

# Multidisplay Gaming: Immersion, Interaction, and Player Experience

Zabta Khan Shinwari

Quaid-i-Azam University, Islamabad

## Abstract:

*This paper investigates the impact of multidisplay setups on gaming experiences, focusing on immersion, interaction, and overall player engagement. It explores how the use of multiple displays enhances the immersive qualities of gaming environments, facilitates novel forms of player interaction, and shapes the overall player experience. Through a comprehensive review of literature and analysis of case studies, the paper provides insights into the benefits, challenges, and future directions of multidisplay gaming.*

**Keywords:** *Multidisplay gaming, immersion, interaction, player experience, gameplay mechanics, gaming technology.*

## Introduction:

Introduction to the evolution of gaming technology and the emergence of multidisplay setups  
Overview of the importance of immersion and interaction in gaming experiences  
Introduction to multidisplay gaming and its potential to redefine player experiences  
Significance of understanding the impact of multidisplay setups on gaming immersion and interaction

## Immersion in Multidisplay Gaming:

In the realm of multidisplay gaming, immersion stands as a cornerstone of the player experience. Immersion encapsulates the player's sense of presence and engagement within the virtual environment, drawing them deeper into the game world. With multidisplay setups, immersion takes on a new dimension, quite literally. By expanding the field of view beyond a single screen, multidisplay configurations envelop the player in a more comprehensive visual experience. This increased visual fidelity enhances the player's ability to suspend disbelief, blurring the lines between reality and the virtual world, thus amplifying immersion.

Moreover, multidisplay setups offer heightened spatial awareness, a crucial element in many gaming scenarios. Whether navigating a sprawling open-world landscape or engaging in fast-paced action sequences, players benefit from a broader perspective afforded by multiple screens. This expanded field of view not only enhances immersion but also provides practical advantages, such as improved situational awareness and better strategic decision-making. Consequently, players feel more deeply connected to the game environment, fostering a more immersive and satisfying gaming experience.

Furthermore, multidisplay gaming often leverages immersive technologies and techniques to deepen the sense of presence. From panoramic displays to virtual reality (VR) headsets,

developers have a plethora of tools at their disposal to enhance immersion. These technologies can transport players into fantastical realms, allowing them to explore virtual worlds with an unprecedented level of realism and interactivity. By incorporating these immersive elements into multidisplay setups, developers can create truly captivating gaming experiences that resonate with players on a profound emotional level.

Additionally, the social aspect of gaming is significantly enriched in multidisplay environments. Immersion extends beyond individual experiences to include shared moments of excitement and camaraderie among players. Multiplayer games played on multidisplay setups foster a sense of community, as players collaborate or compete in richly detailed virtual worlds. The shared experience of immersion strengthens social bonds and creates lasting memories, enhancing the overall enjoyment of gaming for everyone involved.

Immersion in multidisplay gaming transcends mere visual fidelity, encompassing a holistic sense of presence and engagement within the virtual environment. Through expanded fields of view, immersive technologies, and social interaction, multidisplay setups elevate the player experience, transporting gamers to new realms of excitement and adventure. As technology continues to advance, the potential for multidisplay gaming to deliver unparalleled levels of immersion remains boundless, promising even more immersive and captivating gaming experiences in the future.

#### **Definition and significance of immersion in gaming:**

Immersion in gaming refers to the extent to which players feel deeply engaged and absorbed in the virtual world presented by the game. It is characterized by the player's sense of presence, where they feel like they are truly part of the game environment rather than merely observing it from the outside. This sense of immersion can be achieved through various means, including realistic graphics, compelling storytelling, immersive sound design, and interactive gameplay mechanics.

The significance of immersion in gaming cannot be overstated. It is often considered one of the key factors contributing to player enjoyment and satisfaction. When players feel fully immersed in a game, they are more likely to become emotionally invested in the experience, leading to heightened excitement, challenge, and fulfillment. Immersive games have the power to transport players to fantastical worlds, evoke strong emotions, and provide a temporary escape from reality.

Moreover, immersion has been linked to several positive outcomes for players. Research has shown that highly immersive gaming experiences can lead to increased motivation, improved learning outcomes, and enhanced cognitive skills such as problem-solving and spatial reasoning. Immersion can also foster a sense of presence and connectedness among players, especially in multiplayer or online gaming environments, where social interaction plays a significant role.

