

# **Literature Review: Impact of Patterns and Design Styles in eSports**

**Anand**

**101271239**

**Carleton Univeristy**

**anandsuraj@cmail.carleton.ca**

## **1. Abstract**

ESports, also known as electronic sports, refers to organized video game competitions that are played professionally or at a high level. These competitions can be held in person or online, and often involve players or teams competing against each other in popular video games such as Counter-Strike: Global Offensive, Overwatch and Valorant.

With eSports's recent popularity explosion, there are some noticeable trends amongst them that make them distinct: One trend is the increasing professionalization of eSports, with the creation of leagues and organizations that oversee competition. Another trend is the growing mainstream acceptance of eSports, with major broadcasters now showing eSports tournaments and sponsorships from major brands becoming more common. There is also a trend towards the inclusion of eSports in mainstream sporting events, such as the inclusion of eSports tournaments at the Asian Games. (Guo Freeman, 2017)

First-person shooter eSports ranks highest amongst the most popular eSports. In first-person shooter (FPS) eSports, the user interface (UI) refers to the visual elements that allow players to interact with the game. These elements include the in-game heads-up display (HUD), menus, and other on-screen elements that provide information and allow players to perform actions. This review takes a look at the various design patterns implemented in eSports first-person shooter games, to identify the distinction between an eSports and competitive shooter games.

Additionally, this review compares the differences between The Cathedral and The Bazaar style of development through two first-person shooter eSports games; Valorant and Counter-Strike.

The cathedral style of software development refers to a top-down, centralized approach to development in which a single group or individual is responsible for designing and implementing a software system. This style is typically characterized by a high level of control and planning, and a focus on creating a finished product that is polished and complete. The bazaar style of software development, on the other hand, refers to a more decentralized and open approach to development. This style is typically characterized by a high level of collaboration and participation from a wide range of individuals, as well as a focus on rapid prototyping and iteration. (Counter-Strike)

The bazaar style of software development, on the other hand, refers to a more decentralized and open approach to development. This style is typically characterized by a high level of collaboration and participation from a wide range of individuals, as well as a focus on rapid prototyping and iteration. (Valorant)

While these games are near exact copies in terms of objective and skill-set, they have their own distinct features and design patterns that give them each their own unique identity. This review compares projection of the two design styles, The Cathedral vs The Bazaar, through these two first-person shooter games to determine the implications and manifestations of the design styles. (Bezroukov, 1999)

## **2. CCS Concepts**

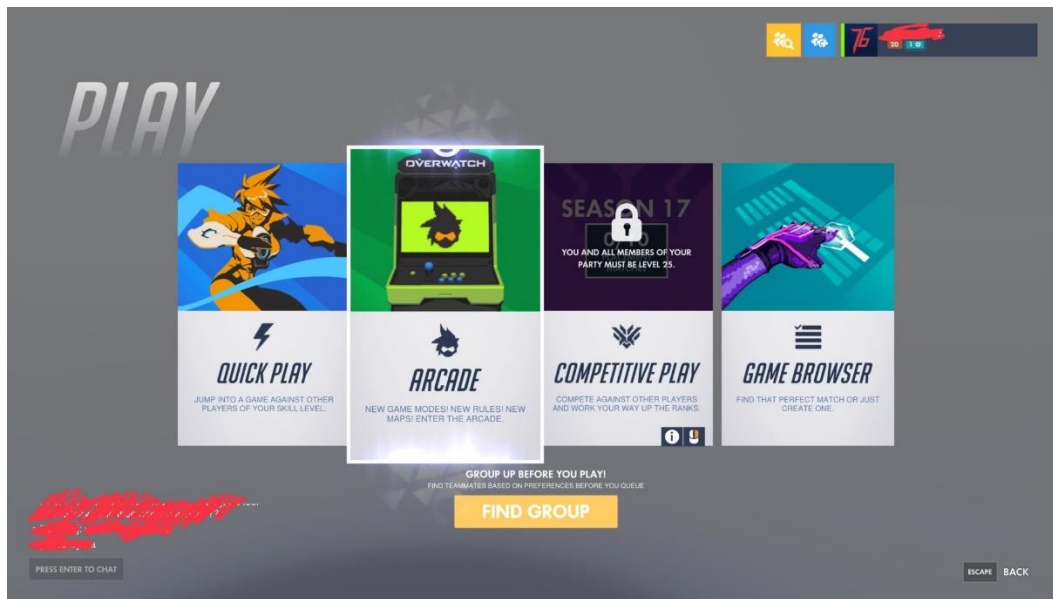
- **Human-Computer Interaction -> User Interface Design;** FPS games
- **Human-Computer Interactions-> Styles of Development;** Cathedral vs Bazaar

### **3. Keywords**

- UI: User Interface
- UX: User Experience
- eSports: Electronic sports; organised video game competitions
- LAN: Local Area Network
- FPS: First-Person Shooter
- HUD: Heads-up Display
- Mini-Map: UI element; A Map of the location the players play on.
- LOS: Line of Sight.
- CSGO: Counter-Strike: Global Offensive
- OWL: Overwatch League

