction to the widgets. All the designed widgets were discussed and analysed one-by-one. Similar to Design Feature 1, participants suggested personalized widget views with regard to layout and colours. Moreover, one participant stated that "Creating my own widget would be nice, it could even create a community effect because I might want to use a widget that was

created by someone else.” Participants agreed that the control panel needed a button for opening and closing, as it took space when it is open but unused. After the comments about the widgets panel, participants started to discuss the widgets individually. The live chat widget and its function was discussed, and participants commented that it could be more beneficial to turn back to important moments of the game in the chat and see the reactions. Moreover, a spam filter is suggested to decrease the overflow of repeated or similar comments. Once turning back to important moments was mentioned, one participant stated that it would be good to have it on broadcast as well. It is suggested that there could be timestamps of important moments and users could easily jump back to that moment. While the replay pop-up was in discussion, one of the participants mentioned a new feature of Twitch. The feature has a similar logic to the replay widget. There is a button that rewinds the broadcast two minutes earlier. With that feature, spectators can watch a particular position again and simply come back to the live broadcast. As a similar version of the proposed replay widget is already developed by one of the biggest broadcasting platforms, participants had positive comments on the widget and its potential. They mentioned that it creates a good interaction between the user and the interface.

Lastly, the voice channel widget was discussed. Participants mentioned that voice channels and live chat create a good social interaction. However, there could be additions to the functions of the widgets. For instance, one of the participants commented that the layout of the users could be the same when they are in the voice channel. Similar to the screen-sharing feature of online meeting platforms, users could annotate some parts while watching or showing each other something. Even assigning a controller for the voice channel that acts as an observer is suggested. According to the participants these additions can enhance the social interaction and sense of community among the users.

#### **6.3.1.3 Design Feature 3: Customizing the Elements**

In this section comments and suggestions of the participants about customization of the interface elements will be presented. Participants remarked that this feature would be beneficial for the interactivity of the interface. However, they commented that it lacks feedback to the user. For instance, one participant mentioned a kind of guidance could be provided when a widget is selected, in his words “... a guidance or feedback could give indications to the users that they are doing something right or wrong.” Following this comment a discussion of grids started. Participants suggested grids (visible or not) could guide the user to place UI elements to the broadcast. Similar to the Windows’s folder placement on the desktop, the UI elements could be placed (or snapped) to predefined grids on the screen. Thus, it helps to place items in logical or appropriate places rather than places that would affect the experience. Moreover, they added that all the widgets could be placed on the interface instead of just the game panels. For Design Feature 3, participants also mentioned that creating and saving layouts should be available, as well as resetting the current layout to default. The split-screen functionality was discussed in two different ways. One was from the perspective of adding multiple tabs to the interface and switching between them, whilst the other was splitting the screen in half with a command.

#### **6.3.1.4 Design Feature 4: Changing Cameras**

The final design feature for participants to evaluate and respond to was about changing the cameras or POV of players. One participant stated that the free camera feature could make it difficult for users to follow the game. One other participant mentioned that, especially for FPS games, it could kill the ‘magic’, when it is seen from a different angle. Some suggested that instead of giving all the control to users, it could be different in each game. For instance, in FPS games, it could still show the POV of a player, but spectators could look the other way that the player does not.

Selecting the player's POVs is another feature that is discussed affluently. While the feature was well received by the participants, there were some additions and suggestions to the current solution. One was selecting two players to watch at the same time with a split-screen. A participant added that: "I could watch two players in the same lane that are on opposite teams to compare their actions and builds (for League of Legends)." Another one was that while selecting a player to watch is easy for games with few players such as League of Legends and CS:GO, it is hard to find a player or a team in PUBG especially in the beginning. Highlighting the teams that are in action was suggested, along with using the mini map (clicking on the names) to find the sought-after players or teams. Also, one participant mentioned that it could be possible to use AI to follow action. AI could direct users to teams or players that are close to each other or in a shootout (for FPS and Battle Royale genres).

#### **6.4 Discussion on the Suggested Design Improvements**

The focus group session was successful in provoking suggestions for improvements or additions to the presented design features. The responses from participants turned into insights for further development on spectator interface design, which would be carried out beyond the scope of this thesis.

Personalization of the user interface was a key point for the participants. It is clear from the responses and comments that overall, the interface design should be personalized based on colours, arrangements and creating widgets or layouts. It could create both a communal and sharing sense with shared created layouts and widgets. On the other hand, it can be helpful for users to attach to the platform and be happier with its functions and features and become part of their routine. Furthermore, while participants appreciated the control over the interface with customizing and personalizing, switching between regular broadcast (current method) and customized one was suggested. The reason behind this suggestion was giving control to the observers when the user cannot be focused to the spectating and controlling at the same time.

Another key insight was to add timestamps to both live chat and the broadcast, to turn back to important moments of the matches. This creates new viewing opportunities for users who missed important moments and cannot find them easily from amongst a three to five hours long live broadcast.

