

Leveraging Platform-Based Games to Propel Virtual Tourism

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Abstract

This study explores the integration of platform games as a powerful tool for enhancing virtual tourism experiences. In traditional tourism, physical travel is usually costly and time-consuming, whereas virtual tourism enables the exploration of destinations remotely. However, virtual tourism can be perceived as passive and lacking engagement. The potential of platform games to overcome these limitations is investigated through the development of a platform game-based virtual tourism experience called "Malaysia Expo." The positive impact of platform game integration is revealed through user testing and evaluation, showcasing interactive and immersive environments that enrich the overall tourism experience. The advancement of sustainable practices and the creation of captivating virtual travel experiences are contributed by embracing gamification in virtual tourism.

Keywords: Virtual Tourism, Platform Games, Malaysia Expo, User Testing, Promotion Tool.

Introduction

Virtual tourism is witnessing a notable upswing, emerging as a compelling avenue for immersing oneself in diverse cultures and exploring new destinations, all within the realm of digital landscapes, thus eliminating the constraints of physical travel. Much research has been dedicated to unraveling the efficacy and untapped potential of virtual tourism, with a specific focus on harnessing the captivating capabilities of 2D platform games. Within this segment, we dig into the landscape of knowledge surrounding the integration of platform games as a catalyst for promoting and enriching the virtual tourism experience.

Literature Review

Virtual tourism had a profound impact on travel intention and there is a significant and positive correlation between virtual tourism and travel intention (Ye et al., 2022). Notably,

the dimensions of content quality, system quality, and interaction quality emerge as influential determinants, profoundly shaping tourists' travel intention by virtue of their interplay with the mediating forces of tourism experience and virtual attachment. Furthermore, the study underscores the pivotal role of system quality in directly propelling travel intention, underscoring its status as a key catalyst in shaping tourists' proclivity to embark on physical journeys.

Video Game as a Promotion Tools

A game titled "City of Metronome" established that players who participated in the immersive gaming experience reported significantly elevated levels of cultural immersion in comparison to non-participants (Klimmt et al., 2010). Besides, a 2D platform game named "Rome: Total War" shows that video games are a potent instrument for the purposes of cultural heritage education and promotion as it effectively imparts knowledge about the intricate cultural heritage of Rome (Bellotti et al., 2014).

An additional illustrative example is found in the renowned game "Assassin's Creed Chronicles" (Wawro, 2016), which transports players on captivating virtual sojourns to diverse corners of the globe, including China, India, and Russia. Within the historically accurate digital environments depicting each location, players are immersed in an intricate tapestry woven with authentic architectural marvels, meticulously crafted costumes, and faithfully recreated customs. This amalgamation provides an unparalleled opportunity for players to engage with and absorb the rich cultural fabric and historical significance associated with each locale.

Moreover, the game "Wanderlust Adventures" (Cook, 2019) emerges as an example of the seamless integration of the virtual tourism concept. Within the immersive realms of this exceptional game, players embark on captivating journeys across diverse regions of the world, concurrently undertaking engaging quests that afford them the opportunity to acquire profound insights into the associated culture and history. With its designed maps, incorporation of iconic local landmarks, and placed cultural references, the game presents a delightful and educational experience that caters to individuals of all age groups, imparting knowledge while fostering a sense of wonder and curiosity.

Platform-based Game

The utilization of platform games has emerged as a novel approach to virtual tourism, enabling players to engage with virtual worlds while simultaneously offering educational and cultural content. Platform-based games belong to the genre of video games that involve guiding characters through levels and overcoming obstacles through actions like jumping, running, and puzzle-solving. One defining characteristic of these games is their non-linear design, allowing players to explore the game world at their own pace. This design principle fosters a sense of freedom and exploration for the player. Additionally, platform games often boast visually vibrant graphics, captivating music, and a diverse range of characters and adversaries.

Platform games promote social interaction and teamwork as players collaborate and communicate to overcome challenges and progress through levels (Zagal et al., 2013). Playing platform games can enhance cognitive and motor skills, stimulate creativity, and sharpen problem-solving abilities (Granic et al., 2014). However, it is important to acknowledge that platform games have faced criticism for perpetuating stereotypes and violence as there is a

correlation between playing violent platform games and increased aggressive behavior in players (Anderson et al., 2010).