### **4. Introduction**

A good user interface (Figure 1) for a game should be easy to use and navigate, and it should provide clear and concise information to the player. The interface should be visually appealing and should enhance the gameplay experience without being intrusive. It should also be intuitive and responsive, allowing the player to easily interact with the game and access important information or features. Additionally, a good game interface should be designed with the specific game and its mechanics in mind, and should be tailored to the needs of the player and the goals of the game. (John Doran, 2017)



*Figure 1 Good User Interface*

First-person shooter (FPS) games are a type of video game that typically involve fast-paced gameplay and a focus on gun combat. Some common design patterns that are often used in FPS games include:

1. Cover system: This refers to a gameplay mechanic that allows players to take cover behind objects in order to avoid enemy fire.
2. Health system: Many FPS games feature a health system, where players have a set amount of health that decreases when they are hit by enemy fire
3. Weapon customization
4. Objective indicator: This is a feature that helps the player locate and complete objectives in the game.

ESports, or electronic sports, refer to organized, competitive video gaming that is often played professionally or at a high level of skill. ESports often involve organized tournaments and leagues, and they may be played online or in person. ESports may also involve sponsorship and prize money. Competitive games, on the other hand, refer to any games that are played at a high level of skill or with the intention of winning. The main difference between eSports and competitive games is that eSports are typically organized and professional, while competitive games can be more casual and informal. ESports often have a higher level of

organization and structure, and they may also have a larger audience and more at stake, such as sponsorship and prize money

There are several common design patterns that are often used in the development of eSports games. These patterns can help to ensure that the game is fair, balanced, and enjoyable for players.

Some common design patterns used in eSports games include:

1. Map design
2. Spawn points: These are the locations where players respawn when they are eliminated from the game.
3. Mini-map: This is a small map of the game environment that is displayed in a corner of the screen.
4. Weapon/ammo counter: This displays the player's current weapon and the amount of ammo remaining for that weapon. It is usually located at the bottom or top of the screen.
5. Crosshair: This is a small cross or dot that is displayed in the centre of the screen and is used to aim at enemies or objects in the game.
6. Inventory: This is a feature that allows the player to access and manage items that they have collected in the game. It is usually displayed as a menu or panel on the screen.
7. Scoreboard: This is a feature that displays the scores of the players in a multiplayer game. It is usually located at the top of the screen and can show the scores of individual players or teams

Some other miscellaneous patterns implemented in E-sport versions of first-person shooters are:

- Matchmaking: This refers to the process of matching players of similar skill levels together in order to create balanced and fair matches.
- Metagaming: This refers to strategies and tactics that players use outside of the game itself, such as studying opponents or analyzing game data, in order to gain an advantage in gameplay.

- Balance: ESports games often strive for balance, meaning that no one character, strategy, or tactic is overwhelmingly powerful. This helps to ensure that matches are fair and that players have a variety of options available to them. (Samer, 2016) (Hullet, 2012)

*The first objective of this review is to Compare the two design styles by taking two first-person shooter eSports {Valorant (Bazaar Style) and Counter-Strike (Cathedral style)} to determine the implications and manifestations of the two design styles*

The "bazaar" and "cathedral" styles of design refer to two different approaches to the design and development of a product or service. The bazaar style is characterized by a decentralized, open, and collaborative approach, in which a large number of individuals or teams contribute to the design and development process. This approach can lead to a wide range of ideas and perspectives, and can result in a highly innovative and dynamic product or service. However, the bazaar style can also be chaotic and disorganized, and it may be difficult to maintain a cohesive vision or direction.

The cathedral style, on the other hand, is characterized by a centralized, hierarchical, and structured approach, in which a small team of experts or authorities oversee the design and development process. This approach can lead to a more focused and disciplined design process, and can result in a high-quality and polished product or service. However, the cathedral style can also be inflexible and resistant to change, and it may stifle creativity and innovation.

While the cathedral style looks to be rigid, inflexible and at times out of touch with the reality there are instances where it is preferred over the Bazaar style. The cathedral style of design can be better when a high level of focus and discipline is required in the design process. This approach is characterized by a centralized, hierarchical, and structured approach, in which a small team of experts or authorities oversee the design and development process. This approach can be beneficial in situations where there is a need for a clear and coherent vision, and where a high degree of precision and attention to detail is necessary. For example, the cathedral

style may be well-suited to the design of a complex technical product or a high-stakes project with tight deadlines. Additionally, the cathedral style can be effective in situations where there is a need for strict control over the design process, such as in situations where intellectual property or proprietary information is involved. Overall, the cathedral style of design can be beneficial in situations where a high level of focus, discipline, and control is required. (Bezroukov, 1999)

*The second objective of this review is to compare the two design styles by taking two first-person shooter ESports {Valorant (Bazaar Style) and Counter-Strike (Cathedral style)} to determine the implications and manifestations of the two design styles*

## **5. Summary**

### **Paper:**

**eSports as An Emerging Research Context at CHI: Diverse Perspectives on Definitions** (Guo Freeman, 2017)

### **Author:**

**Guo Freeman & Donghee Yvette Wohn**

*Summary and key take-aways:*

"eSports as An Emerging Research Context at CHI: Diverse Perspectives on Definitions" is a paper that explores the concept of eSports, which refers to competitive video gaming at a professional level. The paper discusses

the diversity of perspectives on the definition of eSports and how it has evolved over time.

