



SINGAPORE RIVER RELIC ODYSSEY

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PROJECT OVERVIEW



Introduction

Embark on the Singapore River Relic Odyssey, a Unity VR app seamlessly blending education and entertainment. A river cruise transports you unexpectedly to the past's bustling trading port. Engage in three immersive jobs – harbour coolie, coffee maker, and rickshaw coolie – earning relics revealing secrets of Singapore's heritage. This unique experience merges VR, interactive gameplay, and historical storytelling, blurring past and present. Immerse yourself in the Singapore River Relic Odyssey, where every relic tells a tale, unveiling new chapters in the captivating narrative of Singapore's cultural evolution.

PROJECT OVERVIEW



Storyline

In "Singapore River Relic Odyssey," players embark on a VR journey from a bygone trading port. After a magical river cruise, players perform immersive tasks—harbour coolie, coffee maker, and rickshaw coolie—to earn relics unlocking historical secrets. Transported between past and present, players engage with the rich cultural tapestry of Singapore, capturing scenic moments and gaining a deeper understanding of the city's evolution. The narrative unfolds seamlessly, blending education and entertainment, culminating in a congratulatory return to the present by a tour guide, marking the completion of a captivating historical odyssey.

PROJECT OVERVIEW

Key Features

1. Virtual Exploration

The virtual exploration feature provides users with a detailed and immersive experience of the Singapore River. Leveraging Unity VR technology, the environments are faithfully recreated, allowing users to visually and spatially engage with the historical aspects of each site. This feature aims to transport users to a different time and place, fostering a deep connection with Singapore's rich history.



2. Collective System

The collective system is gamified through a culinary quiz, motivating users to answer questions correctly to progress through the historical journey. This system ensures an engaging and educational progress. Each successfully completed quiz rewards users with culinary-themed relics, providing insights into the historical significance of different dishes and culinary practices.



PROJECT OVERVIEW

Key Features

3. Relic Collection

The collective system gamifies the experience, motivating users to complete each job to earn a relic. This sense of progression encourages continued engagement and investment in the historical narrative. Each earned relic serves as a key to unlocking a different facet of Singapore's history related to the completed job, promoting a layered and comprehensive understanding of the cultural and economic landscape.

4. Educational Relics

The relics not only act as collectibles but also serve an educational purpose by providing detailed historical information related to the completed tasks. Users gain a deeper understanding of Singapore's cultural and economic history. The historical insights provided by each relic are seamlessly integrated into the narrative, offering context to the tasks performed and fostering a more meaningful learning experience.



PROJECT OVERVIEW

Key Features

5. Interactive Gameplay

The chosen tasks of harbour coolie, coffee maker, and rickshaw coolie are historically significant, allowing users to actively contribute to the narrative while gaining insights into the daily life and occupations of the past. Interactive elements within each task, such as physically transporting goods or making virtual coffee, provide a tactile and engaging experience, bridging the gap between the user and the virtual world. The tasks are seamlessly integrated into the storyline, ensuring that each contributes meaningfully to the overall historical journey, creating a cohesive and enjoyable gameplay experience.

6. Teleportation between Eras

The teleportation mechanic between past and present adds dynamism to the gameplay, creating a sense of magic and wonder as users seamlessly transition through different historical periods. Users get to witness key historical moments firsthand, enhancing the overall sense of immersion and allowing them to actively participate in significant events of Singapore's history.



DESIGN RATIONALE

1. Immersive Exploration

The player would embark on a historical journey through the Singapore River. Discovering the past of Singapore and exploring the two different views of modern and olden Singapore. The player can experience the historical side and gain deeper understanding of Singapore.

2. Narrative Richness Through Jobs

Working at the trading port introduces historical context, and the coffee-making interlude in a shop house adds depth to the narrative. This immersive storytelling ensures a meaningful and engaging user experience. The inclusion of dynamic story branching, exemplified by Auntie's request and the subsequent rickshaw ride, adds variability and personalization to the user's journey, enriching the overall narrative.



DESIGN RATIONALE

3. Interactive Time Travel Through Odd Jobs

Users partake in three historically significant jobs – harbour coolie, coffee maker, and rickshaw coolie – forming a gamified collective system. Relics earned act as educational portals, showcasing the historical relevance of each occupation.

4. Progression and Rewards

A progression system tied to timed races adds a gamified element to the educational experience. This approach motivates players to strive for excellence. Rewards for completing challenges provide a sense of accomplishment and encourage continued exploration, ensuring sustained engagement with the app.



DESIGN RATIONALE

5. Community Competition

Introducing a social dimension through community competition fosters a sense of camaraderie among players. By allowing them to compare scores and achievements, the app creates a friendly and collaborative environment. This social aspect not only enhances the enjoyment of the game but also encourages players to share knowledge and insights, contributing to a shared cultural learning experience.

Conclusion

"Singapore River Relic Odyssey" merges Unity VR, Firebase, and a web-based front-end, offering an immersive educational experience. Through virtual exploration, time-travel, and heirloom collection, users engage with Singapore's history. Interactive quizzes and culinary challenges provide a multisensory, gamified learning journey, while Firebase ensures personalized, scalable gameplay with community interaction.





GOALS & OBJECTIVES

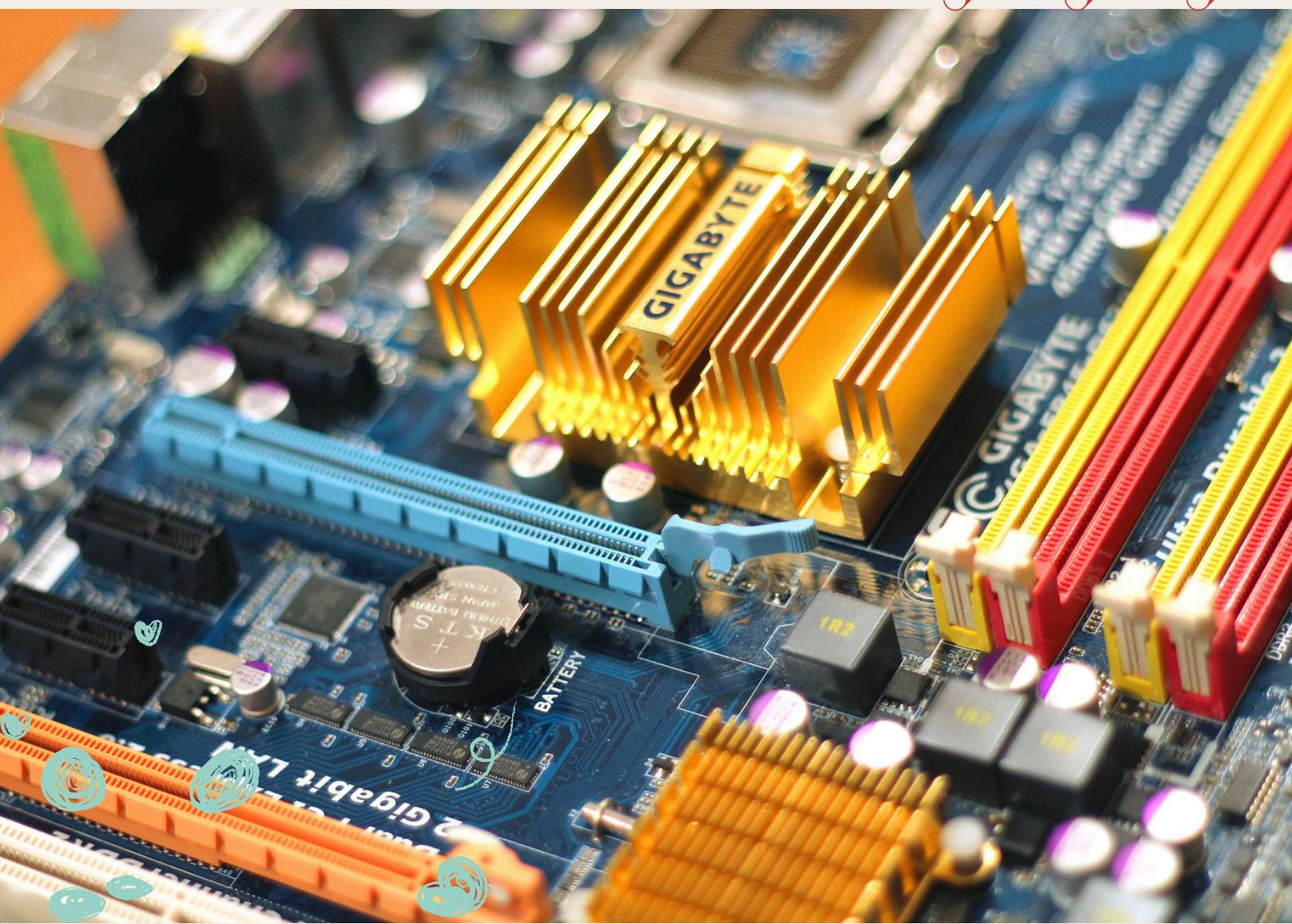
Goals

The primary goal is to provide tourists with an immersive and captivating experience that introduces them to the cultural, historical, and tourist attractions of Singapore. This initiative seeks to blend engaging elements within a mobile application and a purposefully designed physical booth, ensuring a holistic and enriching encounter for users. By tailoring content specifically for tourists, the project aims to create a multifaceted learning experience, going beyond traditional guidebooks, and fostering a sense of active participation and exploration.