Furthermore, the concept of immersion extends beyond individual players to encompass entire gaming communities and cultures. Immersive games often inspire passionate fan bases, dedicated communities, and vibrant online forums where players discuss strategies, share

experiences, and forge friendships. In this way, immersion not only enhances the individual gaming experience but also contributes to the broader social and cultural significance of gaming as a form of entertainment and artistic expression.

Overall, immersion is a fundamental aspect of gaming that shapes how players perceive and engage with virtual worlds. By providing experiences that captivate the senses, challenge the mind, and foster social connections, immersive games have the potential to offer rich and meaningful experiences that resonate with players long after they have put down the controller.

### **How multidisplay setups enhance immersion through increased field of view and spatial awareness:**

Multidisplay setups have revolutionized the immersive potential of gaming experiences by offering users a substantially increased field of view and enhanced spatial awareness. Unlike traditional single-screen setups, which provide a limited perspective of the game world, multidisplay configurations extend the visual horizon, enveloping players in a more expansive virtual environment. By spanning across multiple screens, these setups mimic the natural human field of view, allowing players to perceive their surroundings in a more natural and immersive manner.

Furthermore, multidisplay setups enable a seamless transition between different aspects of the game world, eliminating the need for abrupt camera movements or disjointed viewpoints. This continuity enhances immersion by creating a more cohesive and immersive gaming environment. Players can seamlessly pan their view across multiple displays, experiencing a fluid and uninterrupted flow of visual information that closely mirrors real-life perception.

In addition to expanding the field of view, multidisplay setups also enhance spatial awareness, allowing players to better understand the layout of the game world and anticipate potential threats or opportunities. By presenting a wider perspective of the virtual environment, multidisplay configurations enable players to perceive depth, distance, and scale more accurately, resulting in a heightened sense of presence and immersion.

Moreover, the increased spatial awareness afforded by multidisplay setups enhances gameplay mechanics that rely on spatial orientation and navigation. Players can more effectively navigate complex environments, locate objectives, and strategize their movements by leveraging the enhanced spatial information provided by multiple displays. This heightened spatial awareness not only improves gameplay performance but also deepens the sense of immersion by fostering a stronger connection between the player and the virtual world.

Overall, multidisplay setups significantly enhance immersion in gaming experiences by providing users with an increased field of view and improved spatial awareness. By extending the visual horizon, creating a seamless transition between different aspects of the game world, and enhancing spatial perception, multidisplay configurations immerse players in a more expansive and cohesive virtual environment, enriching their gaming experiences and fostering a deeper sense of presence and engagement.

### **Immersive technologies and techniques utilized in multidisplay gaming:**

Immersive technologies and techniques are integral to the evolution of multidisplay gaming, enriching player experiences and creating more immersive virtual worlds. One key technology utilized in multidisplay gaming is virtual reality (VR). VR headsets transport players into fully immersive environments, allowing them to explore, interact, and experience games in a three-dimensional space. By combining VR with multiple displays, players can enjoy an expansive field of view, further enhancing the sense of immersion and presence within the game world.

In addition to VR, augmented reality (AR) technologies are also employed in multidisplay gaming setups. AR overlays virtual elements onto the real-world environment, blurring the line between the physical and digital worlds. By integrating AR elements with multiple displays, players can interact with virtual objects and characters within their real-world surroundings, creating immersive and interactive gaming experiences.

Dynamic lighting and environmental effects play a crucial role in enhancing immersion in multidisplay gaming. Realistic lighting, shadows, and environmental effects such as weather patterns and environmental physics contribute to creating a more believable and immersive virtual world. These visual enhancements help to evoke a sense of presence and realism, drawing players deeper into the gaming experience.

Furthermore, spatial audio technologies are utilized to enhance the auditory experience in multidisplay gaming. Spatial audio accurately simulates the direction and distance of in-game sounds, creating a more immersive and realistic audio environment. By complementing visual cues with immersive audio, multidisplay gaming setups provide players with a more sensory-rich experience, further enhancing immersion and engagement.