The authors of the paper argue that eSports has emerged as a significant research context at the CHI conference (an annual conference on human-computer interaction) due to its increasing popularity and impact on society. They also discuss the various factors that contribute to the definition of eSports, such as the type of games played, the level of competition, the involvement of professional organizations, and the presence of sponsors and spectators.

The paper presents a number of different definitions of eSports, including definitions that focus on the competitive nature of eSports, definitions that emphasize the role of technology in eSports, and definitions that view eSports as a form of social interaction. The authors also discuss the challenges of defining eSports, including the fact that eSports encompasses a wide range of games and activities, and that it is a rapidly evolving field.

They note that there is no consensus on the definition of eSports, with some people viewing it as a form of sport, while others see it as a form of entertainment or leisure activity.

Overall, the paper highlights the need for more research on eSports within the context of HCI, and argues that the diverse perspectives on the definition of eSports can provide valuable insights for future research.

## **Book:**

**Game development patterns and best practises** (John Doran, 2017)

## **Author:**

**John Doran & Matt Casanova**

### *Summary and key take-aways:*

The book addressed the patterns and practises that good developers should follow. These patterns and practises can be treated merely as guidelines for the individual developers as there is no law or standard that



mandates these principles. However, in the case of an eSports, the design is more constrained in terms of creative freedom of the developers as they strive to standardise (Figure 2) the sport.

There are many patterns and best practices that can be followed in game development to help ensure the success of a game project. Some of these include:

- **Iterative development:** Iterative development involves continuously refining and improving the game through a series of cycles. This can help to ensure that the game meets the needs of the players and that any issues are identified and addressed early on in the development process.
- **Prototyping:** Prototyping involves creating a rough version of the game to test and refine ideas. Prototyping can help to identify and resolve issues early on, and can also be used to gather feedback from players.
- **Playtesting:** Playtesting involves having players play the game and providing feedback on their experience. Playtesting can help to identify problems with the game and can be used to gather insights on what works and what doesn't work in the game.
- **User-centered design:** User-centered design involves designing the game with the needs and preferences of the players in mind. This can help to ensure that the game is enjoyable and engaging for the players.
- **Agile development:** Agile development is a method of software development that involves frequent iteration and collaboration between the development team and stakeholders. It can help to ensure that the game is developed efficiently and meets the needs of the players.
- **Team communication:** Effective communication within the development team is crucial for the success of a game project. It is important to establish clear channels of communication and to encourage open and honest feedback to ensure that everyone is on the same page.



*Figure 2 Red highlights on common design practises*

## **Paper:**

**Second look at cathedral and Bazaar.** (Bezroukov, 1999)

## **Author:**

**Nikolai Bezroukov**

### *Summary and key take-aways:*

Nikolai Bezroukov has written a critical analysis of Eric S. Raymond's "The Cathedral and the Bazaar" paper, in which he argues that the paper oversimplifies the complex issues surrounding the development of software and the open-source development model.

Bezroukov argues that the Cathedral and Bazaar model presented by Raymond is overly simplistic and does not accurately reflect the realities of software development. He suggests that the Bazaar model is not always the most efficient or effective way to develop software, and that the Cathedral model can be successful in certain circumstances. Bezroukov also critiques the idea that the Bazaar model is uniquely suited to the open-source development model, arguing that open-source projects can also be successful using a more centralized, Cathedral-like approach. He suggests that the success of a project depends on a number of factors,

including the size and complexity of the project, the level of collaboration among developers, and the level of resources available to the project. Overall, Bezroukov's critique suggests that the Cathedral and Bazaar model is a useful framework for understanding the different approaches to software development, but that it should not be seen as a definitive guide to the most effective way to develop software.

Some specific advantages of the Bazaar model that Raymond cites in his paper include:

- Greater collaboration: The Bazaar model allows for greater collaboration and communication among developers, which can lead to faster development and more effective problem-solving.
- More diverse perspectives: The Bazaar model allows for a wider range of perspectives and expertise to be brought to bear on a project, which can lead to better solutions.
- Faster development: The Bazaar model allows for rapid development and release cycles, which can allow for faster progress and more rapid iteration.
- Greater transparency: The Bazaar model promotes transparency and openness, which can lead to greater trust and confidence among users and developers.
- Better testing: The Bazaar model allows for more extensive testing and debugging, as it allows for a larger number of users and developers to test and report on issues.

While the Bazaar model has many advantages, it can also be more chaotic and less predictable than the Cathedral model, which can make it more difficult for businesses to plan and budget for software development. Additionally, the Bazaar model relies on a large number of volunteers and unpaid contributors, which can lead to issues of sustainability and equity.

"Cathedral and the Bazaar" paper, are not mutually exclusive and do not necessarily represent a choice between one or the other. Many software projects use a combination of both models, depending on the needs and goals of the project.