Objectives

The objectives of this project encompass various aspects, including the development of a user-friendly interface, compiling accurate and comprehensive information, and integrating interactive features. The seamless transition between the digital application and the physical booth is a key objective, enhancing user engagement across both platforms. With a focus on booth design aesthetics, incorporating advanced technologies, and gathering user feedback, the objectives are geared towards continuous improvement.

TECHNICAL REQUIREMENTS



TECHNICAL REQUIREMENTS

HARDWARE

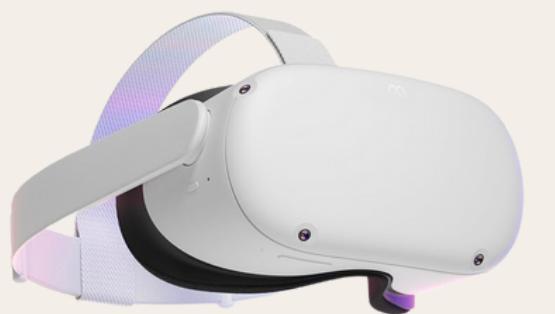
VR Headset: The Oculus Meta Quest 2

The Oculus Quest 2 is a virtual reality (VR) headset developed by Meta.

It is a standalone VR headset, meaning it does not require a computer or external sensors to operate. Everything needed for VR is built into the headset. The Oculus store allows users to download and play VR games and applications without being connected to a computer.

Features

- High-resolution LCD screen with a fast refresh rate for immersive visuals
- Oculus Touch controllers that offers hand tracking and precise motion control for interaction in VR environment



TECHNICAL REQUIREMENTS

HARDWARE

VR Headset: The Oculus Meta Quest 2

Features

- Adjustable head strap and interpupillary distance adjustment for comfort during usage.
- Allows users to connect to a compatible PC via a USB-C cable for access to more experiences available on PC.
- Runs on the Oculus platform, includes a interface for browsing, purchasing, and launching VR games and applications.
- A guardian system that offers safety feature that creates a virtual boundary in the physical space, preventing users from bumping into walls or objects while in VR.



VR Gaming & Entertainment

- Oculus Store provides a wide range of VR games and experiences.
- Users can watch videos, stream content, and engage in social experiences within VR.

TECHNICAL REQUIREMENTS

HARDWARE

VR Headset: HTC VIVE PRO 2

Features

- Offers a high-resolution display with 4896 x 2448 pixels total (2448 x 2448 pixels per eye), providing sharp visuals and improved clarity
- Uses RGB LCD panels with a higher pixel density compared to its predecessor, offering enhanced visual quality

HTC Vive Pro 2 is a premium virtual reality headset designed for high-fidelity VR experiences, primarily targeting enthusiasts, professionals, and gamers seeking top-tier VR hardware.

It aims to deliver an immersive and high-fidelity VR experience with its high-resolution display, increased refresh rates, spatial audio, and precision tracking capabilities, catering to enthusiasts and professionals looking for top-tier VR hardware for gaming, entertainment, and professional applications.



TECHNICAL REQUIREMENTS

HARDWARE

VR Headset: HTC VIVE PRO 2

Features

- Provides a 120-degree field of view, offering a broader and more immersive viewing experience compared to many other VR headsets.
- Offers precise 3D spatial audio, delivering accurate sound positioning for an immersive auditory experience
- Features an ergonomic design with an adjustable head strap, ensuring a comfortable fit for extended VR sessions



- Requires a high-end gaming PC for use, offering tethered VR experiences with support for various VR content available on the SteamVR platform.
- Uses DisplayPort 1.2 and USB 3.0 connections for data transfer and video output to the headset
- Supports refresh rates of up to 120Hz, allowing smoother and more immersive VR experiences, contributes to reduced motion blur and increased visual fidelity



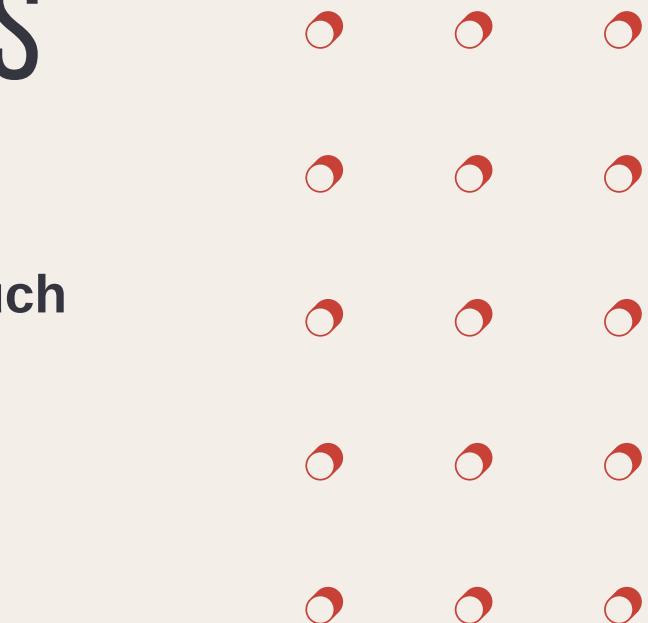
TECHNICAL REQUIREMENTS

HARDWARE

VR Controllers: Oculus Touch Controllers



Specifically made to work in tandem with the Oculus Rift, Oculus Quest, and other Oculus VR headsets, the Oculus Touch Controllers are a crucial component of the Oculus VR ecosystem. These controllers allow users to engage with the virtual environment with ease since they provide accurate and intuitive hand-tracking.



Features

- Provides a Ergonomically designed to fit comfortably in the hand, offering a natural and secure grip for extended VR sessions
- Buttons for various interaction and thumbsticks layout allowing for smooth and precise movement within the VR space.
- Compatible with various Oculus VR headsets, providing consistent and seamless integration with the Oculus ecosystem, including the Oculus Store and supported VR applications and games

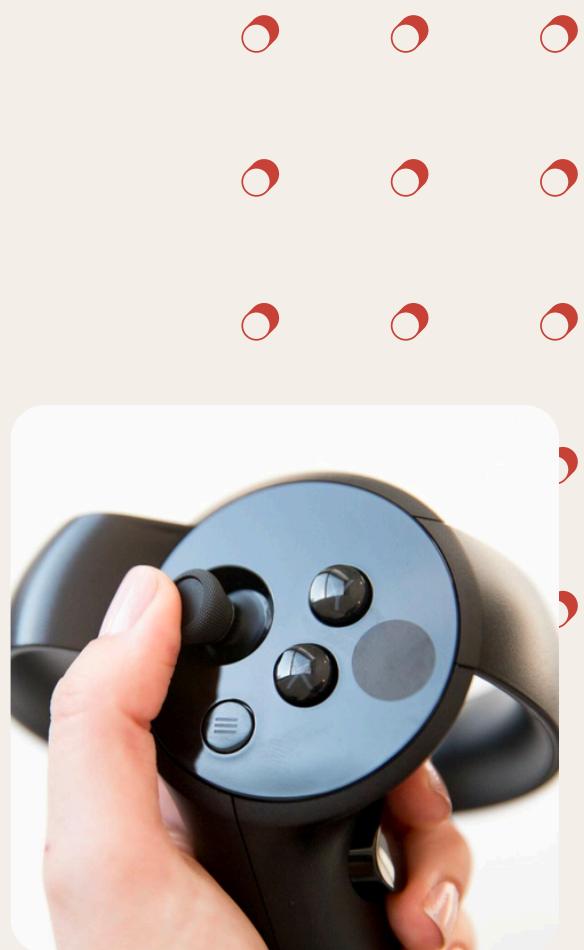
TECHNICAL REQUIREMENTS

HARDWARE

VR Controllers: Oculus Touch Controllers

Features

- Offers precise 3D spatial audio, delivering accurate sound positioning for an immersive auditory experience
- Designed to provide a sense of hand presence and natural interaction within the VR environment, allowing for gestures and hand movements



TECHNICAL REQUIREMENTS

HARDWARE

VR Controllers: Valve Index Controller



Features

- Ergonomically designed to fit comfortably in various hand sizes, offering a secure and natural grip during extended VR sessions.
- Adjustable hand straps: Provides customizable straps for securing the controllers to the user's hands.