Lastly, haptic feedback devices are employed to provide tactile feedback and enhance player immersion in multidisplay gaming. Haptic feedback devices, such as rumble packs and force feedback controllers, simulate the sense of touch and physical interaction with virtual objects, adding an additional layer of immersion to gaming experiences. Overall, immersive technologies and techniques are essential components of multidisplay gaming, pushing the boundaries of immersion and transforming how players interact with virtual worlds.

### **Interaction and Gameplay Mechanics:**

Interaction and gameplay mechanics are fundamental aspects of multidisplay gaming, influencing how players engage with virtual worlds and interact with game elements. One key aspect of interaction in multidisplay gaming is the integration of intuitive control schemes and input devices. Players often utilize a combination of traditional controllers, motion sensors, touch screens, and gesture recognition technologies to interact with game environments and manipulate in-game objects. This diverse range of input methods allows for more natural and immersive interactions, enhancing player engagement and agency within the game world.

Moreover, multidisplay gaming often features innovative gameplay mechanics that leverage the unique capabilities of multiple displays. For example, games may utilize spatial mapping

techniques to dynamically adjust the layout and content of virtual environments based on the physical arrangement of displays. This allows for seamless transitions between different perspectives and viewpoints, creating a more fluid and immersive gameplay experience.

In addition to traditional single-player experiences, multidisplay gaming frequently incorporates multiplayer modes and collaborative gameplay mechanics. Players can join forces with friends or compete against one another in shared virtual spaces, fostering social interaction and teamwork. Cooperative gameplay mechanics, such as team-based objectives and synchronized actions, encourage players to work together towards common goals, while competitive modes introduce elements of strategy, skill, and rivalry.

Furthermore, interaction and gameplay mechanics in multidisplay gaming often emphasize emergent gameplay and player-driven experiences. Rather than relying solely on scripted events and predefined objectives, multidisplay games provide players with open-ended challenges and opportunities for creativity. This allows for a greater degree of player freedom and expression, as individuals can explore virtual worlds at their own pace, experiment with different strategies, and discover hidden secrets and surprises.

Overall, interaction and gameplay mechanics are integral components of multidisplay gaming, shaping how players engage with virtual environments and experience gameplay. By integrating intuitive control schemes, innovative mechanics, and social interaction features, multidisplay games offer immersive, dynamic, and memorable gaming experiences that captivate players and encourage continued exploration and discovery.

### **Role of multidisplay setups in enabling innovative gameplay mechanics and interactions:**

Multidisplay setups have revolutionized gameplay mechanics and interactions by offering developers and players new opportunities for creativity and immersion. One significant role of multidisplay setups is in expanding the field of view, allowing players to see more of the game world simultaneously. This expanded perspective enables developers to introduce innovative gameplay mechanics, such as panoramic views of expansive environments or strategic awareness of multiple objectives simultaneously. By leveraging multidisplay setups, developers can design games with more complex and dynamic gameplay mechanics that take advantage of the increased visual real estate.

Moreover, multidisplay setups enable developers to implement innovative control schemes and interaction methods that utilize multiple screens and input devices. For example, players may use one screen for navigation and exploration while using another screen for inventory management or tactical planning. This dual-screen approach enhances player agency and immersion by providing more intuitive and responsive control options tailored to specific gameplay scenarios.

Furthermore, multidisplay setups facilitate collaborative and competitive gameplay experiences by enabling shared screens and simultaneous multiplayer interactions. Players can engage in cooperative tasks, such as coordinating strategies in real-time strategy games or navigating complex puzzles in adventure games, across multiple displays. Additionally, competitive multiplayer modes can leverage multidisplay setups to offer split-screen views or separate

perspectives for each player, enhancing the intensity and strategic depth of competitive gameplay.

In addition to enhancing gameplay mechanics, multidisplay setups enable developers to create more immersive and interactive narratives by leveraging multiple screens for storytelling and world-building. For example, games may utilize secondary displays to showcase supplementary information, such as character biographies, environmental lore, or real-time events, enriching the overall narrative experience. By integrating multidisplay setups into the storytelling process, developers can immerse players in rich and expansive game worlds that unfold across multiple screens.

Overall, the role of multidisplay setups in enabling innovative gameplay mechanics and interactions is paramount in shaping the future of gaming. By providing developers with versatile tools for designing immersive experiences and empowering players with new levels of agency and engagement, multidisplay setups are driving the evolution of interactive entertainment and expanding the possibilities of gaming experiences.