That being said, there are certain situations in which the Cathedral model may be more suitable than the Bazaar model, or vice versa. Some factors that might influence the choice between the two models include:

- The size and complexity of the project: The Cathedral model may be more suitable for larger, more complex projects that require a high level of coordination and planning. The Bazaar model, on the other hand, may be more suited to smaller, more flexible projects that can be developed and released iteratively.
- The availability of resources: The Cathedral model may be more suitable for projects that have a dedicated team of developers and resources available to work on the project full-time. The Bazaar model may be more suitable for projects that rely on a large number of volunteers and unpaid contributors.
- The intended audience: The Cathedral model may be more suitable for projects that are intended for a specific, targeted audience, while the Bazaar model may be more suitable for projects that are intended for a broad, diverse audience.
- The goals of the project: The Cathedral model may be more suitable for projects that have a specific set of goals or deliverables that must be completed, while the Bazaar model may be more suitable for projects that are more open-ended and flexible.

The Bazaar model is more efficient and effective because it allows for more rapid development and testing of software. He also suggests that the Bazaar model is more suited to the open-source development model, where the source code is freely available and anyone can contribute to the project.

## **Papers:**

**Design Patterns in FPS Levels & The Science of Level Design: Design Pattern and Analysis of Player Behaviour in First-Person Shooter Levels (Kenneth Hullet, 2010) (Hullet, 2012)**

## **Authors:**

**Kenneth Hullett and Jim Whitehead**

*Summary and key take-aways:*

In a first-person shooter (FPS) video game, a level is a self-contained section of the game in which the player progresses through a series of challenges, enemies, and objectives. Levels are typically designed to provide a specific gameplay experience and may vary in terms of their setting, theme, and difficulty.

In most FPS games, the player progresses through a series of levels in a linear fashion, moving from one level to the next as they complete the objectives and defeat enemies. Some FPS games may also include non-linear level design, where the player has the option to choose the order in which they complete levels or to revisit levels that they have already completed.

Level design in FPS games involves creating the environments, enemies, objectives, and gameplay mechanics for each level. This can include designing the layout of the level, placing enemies and other objects in the level, and scripting the behaviour of objects and enemies. Level design is an important aspect of FPS game development as it determines the gameplay experience and challenge of the game for the player. The paper presents an analysis of the use of design patterns in the level design of first-person shooter (FPS) video games. The authors describe the challenges and opportunities of designing levels for FPS games, and how design patterns can be used to address these challenges and take advantage of these opportunities.

The authors identify a set of design patterns that are commonly used in FPS level design and provide examples of how these patterns can be applied in practice. The authors also discuss the benefits and limitations of using design patterns in FPS level design, and suggest areas for future research.

Some of the environmental design patterns identified in the paper include:

- Environmental puzzle pattern: A pattern in which the player must solve puzzles or manipulate objects in the environment to progress through the level.
- Verticality pattern: A pattern in which the level design includes vertical elements, such as ledges and platforms, that the player must navigate.

- Procedural generation pattern: A pattern in which the level is generated algorithmically, resulting in a unique layout for each play through.

Some of the gameplay mechanics patterns identified in the paper include:

- Linear progression pattern: A pattern in which the player progresses through the level in a linear fashion, following a predetermined path.
- Open-world pattern: A pattern in which the player can explore the level freely and choose their own path through the level.
- Branching path pattern: A pattern in which the player can choose between different paths through the level, resulting in different gameplay experiences.

Some of the enemy placement patterns identified in the paper include:

- Spawn point pattern: A pattern in which enemies are placed at predetermined locations and "spawn" into the level when the player approaches.
- Patrol pattern: A pattern in which enemies move along predetermined paths within the level and attack the player when they are within range.
- Ambush pattern: A pattern in which enemies are hidden and attack the player unexpectedly when they are detected.

Some of the environmental design patterns identified in the paper include:

- Cover: This refers to objects or structures that players can use to protect themselves from enemy attacks.
- Line of Sight: This refers to the visibility of players and enemies within the game environment.
- Flanking: This refers to the ability to attack enemies from the side or rear, where they may be less protected.
- Pathfinding: This refers to the ability of players to navigate through the game environment and find their way to their destination.
- Spawning: This refers to the creation of new enemies or objects within the game environment.

- Resource Management: This refers to the management of resources, such as ammunition or health, within the game environment.
- Progression: This refers to the advancement of players through the game environment and the challenges they face as they progress.
- Emergence: This refers to the unexpected or unplanned events or behaviours that can arise within the game environment as a result of player actions.
- Player Choice: This refers to the ability of players to make decisions and choices within the game environment that can affect the outcome of the game.
- Player Death: This refers to the consequences of player death within the game environment, such as respawning or game over

## **Paper:**

**Conventions within eSports: Exploring Similarities in Design** (Samer, 2016)

## **Author:**

**Samer Al Dafai**

## *Summary and key take-aways:*

"Conventions within eSports: Exploring Similarities in Design" is a paper that explores the conventions that are used in the design of eSports, which are competitive video game tournaments. The paper looks at the similarities and differences in the design of these conventions, and how they impact the experience of players and spectators. eSports refers to competitive video gaming, typically organized and played in a professional or semi-professional manner. The paper discusses conventions, or common practices and structures, within the design of eSports tournaments and competitions. The paper begins by discussing the growth and popularity of eSports, as well as the various types of tournaments and competitions that exist within the eSports industry. It

then examines the different conventions that are commonly found in the design of these tournaments, including the use of a bracket system to determine the progression of teams or players, the use of elimination rounds, and the use of playoffs to determine a winner. The paper also discusses the role of sponsors and sponsorships in eSports, as well as the use of prize pools to incentivize participation and competition.