Valve Index Controllers, commonly known as "Knuckles" controllers, are designed to provide advanced hand-tracking capabilities and immersive interactions within virtual reality (VR) environments. Developed by Valve Corporation, these controllers offer innovative features that allow users to manipulate objects and interact more naturally in VR.

TECHNICAL REQUIREMENTS

HARDWARE

VR Controllers: Valve Index Controller

Features

- Enable precise tracking of individual finger movements, allowing users to open, close, and articulate their fingers within the virtual space.
- Allows for more natural and realistic interactions by accurately replicating hand movements and gestures.
- Compatible with the Valve Index VR headset and other SteamVR-compatible headsets, offering a wide range of VR experiences available on the Steam platform.
- Aims to reduce fatigue and discomfort during prolonged VR sessions, enhancing the overall immersive experience.



- Provides tactile feedback, enhancing immersion by simulating sensations in response to interactions or in-game events.

TECHNICAL REQUIREMENTS

HARDWARE

Computing Hardware

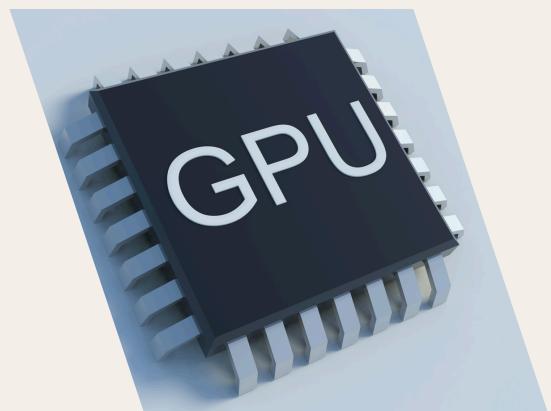
Graphics Processing Unit (GPU)

A high-performance GPU is crucial for rendering VR content. NVIDIA GeForce RTX or GTX series, AMD Radeon RX series, or higher-end GPUs are recommended for VR gaming and experiences.

Generous video memory (VRAM) capacity, preferably 6GB or more, to handle high-resolution textures and complex scenes without compromising performance

Central Processing Unit (CPU)

A powerful multicore CPU (such as Intel Core i7 or Ryzen 7 series or better) is essential for handling game logic, physics calculations, and overall system performance during VR experiences.



TECHNICAL REQUIREMENTS

HARDWARE

Computing Hardware

Random Access Memory (RAM)

At least 16GB of RAM (preferably DDR4) is recommended to ensure smooth multitasking and seamless VR performance.

Headset Compatibility

Check specific hardware requirements provided by the VR headset manufacturer for the recommended specifications and compatibility with your system.



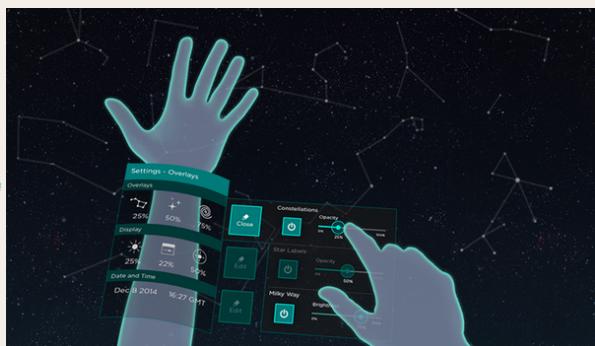
TECHNICAL REQUIREMENTS

SOFTWARE

UI/UX (User interface & user experience)

Navigations & Interaction

- Implement realistic object behavior: by implementing realistic physics for objects in VR environment, it allows users to interact naturally with items based on their properties and physical behavior which is more realistic.
- Use spatial menus with minimalistic interface for menu designs as spatial menu gives user an enhanced immersion during the experience which makes them feel more connected to the environment.



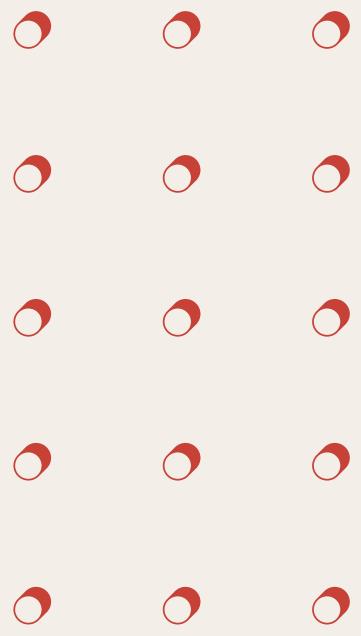
TECHNICAL REQUIREMENTS

SOFTWARE

UI/UX (User interface & user experience)

Navigations & Interaction

- Menu designs should be user-friendly with easy navigation. Using methods such as gaze-based selection, motion controller interactions, or gesture-based controls to make menu selections and confirm actions. It should have logical layout so that it makes sense to the user. Use visual cues for better organisation.
- Use Motion Controllers for interactions. Controller-based interactions allows users to accurately manipulate virtual objects using the controllers' tracking capabilities.

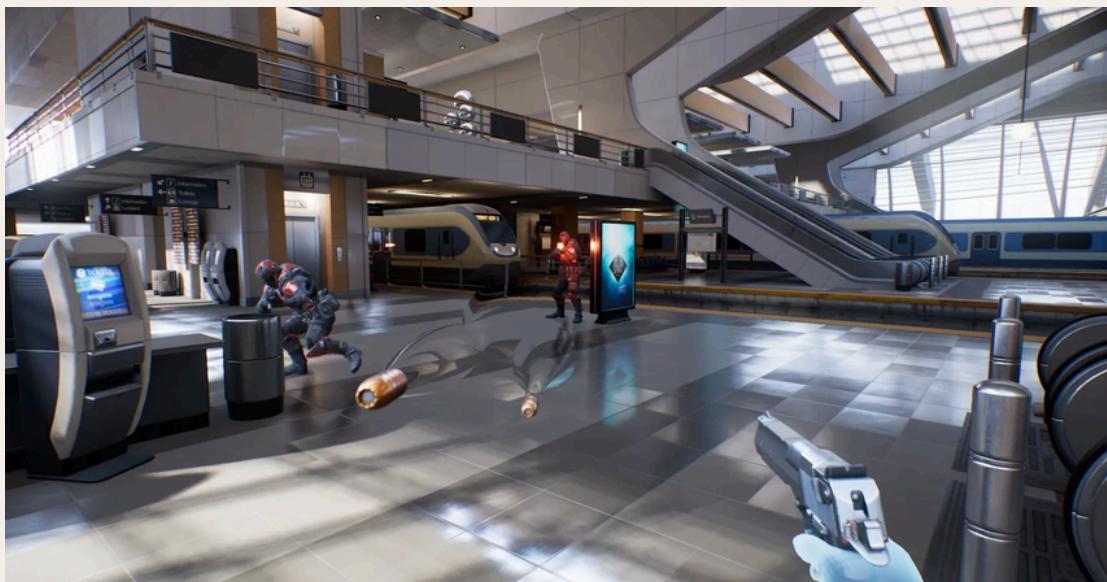
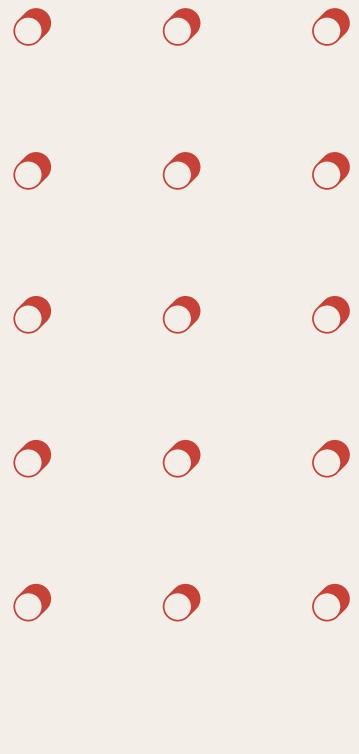


TECHNICAL REQUIREMENTS

SOFTWARE

Comfort and Immersion

- Create a detailed and realistic environment with high-quality visuals, audio and physics that mimic real-world interaction so that it can enhance the sense of immersion during the experience.
- Engage the users with storytelling, a story-driven experience will immerse users in the VR world.
- Interacting with NPCs or other virtual entities that respond realistically to user actions will foster a sense of social presence and immersion to the users.