A platform game called "Explore Korea" that promotes virtual tourism in South Korea had increase the interest in visiting the real-life locations featured in the game (Jung et al., 2019). Besides, a platform game called "Rome Reborn" that promote virtual tourism in Rome, Italy had successfully upswing the interest of the participants in visiting Rome and deepening their understanding of the city's history (Costa et al., 2018). Another 2D platform game named "Adventures in Jilin" showed the effectiveness of platform games in promoting tourism in specific region as the participants exhibited a significantly higher intention to visit Jilin (Zhang et al., 2018).

In addition to their role in virtual tourism, platform games can also serve as vehicles for educating players about different cultures and customs. A platform game called "Folk Game World" (Wang et al., 2019) demonstrated the game's effectiveness in promoting cultural education, as players reported increased knowledge and understanding of Taiwanese culture. Besides, a game named "Tourism Quest" (Trzecieliński et al., 2021) encouraged the players to explore virtual destinations from around the world and find out players have higher levels of satisfaction and engagement compared to those who did not play the game.

2D platform games can stimulate virtual tourism by offering users an immersive experience (Bagade et al., 2022). Besides, gamification mechanisms and social media tools can be employed to promote tourism regions, enterprises, and activities (Kachniewska, 2018). Hence, 2D platform games can be employed as valuable instruments for promoting virtual tourism by providing users with immersive experiences that positively influence their travel intentions.

Platform Game Design and Implementations

A platform game-based virtual tourism experience called Malaysia Expo has been designed and implemented. The incorporation of game design elements such as levels, power-ups, and challenges has been carried out to enhance user engagement. The game has been designed with the objectives of providing an engaging user experience and promoting learning and understanding of different destinations.

Enhance the Virtual Tourism Experience and Promote User Engagement

Platform games offer a valuable means to enhance the virtual tourism experience, providing users with an interactive and engaging method to explore destinations. Platform games can be effectively utilized in the following approaches :

- **Gamification:** By implementing gamification techniques, platform games infuse the virtual tourism experience with excitement and interactivity. Elements such as points, rewards, and leaderboards serve to motivate users, fostering increased exploration and active engagement with the destination.
- **Storytelling:** Platform games possess the capacity to convey narratives set within the promoted destination. By immersing users within a storyline intricately linked to the destination, platform games heighten the engagement and memorability of the virtual tourism experience.
- **Exploration of Virtual Environments:** Platform games enable users to navigate and traverse virtual environments that faithfully recreate real-world locations, landmarks, and natural landscapes. By granting users the ability to interact with

these environments, discover hidden areas, and engage with various objects, the virtual tourism experience is significantly enriched.

- **Interactivity:** Platform games afford users diverse opportunities for interaction with the destination. Users can interact with informative objects that offer insights into the location, or engage in dialogue with virtual characters who provide valuable knowledge regarding the culture and history of the destination. Such interactive elements enhance the depth and authenticity of the virtual tourism experience.

Engaging User Experience

When designing platform-based games to deliver an engaging user experience that facilitates learning and comprehension of diverse destinations, several crucial considerations merit careful attention which are Learning objective, Game mechanics, Narrative, Interactive Elements, Multiplayer, and Personalization.

The game design must align harmoniously with the learning objectives associated with the destination. For instance, if the goal is to acquire knowledge about the history and culture of a particular locale, the game design ought to encompass elements that effectively convey this information.

The game mechanics should be purposefully crafted to foster a spirit of exploration and discovery within the destination. This can be achieved by integrating clues, hints, and rewards that incentivize users to venture into various areas of the virtual environment.

The narrative structure should be meticulously fashioned to impart information about the destination in an engaging and interactive manner. Characters, dialogues, and cutscenes can be leveraged to provide contextual details and backstories that captivate the user's interest. The game should encompass interactive elements that facilitate user engagement with the virtual environment, thereby fostering experiential learning. This may encompass the ability to interact with objects, solve puzzles, or partake in virtual tours, thereby augmenting the immersive experience.

The provision of comprehensive feedback and assessment mechanisms within the game is essential to help users gauge their progress and reinforce their learning. Leaderboards, progress trackers, and quizzes can be incorporated to this end.

Integration of multiplayer components can promote collaboration and social learning. Cooperative gameplay, team challenges, and social features that facilitate user interactions and the sharing of experiences and knowledge are effective ways to encourage collective engagement.