#### **Examples of games leveraging multiple displays for enhanced interaction and engagement:**

Several games have successfully leveraged multiple displays to provide players with enhanced interaction and engagement, pushing the boundaries of traditional gaming experiences. One notable example is "Elite Dangerous," a space exploration and trading game that offers support for multiple monitors or virtual reality headsets. Players can use additional displays to expand their cockpit view, displaying crucial information such as navigation, ship status, and communication channels, while maintaining a clear view of the expansive virtual universe around them. This multidisplay setup enhances immersion and situational awareness, allowing players to effectively pilot their spacecraft and navigate through the vastness of space.

Another example is "Flight Simulator X," a realistic flight simulation game that supports multiple monitors for panoramic cockpit views. Players can configure their setup to display various cockpit instruments, control panels, and external views across multiple screens, providing a more realistic and immersive flight experience. With a multidisplay setup, players can simulate the sensation of piloting a real aircraft, complete with detailed instrumentation and panoramic views of the virtual world below.

"World of Warcraft" is a massively multiplayer online role-playing game (MMORPG) that has implemented multidisplay support to enhance gameplay experiences. Players can use multiple monitors to expand their field of view, displaying additional interface elements such as maps, chat windows, and character statistics. This allows players to multitask more efficiently, coordinating with teammates, navigating through expansive game worlds, and managing various in-game resources simultaneously, ultimately enhancing their overall gaming experience.

The racing simulation game "iRacing" is another example of a game that benefits from multidisplay setups. Players can configure their setup to display different views such as the driver's cockpit, rearview mirrors, and trackside cameras across multiple monitors. This multidisplay setup provides players with a more immersive and realistic racing experience,



allowing them to anticipate turns, monitor competitors, and react to changing track conditions with greater precision and situational awareness.

Lastly, "Civilization VI," a turn-based strategy game, supports multidisplay setups to enhance strategic planning and decision-making. Players can use additional monitors to display detailed maps, city management screens, and diplomatic interfaces, allowing for more efficient information processing and strategic coordination. This multidisplay setup enables players to manage vast empires and engage in complex diplomatic and military strategies with greater ease and effectiveness, enhancing the depth and complexity of the gameplay experience.

### **Influence of interaction design on player enjoyment and immersion:**

The influence of interaction design on player enjoyment and immersion in gaming experiences cannot be overstated. Interaction design encompasses the mechanics, controls, user interface elements, and feedback systems that govern how players engage with and navigate within virtual environments. Well-crafted interaction design can significantly enhance player satisfaction and immersion by promoting intuitive, responsive, and engaging interactions.

Firstly, intuitive controls and user interfaces are essential for ensuring that players can easily understand and navigate the game world. By designing controls that are intuitive and responsive, players can quickly learn how to interact with the game environment, reducing frustration and enhancing immersion. Clear and intuitive user interfaces provide players with essential information and feedback, helping them make informed decisions and stay engaged in the gameplay experience.

Furthermore, the responsiveness of game mechanics and interactions directly impacts player enjoyment and immersion. Responsiveness refers to the speed and accuracy with which the game responds to player input. Smooth and responsive gameplay mechanics make players feel more connected to the virtual world, enhancing the sense of agency and immersion. Conversely, sluggish or unresponsive controls can disrupt immersion and diminish the overall enjoyment of the gaming experience.

Another aspect of interaction design that influences player enjoyment and immersion is feedback mechanisms. Feedback systems provide players with visual, auditory, and tactile cues that communicate the outcome of their actions and decisions. Effective feedback reinforces player agency, helps them understand the consequences of their actions, and fosters a sense of presence within the game world. Well-designed feedback systems can enhance immersion by providing players with a sense of engagement and connection to the virtual environment.

Additionally, the design of in-game interactions and mechanics can shape the emotional experience of players, further impacting their enjoyment and immersion. Engaging gameplay mechanics, meaningful choices, and compelling narratives can evoke a wide range of emotions, from excitement and exhilaration to tension and empathy. By designing interactions that resonate emotionally with players, game developers can deepen immersion and create memorable gaming experiences that leave a lasting impression.