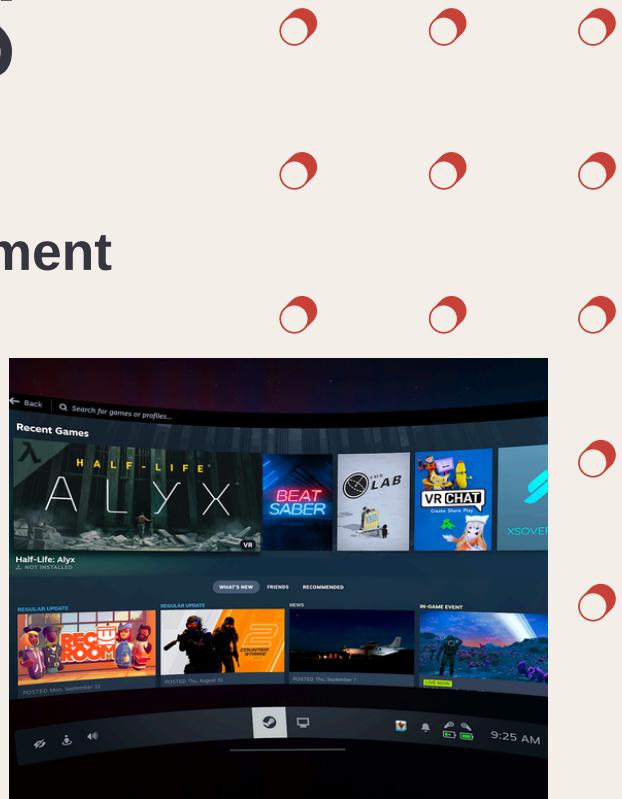
TECHNICAL REQUIREMENTS

SOFTWARE

Game Engines and Development Tools

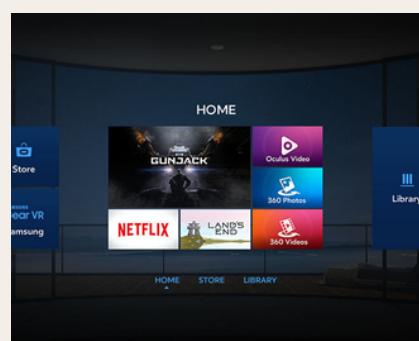
SteamVR

SteamVR is a comprehensive virtual reality platform developed by Valve Corporation, providing tools, APIs, and a wide range of features for both VR users and developers.



UI/UX

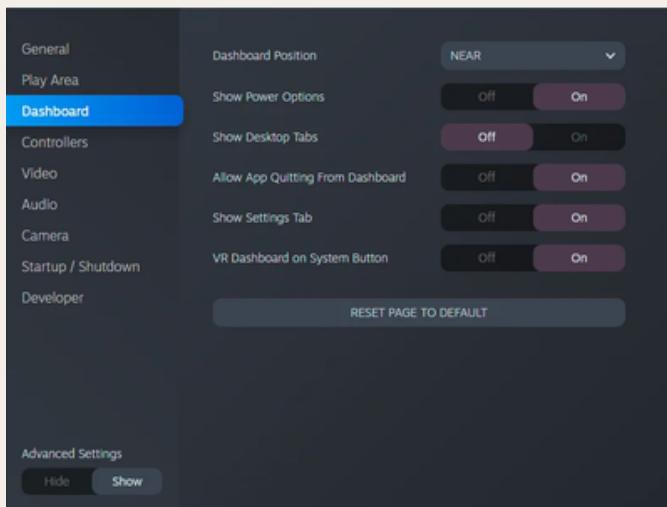
- Provides a dashboard overlay interface accessible in VR, allowing users to access settings, launch games, and access desktop features without leaving the VR environment.
- Users can access settings to customise VR preferences, play area setup, audio settings, controller bindings, and performance options based on their own preferences.



TECHNICAL REQUIREMENTS

SOFTWARE

Game Engines and Development Tools



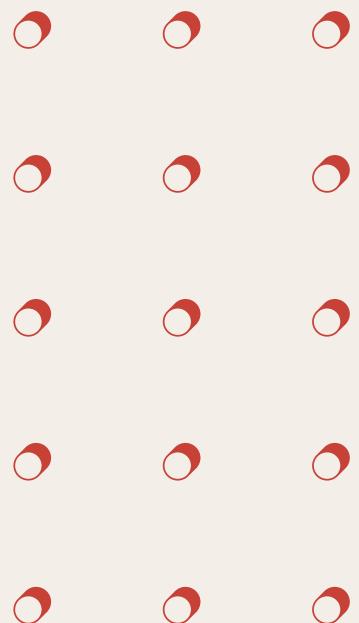
- Supports multiple languages, making the VR experiences accessible to users across different countries and regions
- has flexible accessibility, options for seated gameplay, text readability, and other accessibility features
- SteamVR Home allows users to customise and personalise their virtual space with various environments, objects and decorations
- Users can interact with friends, join multiplayer experiences and hosting virtual gatherings through this feature

TECHNICAL REQUIREMENTS

SOFTWARE

Hardware Support Features

- SteamVR supports variety of VR headsets including HTC Vive, Oculus Rift and etc.
- offers room-scale tracking which enables users to move around physical spaces while being tracked in the virtual environment, enhancing immersion and interaction
- supports various controllers, including HTC Vive controllers, Oculus Touch controllers and etc.



Developer Tools

- Offers APIs for tracking, input handling, rendering, and accessing VR hardware functionalities.
- Allows integration with the Steam platform, offering features for user authentication, content distribution, and multiplayer functionalities.

TECHNICAL REQUIREMENTS

SOFTWARE

Unity 3D VR Integration

Unity3D offers a strong VR integration to enable developers to produce engaging VR experiences on a variety of VR systems



Unity XR SDK

Unity XR SDK (Extended Reality Software Development Kit) provides a unified framework for building VR, AR (Augmented Reality), and MR (Mixed Reality) applications, allowing developers to target multiple XR devices within a single project.

VR Development Tools

VR-Specific Tools: provides dedicated tools for VR development, including visual scene editors, asset importers, and component-based scripting that cater to VR-specific requirements.

VR Camera Rig: built-in camera systems and prefabs for setting up VR camera rigs, ensuring correct rendering and tracking of VR scenes.

Interaction

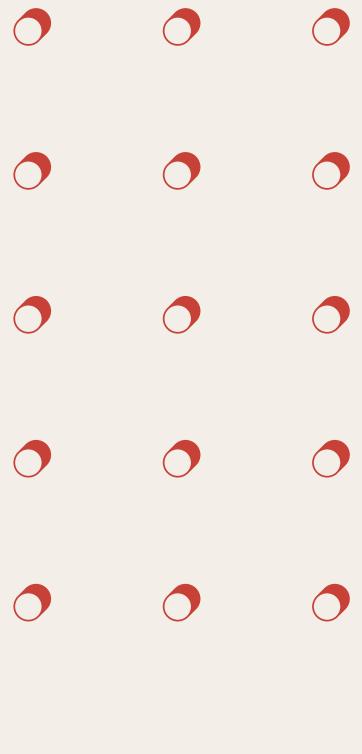
Unity3D offers support for various VR controllers, allowing developers to map and manage controller input for interactions within VR environments. For our assignment, we will be using the Oculus controllers for development.

TECHNICAL REQUIREMENTS

SOFTWARE

Accessibility and Inclusivity

- **Reduce motion sickness:** Include comfort settings, such as adjustable field of view, motion blur reduction, or teleportation mechanics, to mitigate motion sickness for sensitive users. Design elements that minimise the discomfort caused by motion, such as reducing sudden movements, providing fixed reference points and optimising the frame rates.
- **User testing and feedback:** Conduct usability tests with individuals to gather feedbacks and identify areas for improvement in accessibility. Feedback mechanism encourages users to provide feedback to continue to refine and enhance the VR experience.



USER PERSONA

PRISCILLA EDITH CHEW

AEROSPACE ENGINEER



BIO

Priscilla is born in Singapore but raised in Australia, she is very interested in learning the Singapore's culture and wish to be able to have a virtual tour in Singapore to learn more about her country.

MOTIVATION

Financially stable to be able to travel around the world

Wish to be able to live a carefree and balanced lifestyle

”

You must be the change to see the world

FRUSTRATIONS

Unable to travel freely due to financial and time constraint

Don't know much about her own country Singapore

PROFILE

Gender: Female

Age: 20

Country: Australian-Singaporean

PERSONALITY

Loves Travelling



Likes Food



Introverted



SKILLS

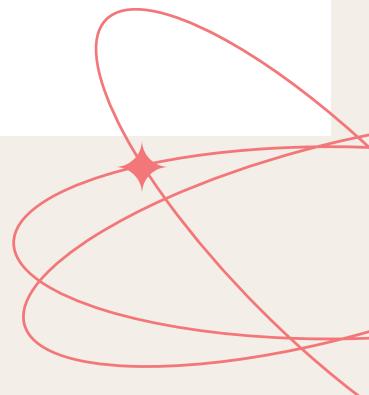
Aerospace Engineering



Problem Solving



We interviewed Priscilla as our user persona as we believe that as a tourist/foreigner to Singapore. Her perspective and experiences will be insightful and useful. She will be the key to understanding our target audience to cater to their needs.