As spectatorship offers a sense of community among the users, the addition to the voice channels feature was a key feature that was valued by the focus group. A voice channel could offer roles to its members such as arranging the layout and controlling it as an observer. Furthermore, since the members spectate together, it is sensible that they have the same layout that gives the opportunity to interact with each other.

From the survey and the interviews, it was concluded that users wished to have control over the whole UI and its elements. In that respect, the proposed design features offered total control over the UI elements with regard to positioning. However, an important insight obtained from the focus group was that widgets and game panels could be snapped to assigned positions (grids) on the interface similar to the iPhone and Windows widget placements.

Lastly, free camera and the POV changes were the most discussed topics. It is clear that changing the view to a free camera could confuse users and create a distraction. So, as an improvement, the free camera could be limited to some pivot points and only turn around those points to show spectators the surroundings. Moreover, there could be shortcuts for POV options that are created by the user beforehand to hover between players. For crowded games such as PUBG, action indicators (closeness, shootout) could be used to highlight the teams in action.



## **CHAPTER 7**

### **DISCUSSION AND CONCLUSIONS**

In this thesis, in order to propose enhancements to the esports spectating experience, expectations and needs of spectators were investigated as well as their motivations behind spectating esports. Since the main scope of the study was the interaction between spectators and the spectating interfaces, users' habits on spectating, motivations, what effects spectators experience of watching, and what could be offered to enhance this experience were the key points to find out.

To answer the research questions provided in the Introduction, a literature review was made (see Chapter 2). The literature review involved an introduction to the competitive gaming history, competitive games and genres, selected games for the research, spectating activity with its stakeholders and motives, and lastly an exploration of the user experiences of spectating regular sports and esports. The results from the review provided a base to create the empirical investigation.

Following the literature review, the methodology for carrying out an empirical investigation in the area was discussed and fixed (see Chapter 3). The investigation that followed consisted of three phases. The first phase comprised a survey, which provided preliminary data from spectators about their motives and habits along with their insights about current interfaces. From the results of the survey (see Chapter 4), interview questions were prepared, and the second phase – in-depth interviews – was conducted. The aim of the interviews was to obtain detailed data from participants about their needs and expectations from a spectating interface. Chapter 5 contains the results of the interviews, converted into clusters, which in turn were interpreted into a set of design recommendations. The last phase of the empirical investigation involved designing new interface features that were in response to the design

recommendations and in line with all of the preceding research. The proposed design features were presented to participants of a focus group session (see Chapter 6), where the aim was to get feedback and suggestions to gain insights for improvements to the proposed features from users' perspectives.

In this chapter, an overall discussion of the findings and implications will be presented. Although the research questions were answered in depth throughout the thesis, a summary of the answers will be provided as a way of concluding on the thesis results. The effect of the COVID-19 pandemic and its consequences on the research will be discussed in the section mentioning the limitations of the study. Lastly, possible follow-up research and routes for further developments for the spectator interface proposals will be presented.

## **7.1 Discussion on Findings and Implications**

In this study, League of Legends, Counter Strike: Global Offensive and PlayerUnknown's Battlegrounds were selected to work on. These games were analysed based on what they offer to players and spectators. As the research focused on spectators' experiences, the interaction between users (spectators) and the product (spectating interface) was a key aspect. To understand this interaction in detail, several steps were followed. Gathering the knowledge from current literature on esports and traditional sports was the initial step. The literature review built a solid structure for the remainder of the research to be built around. Accordingly, the most useful insights from the literature review were selecting the games that would be the focus of the research, uncovering variations of spectators' motivations among studies, and comparison between esports and sports in relation to user interaction.

The second step was to review and then design an appropriate methodological approach of the thesis and plan its implementation in an empirical investigation (see Chapter 3). At the end of the research, it was concluded that the empirical investigation was designed correctly but with minor setbacks. The gathered data

from the investigation (see Chapters 4, 5, and 6), spanning a survey, interviews, interface design, and focus group session, complemented the literature review and successfully resulted in appreciated enhancement proposals for spectators' experience. However, conducting the interviews and focus group session online was challenging, because it created an unnatural environment for both the researcher and the participants. Yet, following the analysis, vast amounts of useful results were obtained in the forms of clusters. The clustering method was used to tidy-up codes created during data analysis and to literally cluster and organize the data.