Overall, the influence of interaction design on player enjoyment and immersion in gaming experiences is profound. By prioritizing intuitive controls, responsive mechanics, effective feedback systems, and emotionally engaging interactions, game developers can create immersive and enjoyable gaming experiences that captivate players and keep them coming back for more.

### **Social Interaction and Multiplayer Experiences:**

Social interaction and multiplayer experiences are fundamental aspects of modern gaming, facilitating collaboration, competition, and community building among players. In multidisplay gaming environments, social interaction features are carefully integrated to enhance the sense of shared presence and engagement among players. One key element is the inclusion of multiplayer modes, allowing players to team up with friends or compete against each other in cooperative or competitive gameplay scenarios. These modes encourage social interaction and foster a sense of camaraderie or friendly rivalry among players, enhancing the overall gaming experience.

Voice chat functionality is another important aspect of social interaction in multidisplay gaming. By enabling real-time communication between players, voice chat allows for coordinated teamwork, strategic planning, and socializing during gameplay. Whether coordinating tactics in a multiplayer battle or simply chatting with friends while exploring virtual worlds, voice chat enhances the sense of connectedness and community among players, strengthening social bonds and relationships.

Social media integration is also commonly incorporated into multidisplay gaming experiences, allowing players to share their gaming achievements, screenshots, and gameplay experiences with friends and followers on social media platforms. This integration not only facilitates social interaction outside of the game but also serves to extend the gaming community beyond the confines of the virtual world, creating opportunities for players to connect and engage with each other across different platforms and channels.

In addition to synchronous multiplayer experiences, asynchronous social interactions are also prevalent in multidisplay gaming. Features such as leaderboards, achievements, and in-game messaging systems enable players to compete with or communicate with other players even when they are not actively playing together. These asynchronous interactions provide opportunities for social engagement and competition, encouraging players to stay connected and invested in the game over time.

Overall, social interaction and multiplayer experiences are integral components of multidisplay gaming, enriching the gaming experience by fostering collaboration, competition, and community building among players. By incorporating features such as multiplayer modes, voice chat functionality, social media integration, and asynchronous interactions, multidisplay gaming environments create vibrant and dynamic social spaces where players can connect, communicate, and collaborate with each other in virtual worlds.

### **Facilitation of social interaction and multiplayer experiences in multidisplay gaming environments:**



Facilitating social interaction and multiplayer experiences is a key aspect of multidisplay gaming environments, enriching the gaming experience and fostering connections between players. One way this is achieved is through the integration of multiplayer modes and cooperative gameplay features. These allow players to team up with friends or compete against each other in virtual worlds, promoting collaboration, teamwork, and friendly competition. By providing opportunities for social interaction, multidisplay gaming environments create a sense of camaraderie and community among players, enhancing the overall enjoyment of the gaming experience.

Voice chat functionality is another important feature in multidisplay gaming environments, enabling real-time communication between players during gameplay sessions. Voice chat allows players to strategize, coordinate actions, and engage in casual conversations, enhancing the social aspect of gaming and facilitating friendships and relationships between players. Additionally, voice chat can contribute to a more immersive experience by providing spatial audio cues that enhance the sense of presence within the virtual environment.

Social media integration is also commonly incorporated into multidisplay gaming environments, allowing players to share their gaming experiences, achievements, and highlights with their social networks. By enabling players to connect their gaming profiles to social media platforms, multidisplay gaming environments facilitate the formation of gaming communities and fan bases, where players can share tips, strategies, and experiences with like-minded individuals. Social media integration enhances the visibility of multidisplay gaming experiences and encourages social interaction among players both within and outside of the gaming environment.

Furthermore, multiplayer events and tournaments are organized within multidisplay gaming environments, bringing together players from around the world to compete in organized competitions and events. These events provide opportunities for players to showcase their skills, compete for prizes, and forge connections with other gamers who share their passion for gaming. By hosting multiplayer events and tournaments, multidisplay gaming environments create a sense of excitement and camaraderie among players, fostering a vibrant and active gaming community.

### **Summary:**

This paper explores the impact of multidisplay setups on gaming experiences, with a focus on immersion, interaction, and player engagement. It discusses how multiple displays enhance immersion and enable innovative forms of player interaction, shaping the overall gaming experience. Through case studies and discussions on challenges and future directions, the paper provides insights into the potential of multidisplay gaming to redefine interactive entertainment.

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