USER JOURNEY

USER JOURNEY MAP

	START	INTERACT	ENGAGE	END
OBJECTIVES	Wanting to know more about Singapore's culture and what to do in Singapore	Interact with the in game interactions	Play with the game in the experience	Enjoyed the experience a lot and learnt more about the country
NEEDS	Start	Instructions / Guide	Time to play	Satisfaction
FEELINGS	Excited	Amazed	Interesting	Convinced
BARRIERS	None	Hesitation, Not sure on what to do	Failed to play / Don't know how to play	Willing to visit Singapore more often

The user journey shows how Pricilla will interact with our app and website. The map represents our users objectives, needs , feeling and challenges users face while using our products.

COMPETITIVE ANALYSIS



COMPETITIVE ANALYSIS

To better understand how the Virtual reality has impacted the tourism industry, We embark on a comprehensive competitive analysis, examining existing experiences such as "One Day in Singapore - VR/360° Guided City Tour," "BRINK Traveler," "National Geographic Explore VR," and "Puzzling Places." This scrutiny is not merely a comparative exercise; it's a strategic imperative to distill insights, identify unique selling propositions, and position our project as a standout in the competitive landscape. As we delve into this analysis, our objective is not just to compete but to draw inspiration from the immersive storytelling narrative in virtual reality tourism.

COMPETITIVE ANALYSIS

ONE DAY IN SINGAPORE - VR/360° GUIDED CITY TOUR



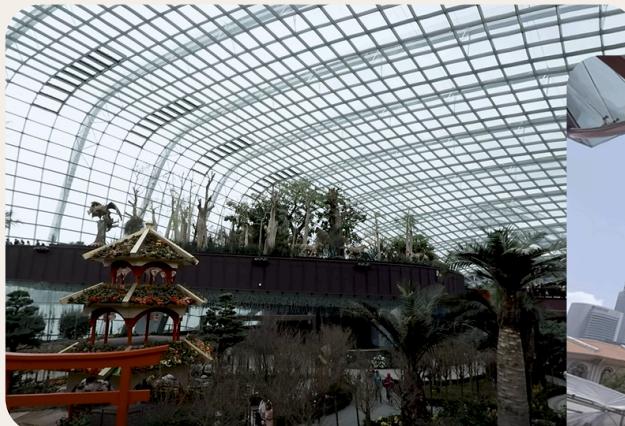
<https://www.youtube.com/watch?v=Hhx-S-BCndE>

This is a video-based virtual reality experience that only allows users to look around 360 degrees. This video experience has a tour guide narration that introduces users to the different places and what can be expected there. This helps users to immerse into the experience as if they are really here in Singapore at all those places introduced which enhances the user experience.

The concept behind this experience is that it brings users on a day trip around Singapore exploring some of the tourist-worthy places. However, not all tourist attraction was covered in this video such as Merlion Park, Universal Studio Singapore, and Singapore Zoo which makes the video a little lacking. The video also does not introduce tourists to how Singapore is a multiracial country as it only displays the Buddha Tooth Relic Temple but does not introduce other religions in Singapore.

COMPETITIVE ANALYSIS

ONE DAY IN SINGAPORE - VR/360° GUIDED CITY TOUR



Despite that, this experience has good pointers that we can learn from and apply to the experience that we are creating. For instance, this experience has an in-game text of the name of the attraction to help the user better capture the name of the location which enhances the accessibility of the experience. In addition, the weather and brightness of the attraction were also taken into account most of the time. Since it is a one-day tour in Singapore, this helps to make the experience more realistic which enhances the virtual experience and helps users to better immerse into it.

Lastly, although the experience is filled with 360 videos, it shows users the exterior and interior of the attraction, this helps users to better immerse themselves into the experience as if they are really there and going into the attraction.

All in all, both the bad and good pointers will be taken into account to help us create a better tourism-based experience.

COMPETITIVE ANALYSIS

BRINK TRAVELER



https://youtu.be/hqpwKhg7SFI?si=zNKXwep2fkik_ffX

BRINK Traveler, a Meta Quest virtual tourism platform, offers an immersive exploration experience. With 44 spots across 28 locations, it boasts fully immersive 3D environments, providing users with a unique journey to iconic natural wonders. Prioritizing user interaction, it features room-scale walkable areas, virtual guides, and multiplayer options.

Its innovative approach allows users to download specific locations, catering to preferences. Beyond entertainment, BRINK Traveler is committed to environmental conservation through its membership in 1% for the Planet. This blend of immersive technology, user-centric features, and sustainability positions BRINK Traveler as a standout in virtual tourism.



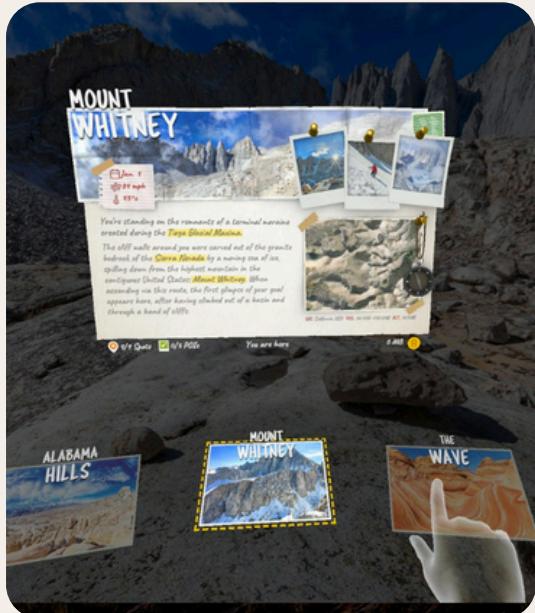
BRINK Traveler on Meta Quest

Travel to some of the world's most amazing natural wonders in fully immersive 3D to feel like you're really there! Step into a postcard with BRINK Traveler and visit some of the most breathtaking places on Earth...

Oculus

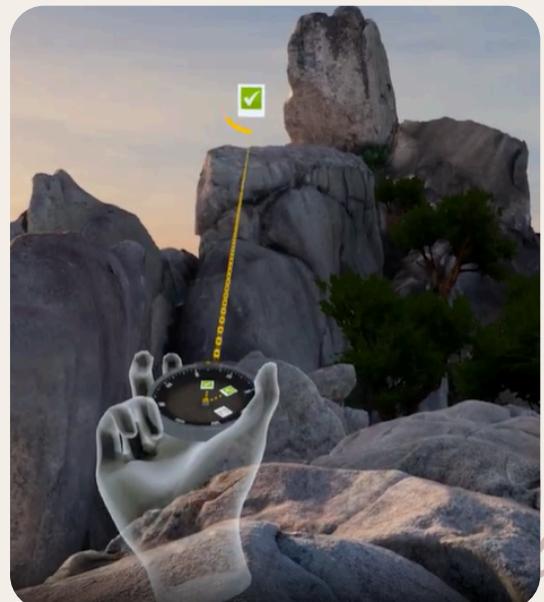
COMPETITIVE ANALYSIS

BRINK TRAVELER



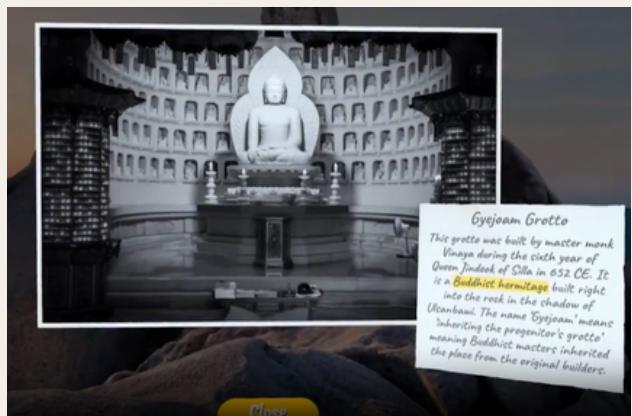
Users will have to select the location that they would like to explore by clicking on the postcard of that location. This experience allows users to travel without the need to go to the place in real life. Once the user has clicked on the postcard, a short introduction about the place will pop up and users can click on the UI button to enter the experience of that location. There is also a Virtual guide & assistant to help users better understand the location.

All of the locations are 3D based which allows users to walk about the location for a few meters as it uses a Room-scale walkable area in each location. This helps users to better visualize and make the experience more realistic and immersive. This experience also has a compass feature that guides users around the space and brings them to points of interest where they can find out more about the place.



COMPETITIVE ANALYSIS

BRINK TRAVELER



An introduction about the point of interest will pop up and once users are done reading they can collect the polaroid of this point of interest to keep it in their scrapbook as a collection.