The key findings of the survey and the most frequent clusters were *excitement of watching live*, meaning that spectators feel excited and hyped while watching live views; and *lack of companion*, meaning that if spectators had the chance, they would watch the games with others. Thus, voice channels were created in the proposed interface design. Another frequent cluster was *controlling the observer's viewpoint*. This cluster was present not only in the survey, but in the interviews as well. To solve this issue, a camera widget was designed in the interface for spectators who want to follow a particular player. The clusters from the semi-structured interviews related to the same subjects raised in the survey but provided more detail. *Sense of community in spectatorship* suggested that the spectator community has strong relationships among themselves and needed attention in their communications. In terms of motivation for spectating, this research's results aligned with the studies that were mentioned in the literature review. Three reasons stand out among others: *excitement and enjoyment*, *following a player or a team*, and *learning from the players*. It was surprising to see that participants had completely opposing comments about commentators (casters). While some participants saw them as a source of knowledge and hype, others believed that casters drew focus from the game and killed the excitement of the game. As suspected, according to the participants, the current spectating interfaces are lacking in terms of interactivity despite users expressing a need to exert control over the interface and cameras. Lastly, when participants were asked about their expectations on the spectating interface, *control over cameras*, *customizing the UI*, and *personalization* were the most frequent

clusters. From these clusters, design recommendations were written. These recommendations were useful in two ways. First, they were a source for the design features of the proposed solution that followed. Secondly, design recommendations may easily be used as interface guidelines, accessible to designers who have no relation to this present research.

As a last step, a conceptual user interface design was proposed with design features that reflect the clusters and design recommendations. This was followed by a focus group session to evaluate and elaborate upon the design features. Like the interviews, the challenging part of this phase was conducting the focus group online. It took time for participants to adapt to discussing something online and giving feedback. However, outcomes of the empirical investigation were appreciated by the participants, and it was deduced from the comments that the proposed solution created a solid base to improve the experience of esports spectators. Furthermore, the proposed user interface design fit with visions for media manipulation, where spectators switch roles from consumers of fixed content to composers of their own experience, able to pick and choose what they see and how. With further research, the interaction between the user and the product may be enhanced to an even higher degree, prior to putting the design into practice.

## **7.2 Revisiting the Research Questions**

Answering the research questions was the main aim of this study. Throughout the thesis, in particular in reporting the survey and interview results, answers to the research questions have arisen. However, to provide the answers in a concise manner, summary answers are gathered together below.

*RQ1. Why do people watch competitive gaming and what do they focus on while spectating?*

*RQ1.1 What kind of motivations do they have for spectating esports?*

*RQ1.2 What do they achieve after watching?*

These three questions will be answered together, as their answers intersect with each other. These questions were investigated in depth through the literature review (see Sections 2.3 and 2.4.1). Since the motivation of spectators was a highly studied subject, considerations were taken and used in the first two phases of the empirical investigation. Spectators of esports tend to watch competitive games to be entertained and feel the excitement of the game, to learn gameplay tricks or meta, and lastly to follow and root for a particular player or team. Furthermore, a significant number of participants mentioned that they watch esports as a leisure time activity. It was concluded that spectators focus only on the essential information on the spectating interface while watching games, rather than checking all the elements on the screen.

*RQ1.3 What kind of needs do they have based on their focus?*

The clusters from the survey and interviews show that spectators need to have control over the broadcast they are watching. Control over the UI elements was found the most predominant issue, along with controlling the observer's camera. Other relevant clusters that were obtained from the empirical investigation were personalization and customization of the UI elements, increased interactivity, improvements on details of UI, and adding relevant information to the interface.

*RQ2. What kind of features or changes could enhance the esports spectating experience?*

The design recommendations section of the thesis concluded that a platform designed specifically for the spectating experience of esports games should be created. Potential design features of said platform were created and presented in the third phase of the empirical investigation. From the design recommendations, four main design features were created: control panel, widget panel, customizing the elements, and changing cameras. Each of these features aimed to enhance the spectators' experience.

*RQ2.1 Which mediums (media) do they use for the spectating experience?*

Data obtained from the survey and interviews showed that spectators mainly follow esports through two platforms, apart from national exceptions (Chinese platforms). The most dominant media for spectating competitive games and tournaments were found to be YouTube and Twitch.

*RQ2.2 What kind of features are offered to them by those media; are they appreciated; and what might be provided to improve the experience?*

YouTube and Twitch offers users to spectate esports events live. Recorded versions of the events are available as videos. YouTube also offers recordings of matches in separate videos and short versions (highlights) of matches. From the survey, convenience in terms of accessibility and user interface benefits were found the strongest reasons for participants to choose YouTube and Twitch. However, a lack of interactivity and a desire to have control were revealed as weak sides of these platforms, which were discussed in the analysis of the interviews.