Personalization is shown by tailoring the game experience to cater to the user's interests and learning preferences holds great potential. Adaptive learning algorithms can be employed to dynamically adjust the game's difficulty and content based on the user's performance and feedback, ensuring a customized and optimized experience.

Potential benefits and limitations of using platform games in virtual tourism.

The utilization of platform games within the realm of virtual tourism presents both potential advantages and limitations. The advantages are as follows

- **Enhanced Engagement:** Platform games offer users an interactive and captivating medium through which they can explore a destination, thereby heightening their motivation to actively participate in the virtual tourism experience.
- **Increased Knowledge Retention:** By infusing the virtual tourism experience with

game-like elements, platform games can facilitate better information retention, aiding users in recalling the knowledge they acquire about the destination.

- **Wide Accessibility:** Platform games possess inherent accessibility, accommodating a diverse range of users regardless of factors such as age, gender, or cultural background.
- **Cost-effectiveness:** The creation of a platform game for virtual tourism can often prove to be more economical compared to developing physical tourist attractions or organizing real-life tours.
- **Customizability:** Platform games possess the inherent flexibility to be tailored to suit various user preferences, interests, and skill levels, allowing for a more personalized and engaging experience.

However, there are a few limitations such as

- **Limited Immersion:** Despite the potential for immersion, platform games may not fully replicate the level of immersion one would experience by physically being present at the destination.
- **Technical Challenges:** The development of a platform game for virtual tourism can present technical complexities, necessitating specialized skills and resources to ensure a seamless and effective implementation.
- **Limited Information:** Platform games may not provide users with the entirety of information typically obtained through traditional tours or guides, potentially restricting the depth of knowledge acquired.
- **Risk of Distraction:** There exists the possibility that users may become overly engrossed in the gameplay itself, diverting their attention away from the educational aspects of the virtual tourism experience.
- **Limited Interactivity:** Depending on the design of the platform game, users may encounter restrictions on the extent of interactivity available with the destination, consequently diminishing the overall level of engagement and educational value.

Platform-Based Game: Malaysia Expo

The objective of the game is to promote virtual tourism through platform-based game, entitle Malaysia Expo. The narrative commences by introducing the protagonist, Jack Hallow, a renowned YouTuber with an inherent passion for globetrotting. The game can be accessed via the following URL: <https://cyborgcodes.itch.io/malaysia-expo>. Recently, he stumbled upon a captivating video showcasing Malaysia's abundance of enigmatic and rare wonders. Intrigued, Jack resolved to embark on a journey to Malaysia, driven by the desire to unveil these mysteries firsthand and immerse himself in the vibrant Malaysian culture. The primary objective of the game is for Jack Hallow to amass a substantial array of captivating content and undergo a multitude of enriching experiences across diverse locales in Malaysia. This endeavor is undertaken to produce exceptional video content for his global audience of viewers and devoted fans. Refer to Figure 1 for an illustrative depiction of the game's progression and flow.

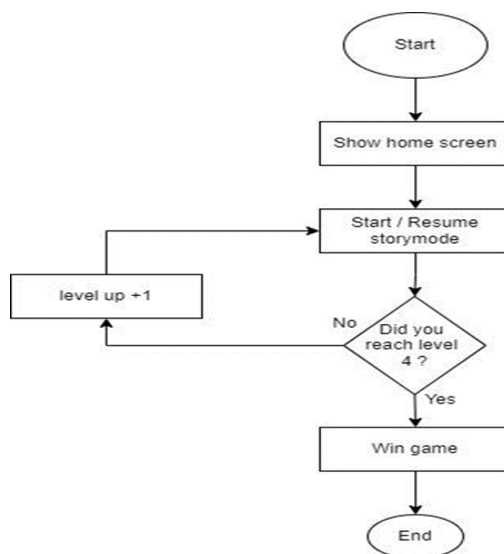





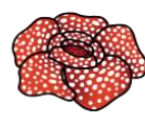




Figure 1 : Game flow.

This platform game consists of three stages. Each of the stages has obstacles and collectible items. Table 1 shows the game characters. Wild animals such as stray dogs pose a significant challenge that Jack must contend with. To ensure Jack's safety and enable him to acquire his desired objectives, it is imperative for him to devise effective strategies to evade and circumvent the potential dangers posed by these untamed canines. These creatures make their appearance in stage 1, symbolizing the untamed wilderness of Sabah's jungles.