In addition to collecting Polaroid film, user can also capture pictures of the location to share with their friends or add them to the photo collection.

In conclusion, this experience has interactive features and gamification concepts that help users to better immerse themselves into the experience and explore the different nature attractions around the world. Since we are planning on creating a camera and scrapbook concept for the experience that we are creating, this research has helped us to better visualize how our idea can be implemented.

COMPETITIVE ANALYSIS

NATIONAL GEOGRAPHIC EXPLORE VR



<https://www.youtube.com/watch?v=D1VILv6Db7I>

Similar to the BRINK Traveler, the National Geographic Explore VR is also a meta quest experience that uses realistic 3D models to help users better immerse into the experience. National Geographic Explore VR leverages the prestige of the National Geographic brand, offering realistic exploration of iconic locations like Antarctica and Machu Picchu. The platform integrates interactive learning, photographic storytelling, and educational initiatives, showcasing a multi-faceted approach to virtual tourism.



COMPETITIVE ANALYSIS

NATIONAL GEOGRAPHIC EXPLORE VR



The concept behind this experience is that user will be a National Geographic explorer to discover some of the most iconic places on earth. There are activity that allows user to interact with the environment they are in such as kayaking through the icebergs, climbing ice mountains and experiencing snowstorm while discovering more about the places.

Users will also be able to learn more about the history of places such as Machu Picchu and complete different missions and activities depending on the location they have chosen.

COMPETITIVE ANALYSIS

NATIONAL GEOGRAPHIC EXPLORE VR



Similar to the BRINK Traveler experience, this National Geographic Explore VR experience also has a photo-taking feature that allows users to capture images. The main mission of this experience is to capture photographs for the National Geographic magazine.

However, I personally feel that this experience might be a little dull due to its lack of variety in its location. However, the concept and mission of this game are very interesting and suitable for users, especially fans of National Geographic. This experience will also be taken into account when planning for the virtual experience that we will be creating as it consists of a historic concept which we are also looking into.

COMPETITIVE ANALYSIS

PUZZLING PLACES



https://youtu.be/8Bmhwd_xsLU?si=qBZnSnUs3002ib6P

Similarly, this experience is also made for the Meta Quest headset. However, the unique selling point of this experience is that it is unlike those typical virtual reality environments and experiences. This experience is a 3D jigsaw puzzle game where users have to puzzle together hyper-realistic miniatures of beautiful places from all around the world. This innovative gameplay mechanic provides a distinctive user experience.



The puzzle-solving aspect adds an interactive and challenging layer to the exploration, attracting users who enjoy a more gamified virtual tourism experience.

COMPETITIVE ANALYSIS

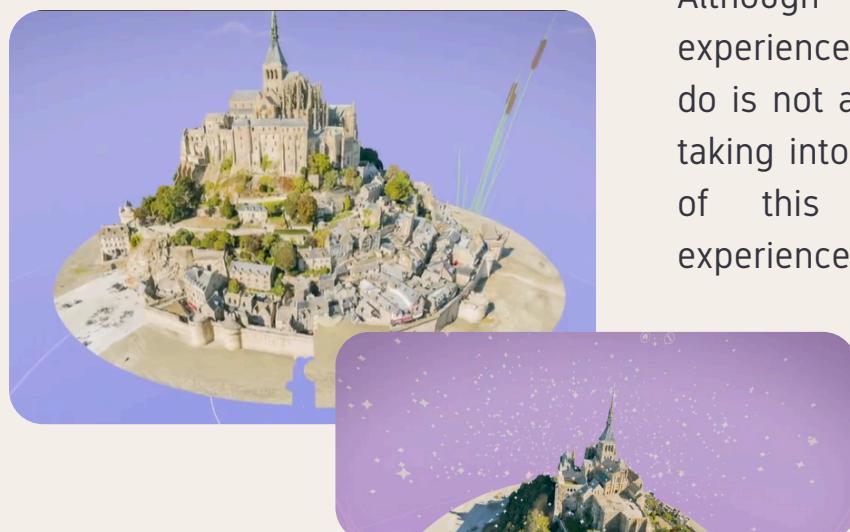
PUZZLING PLACES

There will also be celebration effects to congratulate users when they have completed a puzzle. This helps to ensure the gaming experience and makes the user feel a sense of accomplishment.

The puzzles are also in the form of 3D, which makes it a puzzle-making and model-making experience. This helps users to better visualize the attractions or places that they are creating. Users will obtain a miniature version of the real-world location after they have completed the puzzle.



There are 21 unique puzzles to choose from and each puzzle is available in 25, 50, 100, 200 & 400 pieces. This makes the experience suitable for all ages, skills and patience levels.



Although the virtual reality experience that we are planning to do is not a puzzle game. We will be taking into account the gamification of this experience and the experience it provides users with.

COMPETITIVE ANALYSIS

ANALYSIS SUMMARY

Information about the competitive analysis experiences.

EXPERIENCE	ONE DAY IN SINGAPORE	BRINK TRAVELER	NATIONAL GEOGRAPHIC EXPLORE VR	PUZZLING PLACES
Target Audience	Tourist who will like to find out more about Singapore before coming or tourist who would like to visit Singapore without being here physically	Nature lover and adventurer	Fans of National Geographic or nature lover and adventurer	Puzzle lover or anyone who loves to travel and putting things together
Free or Paid	Free	Paid	Paid	Paid
Interactable	No	Yes	Yes	Yes

The competitor experiences that were chosen are One Day in Singapore, BRINK Traveler, National Geographic Explore VR and Puzzling Places. All these experiences are tourism-related and have features that we are looking into. Thus, they are taken into research to help us better design a user-centered and fun experience. Based on the research found above, shows that all of the experience other than One Day In Singapore is Interactable and free as compared to the other three experience under Meta Quest.

COMPETITIVE ANALYSIS

ANALYSIS SUMMARY

There are 3 different grading - **Poor, Average, Great**

Each application has been graded individually based on the different features that it has and its user experience.

on about the competitive analysis experiences.

FEATURES	ONE DAY IN SINGAPORE	BRINK TRAVELER	NATIONAL GEOGRAPHIC EXPLORE VR	PUZZLING PLACES
Concept	Average	Great	Great	Great
Features available	Poor	Great	Average	Average
Immersive Experience	Average	Great	Great	Great
Gamification	Poor	Great	Great	Great

Based on the table, Brink Traveler is graded the best as compared to the other few experiences. Thus, we will focus more on Brink Traveler while also looking at the great graded experiences to design an immersive and engaging experience.

PHYSICAL VR SETUP



PHSYICAL VR SETUP

RESEARCH

Before we come up with a spatial physical VR setup for our game, we will be conducting a market research on some of the VR set up available in the market to help us better design one for our game that provides users with the best user immersive experience.

Sega's VR Agent

It's a coin-operated VR game without attendants, offering an immersive arcade shooting experience. Players take on the role of an agent sniper, navigating various scenes to eliminate terrorists using a variety of weapons like pistols, shotguns, and machine guns. The VR Agent stands out with its distinctive feature, combining the headset and gun into a single unit.

User Experience

Some user experience pointers from this set up is that the headset will lower down to players level after they have paid for the game. This enhances the user comfort as users wouldn't have to reach for the headset on their own and this also helps to protect the equipment as it would be dangling around when not in use. This setup also uses a sensor net that tracks user's movement, this allows users to move around the area freely which enhances the gaming experiences.



PHSYICAL VR SETUP

RESEARCH

Sega's VR Agent

Design

The configuration supports linking two cabinets for multiplayer engagement, offering users the option to select between two game modes: single-player and multiplayer. Additionally, it features an Air Cannon system to elevate the VR experience. The setup is adorned with complete LED coverage and incorporates two 50-foot vertical screens, enhancing both game visualization and the overall aesthetic appeal of the arrangement.

Conclusion

In conclusion, the Sega VR Agent stands out as a cutting-edge and user-friendly coin-operated VR game that combines innovative design elements, multiplayer capabilities, and immersive features to deliver an exciting and memorable gaming experience for arcade enthusiasts.



PHSYICAL VR SETUP

RESEARCH

SpongeBob SquarePants VR: Dynamic Duo

Similarly, it is also an arcade VR game without attendants, jam-packed with thrilling motion and effects. Players take on the role of SpongeBob and Patrick collaborating to assist Mr. Krabs in his latest delivery venture. As one player navigates through Bikini Bottom by tilting in various directions, the other uses a turret to dispatch Krabby Patties to hungry customers. Enhancing the gameplay by offering dual experience in a single gameplay.

User Experience

Some user experience pointers from this setup is that it is a seated VR game and its seats are covered with leather cushioning which makes it more comfortable for users to seat. The base on the setup has motion effects that moves based on user's movement and the gameplay. This help users to better immersive themselves into the game and thus making the gameplay more enjoyable. In addition, the setup also comes with fans to help user better simulate themselves driving at high speed which enhances the user experience.