### **7.3 Limitations of the Research**

As the research took place during the COVID-19 pandemic, it was affected as well as the rest of the world from this global situation. Initially, the empirical investigations were planned to be conducted physically (except the survey). As mentioned in the methodology chapter, interviews with Turkish and European spectators were to be carried out to allow a cross-comparison between the two. Since the researcher was in Delft, The Netherlands at the time during Erasmus exchange, the recruitment for such interviews would not have been difficult. However, adapting to the pandemic conditions slowed down the process of the study and rather than analysing the different regions' spectatorship, game-specific interviews were conducted to analyse the subject on an international level. Given the COVID-19 restrictions and isolation periods, all the interviews were conducted via online meetings. Although the participants were regular spectators of competitive games, graphics of screenshots of games or videos were provided to remind them of the

existing spectating interfaces. In a physical meeting, annotating, or showing something to participants, would be easy. However, most of the participants had a difficult time annotating parts of the interface during online meetings (using Zoom). Similarly, the final phase of the empirical investigation, the focus groups, aimed to create discussions among participants on a particular subject. Since the focus group was held online, discussing while looking at a screen was not ideal for the participants compared to a face-to-face discussion. To create a relaxed and sincere environment, small talks and short breaks were applied to the focus group.

Another limitation of the study was issues related to PUBG. PUBG was selected because of its popularity in the battle royale genre, and it was the only game that had regular tournaments and leagues that reached an international audience. However, before the interviews had commenced, PUBG had been slowly losing its popularity to the new games in the genre (Apex Legends, Call of Duty: Warzone). Therefore, it created a harder task than expected to find spectators who agreed to be interviewed.

The research arrived successfully at a set of design recommendations and their implementation as distinct design features. A coherent finalised design solution was not a goal for the research, but with more time, a further round of iterations to the proposed design features could be achieved based on the insights obtained from the focus group. Furthermore, rather than creating a platform that is the same for all the games, there can be an opportunity instead to develop game-based spectating platforms that have features catering to the needs of specific games. Lastly, the usability and technical performance of the user interface design proposals are yet to be tested. For example, watching the game, casters, chat etc. simultaneously can demand a high cognitive load, which may or may not be easy to handle. Situation awareness may also be difficult to achieve.

## **7.4 Suggested Future Research**

This thesis focused on investigating spectators' motives behind esports spectating and uncovering their expectations and needs from a spectating interface. Three games were selected because of their popularity among spectators. For further developments, researching different games, and perhaps different genres, might provide complementary results.

The design features were presented as still images rather than interactive prototypes. Furthermore, interaction between the features could not be emphasized due to time constraints. Therefore, in further developments the design features can be realized as working prototype interfaces. In this way, it would be possible to analyse the features together as a whole and evaluate the designs based on UX/UI metrics.

Because of the time limitations, only a relatively small selection of design features was created for the proposed interface design. However, since the design recommendations on which the features are based are provided in the thesis, it will be possible for other designers to make their own interpretations and reach their own interface design. From the results of the empirical investigations and the design recommendations, it is also possible for current interfaces to be enhanced rather than taking the path of developing a new spectating platform. Moreover, game companies and streaming platforms, as discussed earlier in the thesis, are already trying to enhance the spectators' experience by adding new features to their platforms. Therefore, the outcomes of this study may act as suggestions for those who want to improve their spectating interfaces.



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## APPENDICES

### APPENDIX A

#### INFORMED CONSENT FORM: FOCUS GROUP (TURKISH)

##### ARAŞTIRMAYA GÖNÜLLÜ KATILIM FORMU

Bu çalışma ODTÜ Endüstri Ürünleri Tasarımı Bölümü yüksek lisans öğrencilerinden Ozan Aksun tarafından yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

##### **Çalışmanın Amacı Nedir?**

Çalışmanın amacı e-spor izleyicilerinin alışkanlıklarını ve isteklerini anlayarak daha iyi bir deneyim sunmaktır.

##### **Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?**

Mülakatlar yaklaşık 45 dakika uzunluğunda olacaktır. Mülakat 12 soru içermektedir ve sorular açık uçlu sorulardır.

##### **Katılımınızla ilgili bilmeniz gerekenler:**

Bu çalışmaya katılmak tamamen gönüllülük esasına dayalıdır. Herhangi bir yaptırıma veya cezaya maruz kalmadan çalışmaya katılmayı reddedebilir veya çalışmayı bırakabilirsiniz. Araştırma esnasında cevap vermek istemediğiniz sorular olursa cevaplayabilirsiniz.

Araştırmaya katılanların kimlik bilgileri gizli tutulacak ve kimlik bilgileri herhangi bir şekilde eşleştirilmeyecektir. Toplanan verilere sadece araştırmacılar ulaşabilecektir. Bu araştırmanın sonuçları bilimsel ve profesyonel yayınlarda veya eğitim amaçlı kullanılabilir, fakat katılımcıların kimliği gizli tutulacaktır.

##### **Araştırmayla ilgili daha fazla bilgi almak isterseniz:**

Çalışmayla ilgili soru ve yorumlarınızı araştırmacıya [ozanaksun@hotmail.com](mailto:ozanaksun@hotmail.com) adresinden iletebilirsiniz.

*Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.*  
(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Ad Soyad

Tarih

İmza

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## APPENDIX B

### INFORMED CONSENT FORM: FOCUS GROUP (TURKISH)

#### ARAŞTIRMAYA GÖNÜLLÜ KATILIM FORMU

Bu çalışma ODTÜ Endüstri Ürünleri Tasarımı Bölümü yüksek lisans öğrencilerinden Ozan Aksun tarafından yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

##### **Çalışmanın Amacı Nedir?**

Çalışmanın amacı e-spor izleyicilerinin alışkanlıklarını ve isteklerini anlayarak daha iyi bir deneyim sunmaktır.

##### **Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?**

Odak grubu görüşmesi yaklaşık 60-90 dakika uzunluğunda olacaktır. Görüşmede önerilen tasarımı kullanmanız istenecektir. Sizden tasarım hakkında geri bildirim vermeniz istenecektir.

##### **Katılımla ilgili bilmeniz gerekenler:**

Bu çalışmaya katılmak tamamen gönüllülük esasına dayalıdır. Herhangi bir yaptırıma veya cezaya maruz kalmadan çalışmaya katılmayı reddedebilir veya çalışmayı bırakabilirsiniz. Araştırma esnasında cevap vermek istemediğiniz sorular olursa cevaplamayabilirsiniz.

Görüşme sesli ve görüntülü olarak kayıt altına alınacaktır. Kayıt başlangıcı ve bitişi araştırmacı tarafından belirtilecektir.

Araştırmaya katılanların kimlik bilgileri gizli tutulacak ve kimlik bilgileri herhangi bir şekilde eşleştirilmeyecektir. Toplanan verilere sadece araştırmacılar ulaşabilecektir. Bu araştırmanın sonuçları bilimsel ve profesyonel yayınlarda veya eğitim amaçlı kullanılabilir, fakat katılımcıların kimliği gizli tutulacaktır.

##### **Araştırmayla ilgili daha fazla bilgi almak isterseniz:**

Çalışmayla ilgili soru ve yorumlarınızı araştırmacıya [ozanaksun@hotmail.com](mailto:ozanaksun@hotmail.com) adresinden iletebilirsiniz.

***Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.***  
(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Ad Soyad

Tarih

İmza

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## APPENDIX C

### ETHICS COMMITTEE APPROVAL

UYGULAMALI ETİK ARASTIRMA MERKEZİ  
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ  
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21 Ocak 2020

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Owain PEDGLEY

Danışmanlığını yaptığınız **Ozan AKSUN**'un "eSporda İzleyici Modunu Tasarlamak: Bir Deneyim Geliştirici" başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve 005-ODTU-2020 protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

  
Prof. Dr. Mine MISIRLISOY

Başkan

  
Prof. Dr. Tolga CAN  
Üye

Doç. Dr. Pınar KAYGAN  
Üye

  
Dr. Öğr. Üyesi Ali Emre TURGUT  
Üye

  
Dr. Öğr. Üyesi Şerife SEVİNÇ  
Üye

  
Dr. Öğr. Üyesi Müge GÜNDÜZ  
Üye

  
Dr. Öğr. Üyesi Süreyya Özcan KABASAKAL  
Üye

## APPENDIX D

### INTERVIEW QUESTIONS

- 1- Do you play the game? How long have you played the game?
- 2- What is the frequency of your spectatorship? Why do you think it is? Why not less or more frequently?
- 3- How do you spectate it? In terms of environment, company who you are with, mediums(devices). Can you explain why you prefer these?
- 4- Which aspects of watching eSports are in your interest? What motivates you to watch esports? Eg. leisure time activity. Can you explain why?
- 5- What do you think about commentators' contribution? Is it helpful? What could be added?
- 6- What do you think about the existing interface of spectating mode? (Colours, icons, anything)







7- Is it satisfying to only watch, or do you prefer to have control of what you are watching? Either way, why?

8- What are the features that you find beneficial for your experience (spectating experience, watching) in current interfaces? Why?

9- What are the features that you find not that important for your experience in current interfaces? Why?

10- What would you do as a spectator, if you had the control of the current interface?

11- What are your dreams and expectations in this topic?



## APPENDIX E

### SURVEY QUESTIONS (TURKISH)

1- Yaş Aralığı

18-24

25-32

33-40

40+

2- Cinsiyet

Erkek

Kadın

Diğer

3- Meslek

4- Düzenli oynadığınız oyunları lüften seçiniz.

CS:GO

PUBG

LoL

Other:

5- CS:GO oyununu ne kadar süredir oynuyorsunuz?

1 yıldan kısa süredir.

1-3 yıl arası

3-5 yıl arası

5-7 yıl arası

6- PUBG oyununu ne kadar süredir oynuyorsunuz?

1 yıldan az

1-3 yıl arası

7- LoL oyununu ne kadar süredir oynuyorsunuz?

1 yıldan az

1-3 yıl arası

3-5 yıl arası

5-7 yıl arası

7 yıldan fazla

8- Düzenli olarak izlediğiniz oyunları lütfen seçiniz.