The authors also examine the use of rules and regulations in eSports tournaments, including the role of rule-making bodies and the importance of maintaining fairness and balance in competition.

- **Bracket system:** Many eSports tournaments use a bracket system to determine the progression of teams or players through the competition. This typically involves grouping participants into a series of brackets, with each bracket containing a certain number of teams or players. The winners of each bracket then advance to the next round, with the ultimate goal being to reach the final bracket and be crowned the winner.
- **Elimination rounds:** Many eSports tournaments also include elimination rounds, in which participants are eliminated from the competition if they lose a certain number of matches or games. This is often used to narrow down the field of participants and create a more competitive environment.
- **Playoffs:** Many eSports tournaments also use playoffs to determine a winner. This typically involves a series of elimination rounds, culminating in a final match or series of matches between the top remaining teams or players.
- **Sponsors and sponsorships:** Sponsors and sponsorships are an important aspect of many eSports tournaments, as they provide funding and other resources that help to support the event. Sponsorship deals can range from simple logo placements to more comprehensive partnerships, and may include rights to use players or teams for promotional purposes.
- **Prize pools:** Prize pools are another common feature of eSports tournaments, and are used to incentivize participation and competition. These prize pools can be funded by sponsors, tournament organizers, or other sources, and are typically distributed to the top-performing teams or players.



- Rules and regulations: Many eSports tournaments also have detailed sets of rules and regulations that govern the conduct of participants and the overall competition. These rules may be established by rule-making bodies within the eSports industry, or by the organizers of specific tournaments. The goal of these rules is to ensure fairness and balance in competition.

Overall, the paper provides a detailed analysis of the conventions and common practices within the design of eSports tournaments and competitions, and highlights the importance of these conventions in shaping the competitive landscape of eSports.

## **6. Discussion and Conclusion**

*Comparing the patterns implemented in competitive first-person shooters and E-sport version of first-person shooters to determine where the distinction between these games occur.*

To produce a distinction between eSports and competitive shooters it is important to first summarise the two concepts individually:

ESports:

An eSports is a form of competition that is organized and facilitated by a professional organization or company, often featuring a prize pool for the top performers. ESports are typically played on a computer or video game console and often involve teams of players competing against each other in a virtual environment.

Competitive shooter:

A competitive FPS (first-person shooter) is a type of video game that is played in a competitive manner, typically involving teams of players competing against each other in a virtual environment. Competitive FPS games often involve a high level of skill and strategy, and may be played

in a variety of settings, including online tournaments and LAN events. (Guo Freeman, 2017) (Samer, 2016)

The main distinction between an eSports FPS and a competitive FPS is largely one of context. An eSports FPS is a type of competitive FPS that is played in the context of organized, professional competition, often featuring a prize pool and other incentives for top performers. A competitive FPS, on the other hand, can refer to any type of FPS game that is played in a competitive manner, regardless of whether it is organized and facilitated by a professional organization or company. Another difference between eSports FPS games and competitive FPS games is the level of professional organization and support. ESports FPS games are typically supported by professional organizations and have a larger, more established competitive scene, while competitive FPS games may have a more informal competitive scene. While by and large the difference lies in context there are certain UI patterns that are followed in the eSports scene that is not given that much relevance to in the first-person shooter game scene. (Samer, 2016)