Table 1
Game Character.

	Obstacles			
 Jack Hallow				
	Pirate	Wild animal	Mosquitos	Robot
	Collectible item			
				
	Rafflesia flower	Dodol	Coin	

Both in the virtual realm of the game and, mosquitoes are a ubiquitous nuisance. Acting as the sole airborne adversaries, they impede progress by obstructing jumps between platforms and narrow passageways. These obstacles manifest themselves in both stage 1 and stage 3. Pirates constitute another form of impediment within the game, thwarting Jack Hallow's quest for captivating content for his video. Consequently, it becomes imperative for Jack Hallow to discover means of circumventing contact with these pirates. They make their appearance in stage 2, symbolizing the historical significance of Malacca as a once globally renowned trade port. In the modern era, robots emerge as yet another obstacle. They make

their presence felt in stage 3, aligning with the prevailing theme of contemporary technology pervasive in Kuala Lumpur today. Figure 2 displays the menu option.



Figure 2 : Menu option.

Figure 3 shows the first stage that uses a jungle background, as Sabah contains large amounts of jungles. The collectible item for Stage 1 is the Rafflesia flower, a well-known for its unique pattern, size, and smell. It can be found in Malaysia's jungle.

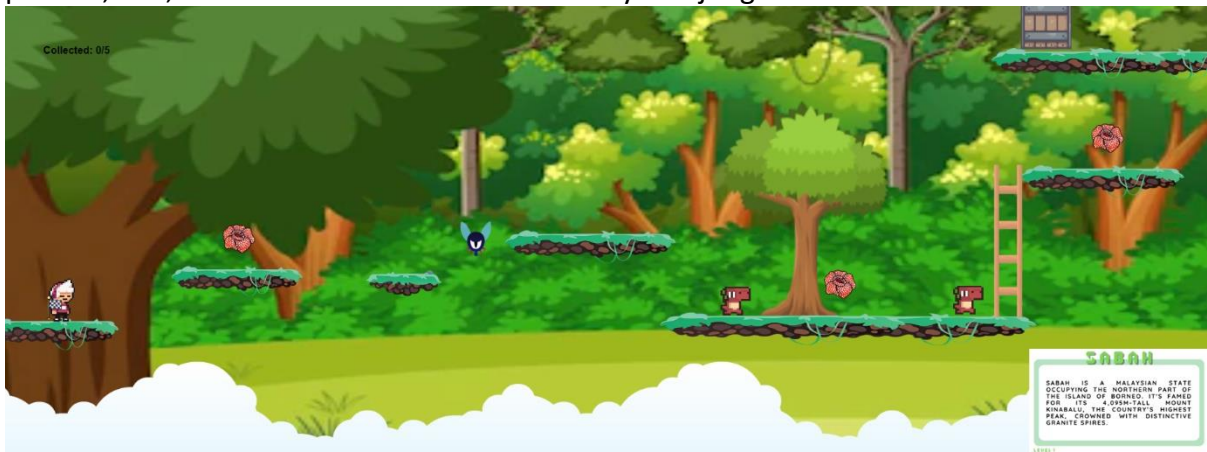


Figure 3 : Sabah.

Stage 2 uses a background consisting of many historical elements of Melaka, including Fort A Famosa, Stadhuys, and Christ Church Malacca. The collectible item for Stage 2 is a dodol. Dodol is a unique confection found in South East Asia, sweet and chewy.