CS:GO

PUBG

LoL

Other:

9- CS:GO oyununu hangi sıklıkla izliyorsunuz?

Her gün

Haftada birden çok

Haftada bir

Ayda bir

Sadece büyük etkinlik veya turnuvalar

10- PUBG oyununu hangi sıklıkla izliyorsunuz?

Her gün

Haftada birden çok

Haftada bir

Ayda bir

Sadece büyük etkinlik veya turnuvalar

11- LoL oyununu hangi sıklıkla izliyorsunuz?

Her gün

Haftada birden çok

Haftada bir

Ayda bir

Sadece büyük etkinlik veya turnuvalar

12- E-sporu hangi yol ile izliyorsunuz?

Canlı

Kayıt

Özet

13- Neden bu yol ya da yollar ile izlemeyi tercih ediyorsunuz?

14- E-sporu nasıl izliyorsunuz?

Yalnız

Grup halinde

15- Neden bu durum ya da durumlarla izliyorsunuz?

16- Oyun izleme nedeniniz nedir?

Oyun öğrenmek

Oyunla ilgili spesifik oynama şekillerini öğrenmek

Eğlence amaçlı

Favori takım veya oyuncuyu desteklemek

Boş zaman aktivitesi

Diğer:

17- E-spor etkinliklerini takip etmek için kullandığınız platformları lütfen seçiniz.

Twitch

Youtube

Facebook

Steam TV

Diğer:

18- Bu platform ya da platformları neden tercih ediyorsunuz?

19- Bu platform ya da platformlar oynanan oyunla ilgili bilgileri iletmek için yeterli mi? Neden?

20- LoL izleyici arayüzünde bulunan aşağıdaki bilgi araçlarını 1'den 5'e kadar derecelendirebilir misiniz? (1 daha az önemli 5 çok önemli)



Ekranın üstündeki toplam altın, skor ve kule sayısı.

Yanlarda bulunan karakter avatarları, büyüler ve rune seçimleri.

Üst köşelerde ejderhalara veya baronlara geri sayım

Orta altta bulunan oyuncuların eşya seçimi ve K/D/A





Üstteki toplam puanlar

Harita

Seçili oyuncuların alt köşelerde silah seçimleri ve sağlık oranları.

K/D/A ve orta altta bir oynatıcının web kamerası görünümü.

23- Arayüzün kontrolü sizde olsaydı, nasıl değişiklikler yapardınız?  
(Beklentilerinizi,

arzularınızı veya hayallerinizi yazabilirsiniz)

## APPENDIX F

### EXAMPLE OF TRANSCRIBED INTERVIEW (PARTICIPANT 1 – LEAGUE OF LEGENDS)

**Facilitator:** OK, let me start with the first question. So, you have you play the game League of Legends. How long have you played the game?

**Participant 1:** I play since two thousand ten, I guess, since the beginning of the game. OK, basically,

**Facilitator:** OK, this is a good 10 years. What is the frequency of your spectatorship? Like, how often do you watch it?

**Participant 1:** I mostly watch it when there is a championship, it can be any championship like a Turkey championship world championship. I mean, it depends on how big the tournament is, but I mostly watch the good ones. The Chinese one the American finals, etc. So there's I can't say some exact frequency, but mostly depends on the championships and tournaments.

**Facilitator:** OK, you nearly answered it. But why do you think it is like why do you think it's the only big championships, not the everyday or every game?

**Participant 1:** Because I believe the smaller tournaments are kind of boring because they're mostly like, I don't want to say bad things, but kind of like when the bad teams are playing the championship doesn't feel like enjoyable to me. Yeah, it's a great like teams they're doing some stuff that none can do the same. I can give the example of like if Betty or something when it was like ten years ago, a lot of years ago. They do stuff that I can do and it gives you the I don't know if it's a pleasure seeing a great plays. And that's why I watch the bigger games. So the bigger tournaments.

**Facilitator:** OK, how the spectators in terms of environment or platform.

**Participant 1:** If it's kind of like a small tournament, I just watch it from Twitch, I don't really mind, but when it was like a couple of months ago, I was actually watching with my friends, like we were trying to make it at the same time and watch it at the same time over Discord channel. So we were watching like two or three people together and you comments at the same time. And so it was a lot more enjoyable experience.

**Facilitator:** OK, if that if you want to explain, why do you prefer, like watching with the friends in Discord for just entertainment and making comments, or is there another reason?

**Participant 1:** Well, I mostly enjoy playing with those friends, so they're all the experience of legends as much as me. So it's more fun and also like there are commentators of these big games. But coming together, like you do for opinions about the game is a lot more enjoyable, like when a group of like a better team makes a choice of a champion, for example, and the commentator sometimes says, yeah, it's a great champion, but not always in exactly the same opinion like discussing it is I believe makes the makes it more enjoyable.