## ESports:



Figure 3 eSports 1: Valorant



Figure 4 eSports 2: Counter-Strike



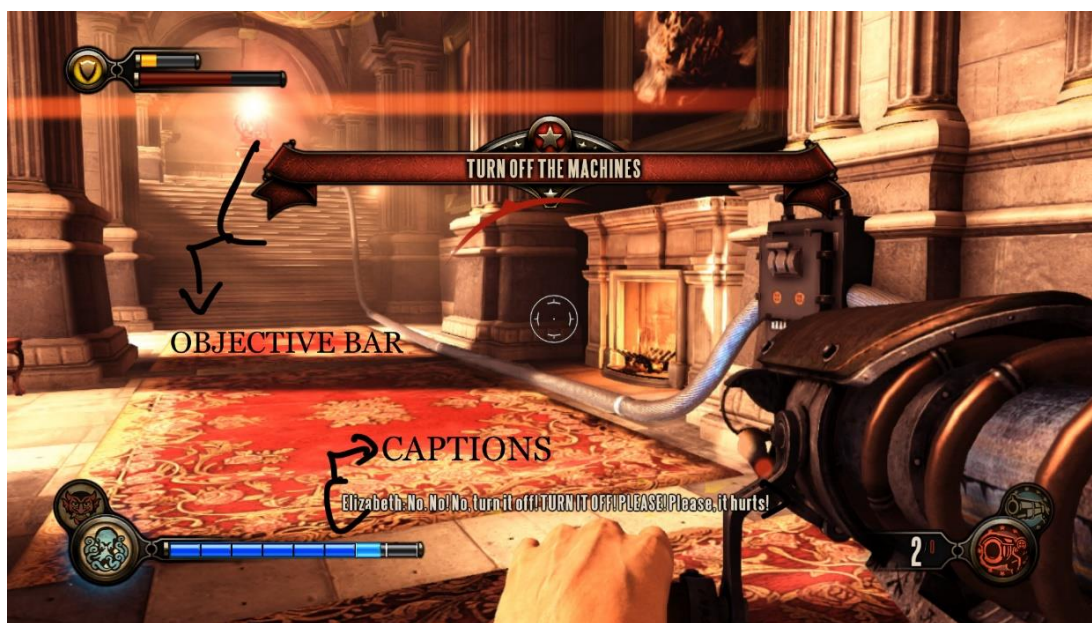
Figure 5 eSports 3: Overwatch



From the images (Figure 3, Figure 4, Figure 5) it can be seen that there are certain elements of design patterns consistent across the eSports games:

- Minimap
- Health
- Team information
- Visibility of the level

### **Competitive First-Person Shooters:**



*Figure 6 Competitive First-Person Shooter 1: Bioshock*

These elements (Figure 6) are not given the same priority in competitive shooters that are not an eSports. The competitive shooters generally feature large objective tabs and information boxes to the comparatively minimalist design featured in eSports games. Additionally, competitive shooters often feature a campaign game mode in addition to other modes that are not found generally in eSports games. (Hullet, 2012)

### *Personal Insight:*

There exists no standard of design that has to be achieved or particular subset of design patterns that has to be implemented in order for a competitive shooter to pass as an eSports. However, there are certain

design elements that are consistent across eSports first-person shooters. ESports games generally aim to keep their design elements readable and minimal (Figure 7, Figure 8, Figure 9) so as to not to distract the players, while providing the maximum possible information they can on the level. Common features like minimap, player health and team status are consistent across almost all eSports shooters (Figure 3, Figure 4, Figure 5). Furthermore, even in the design of the minimap there is consistency across different games; the minimaps are designed in such a way that enemy information isn't provided unless the enemy triggers a particular action or event. (Guo Freeman, 2017)