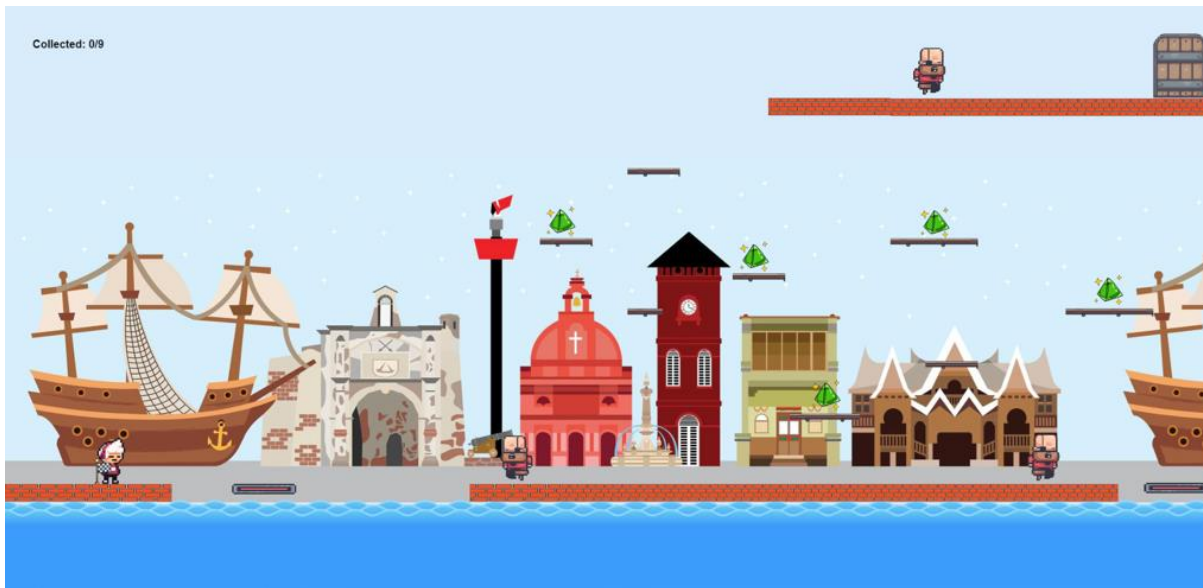


Figure 4 : *Melaka*.

In stage 3, Jack needs to overcome the robots and mosquitos as obstacles. A coin is a collectible item for Stage 3. After independence, Malaysia started using its currency, the Malaysian Ringgit, including minting its coins.



Figure 5 : *Stage 3*.

Results

The usability testing has been done for discovering problems, comparing against benchmarks, and comparing against other interfaces. 35 users did the user testing. Google Form is used as a survey platform since it is quite a familiar survey platform nowadays. The purpose of this questionnaire is to get feedback from the end-user, and the feedback will then become very valuable information in enhancing our game product. Table 2 shows the usability testing result.

Table 2

Usability Testing Result

	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
Was the game easy to learn and understand?	0%	0%	15%	62%	24%
Were the levels appropriately challenging?	0%	3%	21%	47%	29%
Did the controls feel intuitive and responsive?	0%	6%	35%	53%	6%
Have you learned some culture of Malaysia through the game?	0%	3%	21%	65%	12%
Did you experience any bugs or glitches while playing?	6%	15%	24%	44%	12%
Was the game entertaining and enjoyable to play?	0%	3%	29%	56%	12%
Did the game keep you engaged throughout the entire playthrough?	0%	3%	15%	71%	12%
Were the graphics and animations visually appealing?	0%	0%	38%	47%	15%
Did the sound effects and music enhance your experience of the game?	0%	3%	29%	53%	15%
Would you recommend this game to others?	3%	0%	21%	62%	15%

The analysis of the user responses indicates the following insights

- Learning and Understanding
 - The majority of respondents (62% agree, 24% strongly agree) found the game easy to learn and understand. This suggests that the game's mechanics and instructions were effectively designed to facilitate a smooth learning curve.
- Level Challenge
 - Nearly half of the respondents (47% agree, 29% strongly agree) felt that the levels in the game were appropriately challenging. This indicates that the game offered a balanced difficulty progression, keeping players engaged without becoming too frustrating or too easy.
- Intuitive Controls
 - A significant proportion of respondents (53% agree, 6% strongly agree) found the controls of the game to be intuitive and responsive. This suggests that the game's controls were designed thoughtfully, allowing players to interact with the game world comfortably and effortlessly.
- Cultural Learning
 - The majority of respondents (65% agree, 12% strongly agree) reported that they learned some aspects of Malaysian culture through the game. This indicates that the game effectively incorporated cultural elements, providing players with an educational and enriching experience.
- Bugs and Glitches