**Facilitator:** OK, what motivates you to watch esports? Like, for example, a leisure time activity could be a reason.

**Participant 1:** Well, for LoL there are some gifts if you watch them, this is

Facilitator: the main incentive. Yeah, for the incentives.

**Participant 1:** Yeah, yeah. I guess that's one of the reasons. Other than that, I'm not really sure, like seeing people do something that I can't do like or do better than me makes me enjoy it. It's the same as like I used to play basketball to compare it with. So seeing like LeBron James doing something great makes me enjoy watching his game. So it's kind of similar with the online tournaments or like tournaments. So seeing these people doing good stuff, I think that what motivates me, if that answers your question.



Facilitator: Yeah. Yeah, sure. What do you think about it? You mentioned about it. What do you think about the commentators contribution to the watching experience?

**Participant 1:** I think it's really, really important because I can give a Turkish commentator the examples. It's not only my opinion, but it's the opinion of the three people that I'm watching it with. So there is as an example, there's a guy that we all hate because he's talking really I don't know how to explain a little bit arrogant like it. I don't know. He's like, I know everything. They shouldn't be picking Champion, etc..

**Facilitator:** So I guess I know what you're talking about. Yeah, yeah, yeah, yeah.

Participant 1: That guy really, if that guy is commenting, I don't really want to watch that game because everything he comments like it doesn't make me it doesn't help me into the game. But there are a couple of people I can give the example Kaan Kural. Yeah. I like him very much from basketball games and also from the games. And he's making comments and he's he's enjoying it and really enjoying it. And he makes me enjoy the game. He's doing jokes and he's talking really fun. I think it's because he's really experienced from basketball. So I think it really makes a great difference. Like if there's if if he is in control, is commenting a league of legends, then I will probably watch it, even though it's not a really good game, OK?

Facilitator: What do you think about the existing interface of spectating, the colours, icons, everything, anything?

**Participant 1:** Whole League of Legends. I think, like I used to be a better one, especially for the last world championship. They were really lacking some of the information, like a couple of champions have things that it's an example of something. It gives you a bonus every time you feel something is a bonus. As someone who is watching the game, I like to see how that specific champion is going, these stats. So for the last championship, they actually didn't show. I don't know why, but it really annoyed me and everybody wanted to see it. But it was like so I think that was kind of like a bad experience for players to watch the game. Other than that,

I'm not really sure about the colours. But if nothing was wrong, I was fine for the League of Legends, but I think they were like a couple of more options, maybe more open to show the I don't know how much gold they earn, for example, etc. But there was something like a during team fights, quite a bit like important seconds of the game. They were just shutting down all the interfaces to allow people to see all things happening. And they were just doing out, which was great. I think that's what I can say.

**Facilitator:** Yeah, the other question is kind of connected that is it satisfying to only watch or they prefer to have control of what you're watching?

**Participant 1:** I think it could be better if I can give the example for Counterstrike. I used to watch those games, too, like a couple of years ago. So they have options to watch it over Twitch. Or you could just watch it from the game itself. I think it's the same. I don't watch any more, so I don't know. I was actually so it was looking like you could switch between players that I was using that option because like sometimes something happens, but maybe I just I really don't want to see that. Instead, I just want to watch a specific player because maybe I like that player. Or maybe I was just sensing something is going to happen that the people who is making you want to watch, which is not something it is possible. So I would like to have a control over what I want to see

**Facilitator:** Instead of the observer's view. You want to control what players to watch? Yes, OK. And OK, I'm going to show you the screenshot now. The question is, what are the features that you find beneficial for your spectating experience in the current interface? I want to show you a screenshot of. A final game of the worlds. So can you point out can you make changes on the screen? I think so,

**Participant 1:** yeah, I can, yeah. Yes. Can you repeat the question?

Facilitator: Let me see. OK, what are the features that you find beneficial for your spectating experience? You don't have to circulate around, but while you're talking, you can point it out.

**Participant 1:** I think it's really good for, like, drake timing and the baron timing because mostly like burdens of playing the game around these two objectives. So if I don't see those, I will be thinking like, hey, what's going on? Why is everybody going to the bottom side of the map? But I think it's really important and it could even be bigger for us to see what and five players are doing this action. And so, yes, I think it's also really important. I mean, all of these things, but those gold differences, I think are really important because like players doesn't see those gold differences. But making us makes us feel like how can I say the difference between the teams? I mean, who's leaving so that we as spectators can make better comments? Also, what kinda annoys me here and what I was saying here, it wasn't something here, thing I was pointing out was here. So I know this is just the commercial part or something, but this is kind of annoying.

**Facilitator:** Yeah. Yeah. To to be able to see the skill set of the selected player.

**Participant 1:** Even sometimes there's little things that some specific champion can upgrade their like abilities, like they make up with the q ability, w ability. And I would like to see that which ability they are upgrading, but you can see more of them. I'm sorry, I'm back to the problem. But yes, um, other than that, what is really beneficial? I don't know, I think it's really simplistic and for someone who playing for a really, really long time, I think it's fine. It's very simple, especially the these items and like parts about level. But I think it might be hard for a new player to understand these items and everything. This part may be more like explanatory. Yeah, I think that's it. And also the map who I think could be a little bit bigger because sometimes I'm having trouble seeing what's happening here because these are too big to see what exactly is going on.