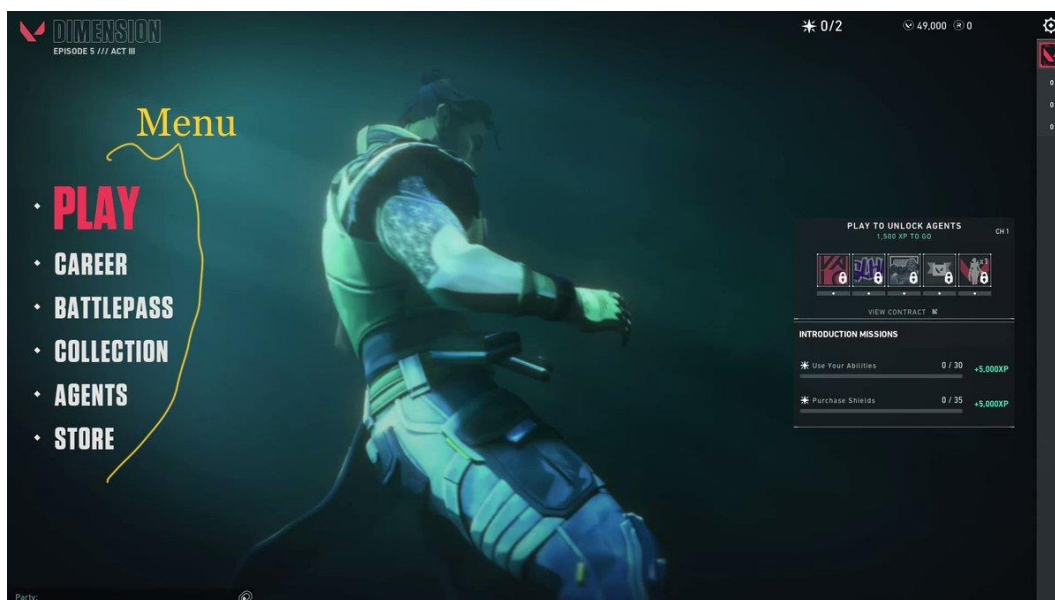


Figure 7 eSports: Minimal design Valorant

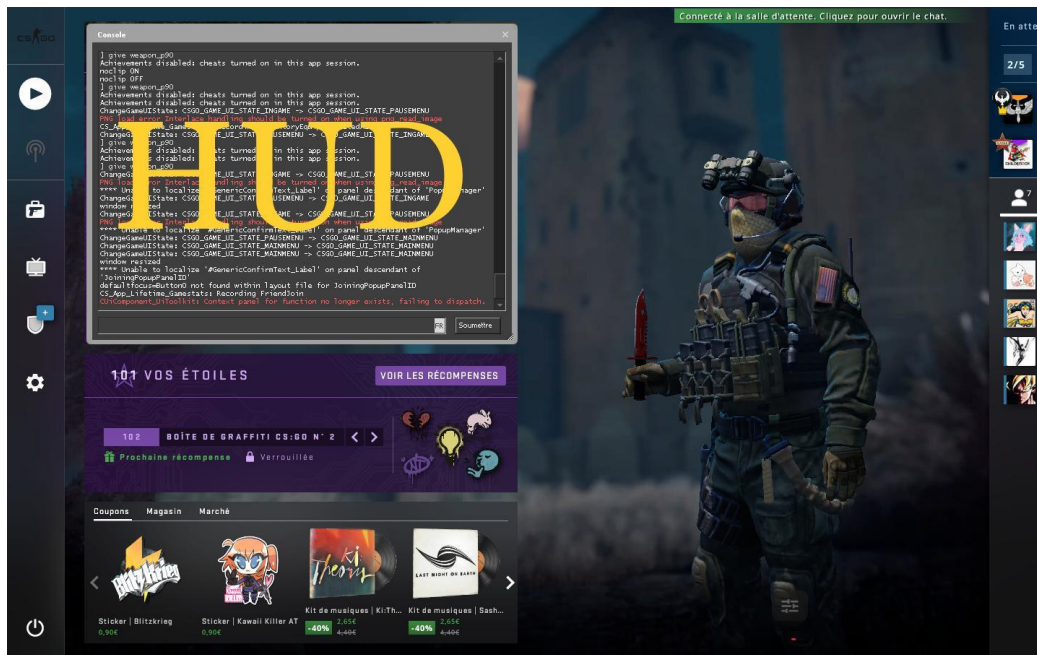


Figure 8 eSports: Minimal design Counter-Strike

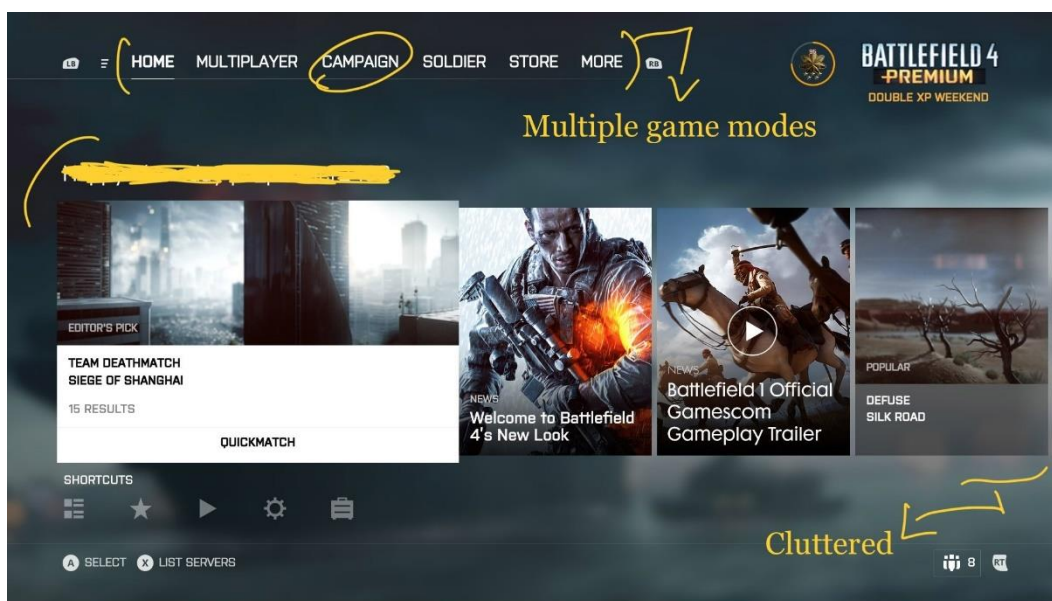


Figure 9 Competitive FPS: Battlefield

These designs however are not part of a standard or a particular subset of design patterns, they are simply a product of trial and error and in some cases copying, among the unique developers of each of these games. There is no formal or official standard that an eSports has to follow, but there are a lot of common patterns that are consistent around successful eSports first person shooters. (Kenneth Hullet, 2010) (Samer, 2016)

*Comparing the two design styles by taking two first-person shooter ESports {Valorant (Bazaar Style) and Counter-Strike (Cathedral style)} to determine the implications and manifestations of the two design styles*

To discuss the implications of the design styles and their consequences on the games, I'll start by differentiating both the styles. (Bezroukov, 1999)

The bazaar model, refers to an open, decentralized approach to software development, where a large number of developers contribute to a project in a more collaborative and open manner. This approach is characterized by a focus on rapid iteration and experimentation, with the goal of producing a functional product as quickly as possible.

Some specific advantages of the Bazaar model: (Figure 10) (Twitter, 2022)

- Greater collaboration
- More diverse perspectives
- Faster development.
- Greater transparency.
- Better testing.