PHSYICAL VR SETUP

RESEARCH

SpongeBob SquarePants VR: Dynamic Duo

Design

The entire arrangement is crafted to resemble a car shaped like a boat, a common sight in the cartoon series. Given that the game revolves around navigating the town for deliveries, this design serves to enhance users' immersion in the gameplay. The front panel is adorned with stickers depicting the town's roads, directly tying into the driving aspect of the game. Additionally, the setup includes controllers that users can grasp to stabilize themselves and engage in the gameplay.

Conclusion

In conclusion, the SpongeBob SquarePants VR: Dynamic Duo stands out as an engaging and well-crafted arcade VR game that combines comfort, motion effects, and thematic design to create a unique and enjoyable gaming experience for players of all ages. The collaborative nature of the gameplay adds a social element, making it a standout attraction in the arcade gaming landscape.



PHSYICAL VR SETUP

RESEARCH

VR Super 360 Flight

Similarly, it is also an arcade VR game without attendants, jam-packed with thrilling motion and effects. This setup holds up to 2 players and allows users to play a wide range of games based on their preference such as VR Rapid Dive, VR Dragon Warrior and VR Hyper Storm.

VR Super 360 Flight (User Experience)

The set up includes crossbody and feet seatbelts designed to ensure users remain secure and safe throughout the gameplay. This feature enhances the overall user experience by instilling a sense of safety, allowing users to fully enjoy the gameplay without concerns for their well-being. Additionally, the setup incorporates side-mounted handler controllers beside the seats, providing users with increased control during gameplay and contributing to a more enjoyable experience.



PHSYICAL VR SETUP

RESEARCH

VR Super 360 Flight

Design

The arrangement is illuminated by surrounding lights, giving it a distinct sci-fi appearance. A security fence encircles the seating area, ensuring the safety of players during gameplay. The cockpit is designed in a circular shape, facilitating a 360-degree rotation—circle as it is the most convenient shape for such movement. Additionally, the setup includes a leg compartment and seat belts, enhancing both comfort and safety for the overall experience.

Conclusion

In conclusion, VR Super 360 Flight stands out as an exciting and safety-conscious arcade VR game, offering a variety of immersive games and prioritizing user comfort and security. The combination of motion, effects, and safety features creates an overall package that is sure to captivate and delight arcade enthusiasts seeking an intense and thrilling VR experience.



PHSYICAL VR SETUP

RESEARCH

Measurements

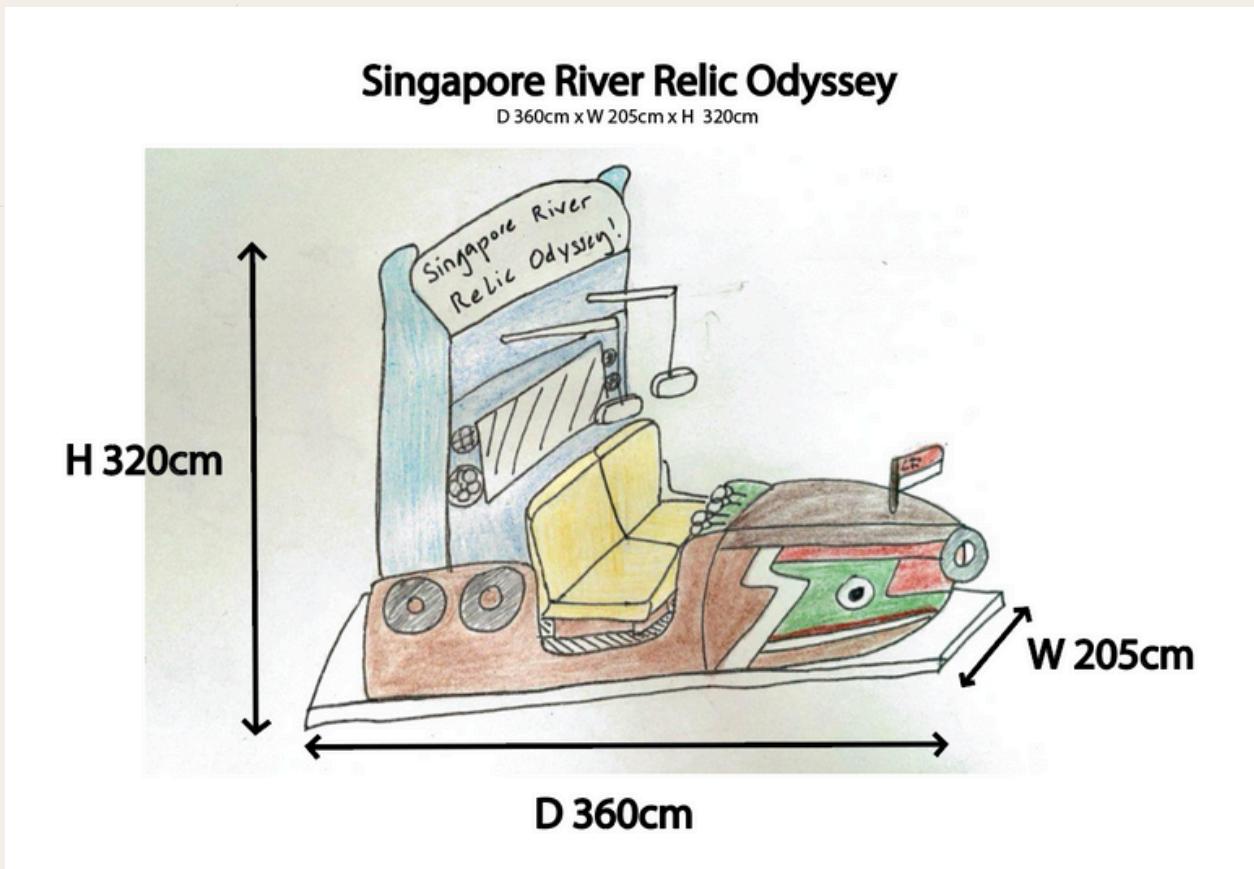
Product name	Product Size	Weight
Sega's VR Agent	D 259.08cm x W 327.66cm x H 236.22cm	420.027 kg
SpongeBob SquarePants VR: Dynamic Duo	D 361cmx W 206cmx H 320cm	624 kg
VR Super 360 Flight	L 315cm x W 262cm x H 270cm	650Kg

The table displays the dimensions of the setup employed in the research. It reveals that the majority of VR products have an average size of L 311cm x W 265cm. Given the nautical theme of our game, its dimensions are expected to closely resemble those of Sega's VR Agent, which serves as the most relevant comparison.