**Facilitator:** Yeah. Also, they overlap each other.

**Participant 1:** Yeah. Yes, exactly. Sometimes you can see like behind Leona who is that, I mean, I know when you're watching the game, it's not a big problem, but sometimes two separate things happen at the same time. So at that point, I would like

to see it a little bit better, a little bit clearer to see what's going on at this. Who's going there. So, yeah.

**Facilitator:** OK, the other question is also a screensharing question, what are the features that you find not that important for the spectating experience?

**Participant 1:** The same screenshot

**Facilitator:** you can use the red colour for the

**Participant 1:** yeah, I was that's what I will be, OK, OK, what is not that important. The. I guess these runes, this is not really important, and mostly because. And at the beginning of the game, they mostly show which player is playing with which rune. So I think it's not that important we saw them right here. It's the same size with summoner spell. I mean, instead, they could have made summoner spell a little bit bigger so that we can see sometimes it's kind of troubling to see those like this to see like how much time left, like how many seconds especially. It's like when it's like a 10 seconds or three seconds because it makes a difference. You can say that, yeah, he's going in because he's important. Spell is almost done is almost three seconds. But if it's ten seconds, it can be confusing for your understanding of the game. So that's it. I think as I said this, because it's

**Facilitator:** Yeah, I mean, you know what you're watching and we're watching it, right?

**Participant 1:** I mean, I want details in more detail because I know this game. So maybe wards these things, all this stuff, because in the game, like, people are more like, I don't know, hundreds to hundreds of wards out of the game. So I don't really mind if someone has one or two more wards. So instead they could made more space for maybe both things here that they couldn't show because of the commercials. And not every champion has this ability. But I don't know, like in a better life, maybe this could have happened because I don't think this is really necessary because, like. A little more getting the time. OK, so, yeah. Anything else? I don't really think so.

**Facilitator:** Let me take a screenshot of that. OK. So, um, I. Other question is last two questions for the interview. What would you do as a spectator if you had the control of the current interface? What would you change about the current interface?

**Participant 1:** I will probably do that thing I said, I really upset, obsessed about it, but that was the point that I will almost be annoyed. So maybe that could be things that, um, that will serve both the players that want to see details and doesn't want to see. I think they're doing a good job of bringing in fights like raising the bar. And so it can be something close to what I've been thinking is. Like, you can show the items and like when there's not something really important, maybe something small, we could show the items like for beginners, like, at the bottom of the screen, there are like items. Yes, experienced players. You can show them like a small detail for everyone can see items, but maybe like maybe every five minutes in times you can show the details or maybe you can show like the ones I mentioned. And other than that, maybe even one of these items, because you don't have to show them every second because you're getting you don't need them. But also at the beginning, like in five first five minutes, you also don't because nobody almost using that stuff . So that part can be like a changing parts, doing time controlled by someone. They can show some stuff and they can change it all the time instead of something clicks. I think that that's the most important part.

**Facilitator:** Yeah. You said by someone, do you prefer by you or by someone else?

**Participant 1:** If I could, I would like to see those above the platform like a twitch or somebody has to do it now it twitch brings up a new opportunity for us to change the part or something like more like a if that that's the case, I would be happy to do it by myself, for myself. But for now it could be to people controlling that stream.

**Facilitator:** OK, and the last question is like the every into last question, what are your dreams and expectations in this topic? What, like the wildest dream on the topic? What could have done for the best experience?

**Participant 1:** What could have done. I always find this is a hard question because due to impossible for now, let me think about it for a second. I think I don't know how. I don't really know how but seeing different things at the same time could be a great opportunity sometimes. like the bigger part happens in the bigger screen, but in a small screen to show you something different.

**Facilitator:** Picture in picture view.

**Participant 1:** Yeah, yeah. That kind of thing. But I think it's kind of not that great. Like, for example, I've been thinking mostly, especially at the beginning part of the game, the game is split into three and even four. So instead of showing one screen, take it from right in the middle and show one lane here. And if, for example, top line and bottom line here, so we can see what they're doing. And I don't think it will be splitting too much. Sometimes I feel like I see bottom line what's going on right now here. So that could be a better one because not really good. I used to watch a lot of Overwatch games as an example. Every team had six players, so they are all doing very different things and they were all really happy for us. So it was really a lot more harder than LoL to watch because almost every two seconds the camera was changing for two seconds splitting the camera and making it like four seconds could be better. I think it's really hard because, like, small screen, like, reduces your vision. I mean, that's my dream. I see a lot more happening at the same time. OK, that would be.