While the Bazaar model has many advantages, it can also be more chaotic and less predictable than the Cathedral model, which can make it more difficult for businesses to plan and budget for software development. The Bazaar model also relies on a large number of volunteers and unpaid contributors.

The cathedral model refers to a traditional, centralized approach to software development, where a small group of developers work on a software project in a closed, hierarchical manner. This approach is characterized by top-down control and a focus on perfection, with the goal of producing a finished product that is as polished and bug-free as possible.

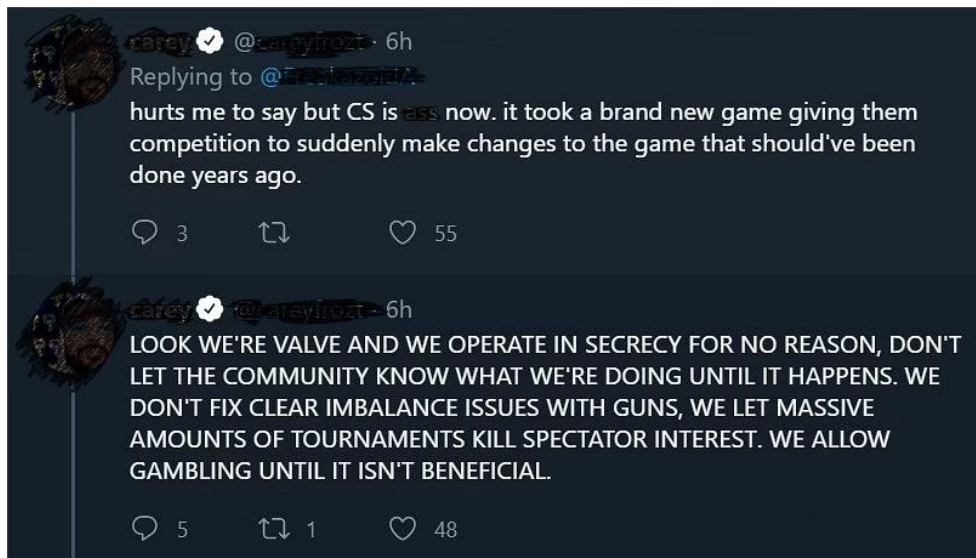
There are certain situations in which the Cathedral model may be more suitable than the Bazaar model, or vice versa. Some factors that might influence the choice between the two models include:

- The size and complexity of the project
- The availability of resources
- The intended audience
- The goals of the project.

Both Counter-Strike (CS) and Valorant are FPS games that have been developed using a combination of the cathedral and bazaar models. CS was developed using the cathedral model, with a small team of developers working on the game in a closed, hierarchical manner. Valorant, on the other hand, was developed using the bazaar model, with a large number of developers working on the game in a more open and collaborative manner.

There are aspects to both games where elements are taken from both the design styles. Valorant more than Counter-Strike. Bazaar style is usually associated with open-source source code. However, in the case of Valorant, the public really does not have the authority or access to change any of the design. The input of the public is considered by the developers before deploying it. Valorant adopts elements of cathedral style where a certain level of clearance is required before you have the authority to implement any change in the game, in order to maintain its integrity as an eSports and as a competitive first-person shooter.





*Figure 10 Professional Counter-Strike player on its developers: Valve*  
*Source: Twitter*

### *Personal Insight:*

Cathedral and bazaar style are not mutually exclusive. For instance, in the case of Valorant, the bazaar style of development played a role in the explosion of the game's popularity, however, that was not the only factor. The developers of the game produce a lot of cinematics around the playable characters which are loved by the community as it gives the characters depth. Additionally, the developers took care to ensure that the game's mechanics were forgiving to beginners. This meant that while the eSports had a lower skill-gap than and more inconsistencies than Counter-Strike, as a game it was more welcoming to newer players. These factors also played a significant role in the rise in popularity of Valorant in just 2 years since its launch. (Figure 12) (IGN, 2022)

Counter-Strike on the other hand is already a well-established eSports (Figure 11) (IGN, 2022). It had been dominating the eSports scene since before Valorant was even released. This is a significant contributor to the popularity of Counter-Strike and explains the viewership it receives. It is not possible to make accurate predictions on what the viewership of Valorant is going to look like in a decade simply due to the number of factors involved. This is a major factor that skews the comparison.



Figure 11 Counter-Strike viewer ship: Source IGN 2021



Figure 12 Valorant viewership: Source IGN 2022

The bazaar style of development and the cinematics offered by Valorant has helped the community feel close to the game which helps compensate for the lower skill-gap by giving depth and personality to their characters (John Doran, 2017). While Counter-Strike thrives due to its incredible skill-gap owing to the mechanics of the game, the standard set by the game as an eSports and by the respect it has earned from the gaming community. (Bezroukov, 1999) (Samer, 2016) (John Doran, 2017)

There are multiple factors owing to the success of these two games and while the contrasting design styles are prominent in these two games, they are actually a composite of both the design styles. The bazaar style enabled Valorant to create an interactive and active community which is compensated by the lower skill ceiling of the game when it comes to the eSports scene. Various implications of the design styles can be seen across these two games in different sections.

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