- A significant number of respondents (44% agree, 12% strongly agree) experienced bugs or glitches while playing the game. This suggests that some technical issues affected the gameplay experience for a notable portion of players.
- Entertainment Value
 - The majority of respondents (56% agree, 12% strongly agree) found the game to be entertaining and enjoyable to play. This indicates that the game successfully provided an engaging and pleasurable experience for the players.
- Player Engagement
 - A large majority of respondents (71% agree, 12% strongly agree) reported being consistently engaged throughout the entire playthrough of the game. This suggests that the game succeeded in maintaining the interest and attention of players from start to finish.
- Visual Appeal
 - A considerable proportion of respondents (47% agree, 15% strongly agree) found the graphics and animations of the game to be visually appealing. However, a significant number of respondents (38% neutral) did not express a strong opinion, indicating room for improvement in this aspect.
- Sound Effects and Music
 - A majority of respondents (53% agree, 15% strongly agree) felt that the sound effects and music enhanced their experience of the game. This indicates that the audio elements contributed positively to the immersion and enjoyment of the gameplay.
- Recommendation
 - A significant portion of respondents (62% agree, 15% strongly agree) expressed their willingness to recommend the game to others. This suggests a favorable impression of the game's overall quality and value.

Overall, the user responses indicate a generally positive reception of the game, with notable strengths in terms of ease of learning, appropriate challenge, cultural learning, entertainment value, player engagement, and recommendation. However, there are areas such as technical issues, graphics, and animations that may require further attention and improvement to enhance the overall player experience.

This usability testing primarily focuses on aspects related to gameplay experience, enjoyment, and learning. However, some indirect indicators suggest that the game may have the potential to promote virtual tourism such as cultural learning, engagement and enjoyment, and recommendation.

Cultural Learning: A significant majority of respondents (65% agree, 12% strongly agree) reported that they learned some aspects of Malaysian culture through the game. This implies that the game successfully incorporated cultural elements, which could contribute to promoting virtual tourism by offering players insights into the destination's culture and heritage. The explanation is as below:

Engagement and Enjoyment: The majority of respondents expressed high levels of engagement (71% agree, 12% strongly agree) and enjoyment (56% agree, 12% strongly agree) throughout the game. Engaged and entertained players are more likely to have positive

associations with the virtual tourism experience offered by the game, which could potentially encourage them to explore the destination further in real life or through other virtual means. Recommendation: A considerable proportion of respondents (62% agree, 15% strongly agree) expressed a willingness to recommend the game to others. Positive word-of-mouth recommendations can play a significant role in promoting virtual tourism by generating interest and attracting potential visitors to explore the destination virtually.

While these indicators provide some insights, a more comprehensive analysis would require additional research, such as surveys specifically designed to measure the impact of the game on virtual tourism. Such research could assess factors like players' intention to visit the actual destination, their increased knowledge about the location, or their motivation to engage in virtual tourism activities.

In conclusion, while the survey responses do not directly address the game's effectiveness in promoting virtual tourism, certain elements suggest that the game has the potential to do so. The incorporation of cultural elements, high levels of engagement and enjoyment, and positive recommendations from players all contribute to a positive impression of the game's potential for promoting virtual tourism.

Conclusion

Platform games serve as an engaging and interactive medium for effectively promoting virtual tourism and captivating users. By leveraging elements of gamification, storytelling, exploration, and interactivity, these games facilitate a profound connection between users and the destination, thereby fostering a truly immersive and memorable virtual tourism experience. Notably, platform games offer users the opportunity to hone their skills, while also encouraging collaboration with fellow players through unique gameplay mechanics.

While concerns regarding the potential negative ramifications of platform games persist, extant research suggests that their inherent advantages may outweigh any associated drawbacks. Nevertheless, further investigation is warranted to comprehensively explore the influence of platform games on players across diverse contexts. It is imperative, therefore, to exercise prudent discernment when designing and promoting platform games in the realm of virtual tourism, considering both their potential benefits and limitations.

Platform games for virtual tourism have limitations in replicating the immersive experience of physically being present at a destination, as they encounter technical obstacles and limit the depth of knowledge gained. However, the Malaysia Expo has been designed as an engaging medium for users to explore a destination, showcasing its unique characteristics and enhancing their motivation to actively participate in the virtual tourism experience. This game also improves information retention, assisting users in remembering the knowledge they acquire about the destination. By infusing excitement and interactivity, these platform games allow users to faithfully explore virtual environments that replicate real-world locations, landmarks, and natural landscapes. Additionally, users can engage with virtual objects and characters that provide valuable insights into the culture and history of the destination.

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