PHSYICAL VR SETUP

OUR SET-UP

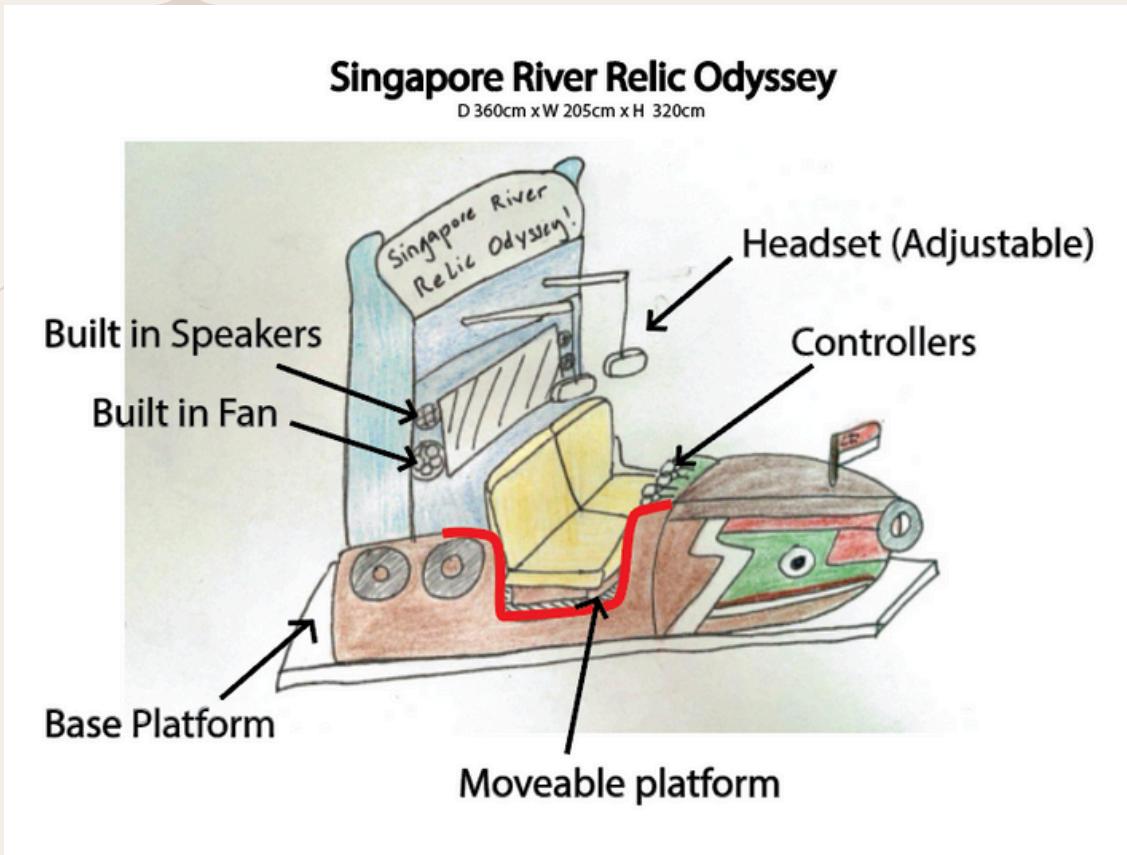
Measurements



After much consideration, this is our finalized physical VR Setup Design. We had made use of the research's findings for our set-up. The dimensions of our setup are D 360cm x W 205cm x H 320cm, closely resembling the SpongeBob SquarePants VR: Dynamic Duo setup utilized in the research. This choice is based on the similarity of our design, both being vehicle-like setups.

PHSYICAL VR SETUP

OUR SET-UP



Features

Taking the research findings into account, here are some of our features:

Adjustable headset

The headset is designed to be movable, positioning it at the top when not in use to prevent it from hanging loosely. When the game commences, the headset will gradually lower to the player's level.

PHSYICAL VR SETUP

OUR SET-UP

Features

Controllers

Similar to the Meta Quest controller to help user play the game.

Built-in Speaker

Enhances player immersion in the gaming experience.

Built-in Fan

Designed to simulate the feeling of riding a boat at the start of the game, offering a more immersive experience for the player.

Moveable Platform

The setup will adjust and move when the player is navigating a boat or trishaw, providing users with a heightened sense of realism in the virtual experience.

Base Platform

This is to help stabilize and keep the set up in place when it is in use.

Smooth edge at the entry point

This is to help player stay in the moveable platform when playing the game and keep player in place. This feature ensures that players are securely positioned and adds to the realism, making them feel as if they are truly in a boat.

All these features help players to better immerse themselves into the experience and enhances the user experiences.



PHSYICAL VR SETUP

OUR SET-UP

Additional Stuff

The set up could be placed at :

- Tourist Attraction
- Arcades
- Moveable around different school

This allows everyone especially tourist to learn more about Singapore's history while playing a game. Whereas, Student will also be able to learn more about Singapore' history while experiencing VR.



FIGMA PROTOTYPE



FIGMA PROTOTYPE

Low-Fidelity

URL to Low-Fidelity Prototype :

<https://www.figma.com/file/h4rkhKak8EV19Ng42CFIDf/zookeepers-low-fed-asg2?type=design&node-id=0-1&mode=design&t=Mn5NiCeGtrq6vTkm-0>

The attached are the screenshots of our prototype :



FIGMA PROTOTYPE

High-Fidelity

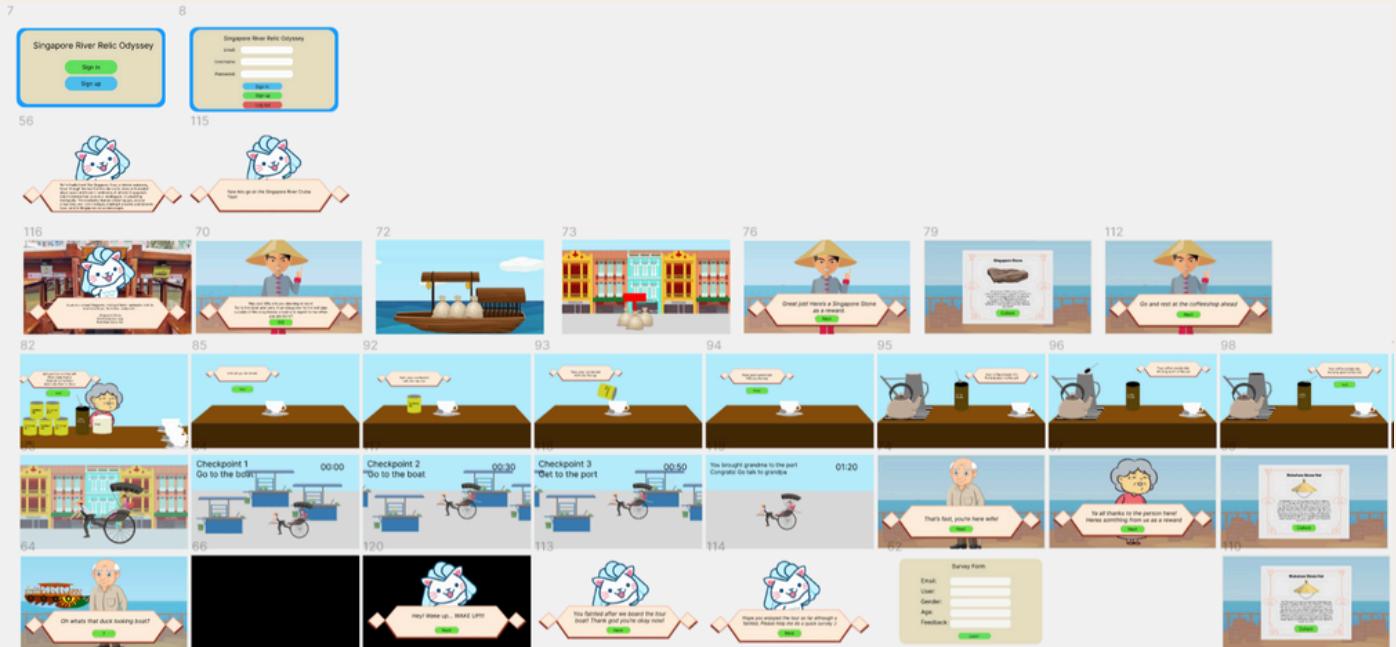
URL to High-Fidelity Prototype :

<https://www.figma.com/file/d1iymtnDlacYpeYDn84Pjo/zookeepers-Hi-Fed-asg-2?type=design&node-id=738-170&mode=design&t=AR476b0F54MXbltf-0>

For the VR EXperience:

<https://app.draftxr.com/vr/zFkeSz>

The attached are the screenshots of our prototype :



SUPPORTING VISUALS



REFERENCE IMAGES

Our group visited the Singapore Museum for inspirations and gather information about the past of Singapore, as well as the modern Singapore



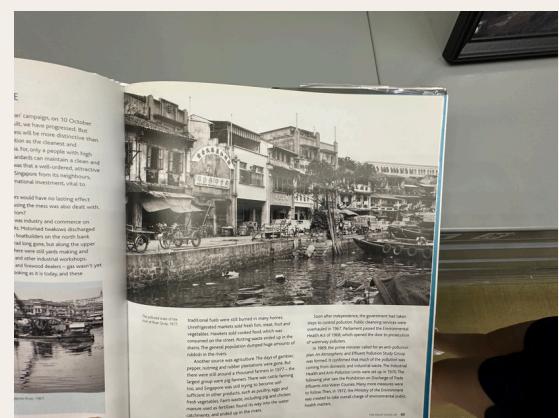
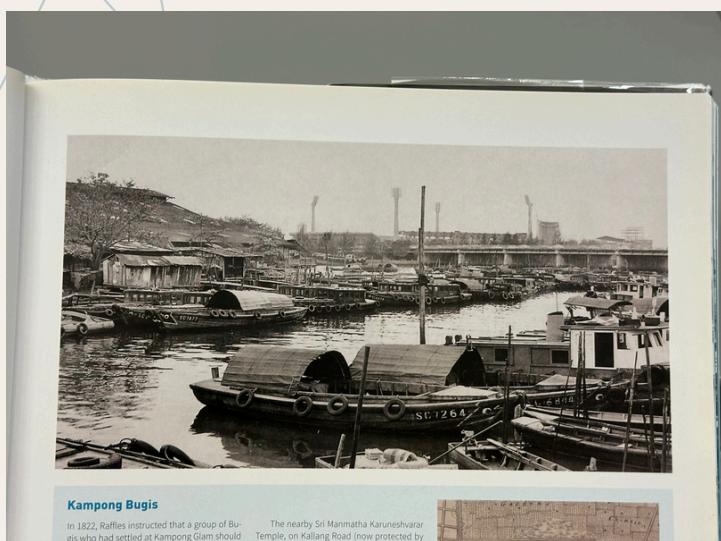
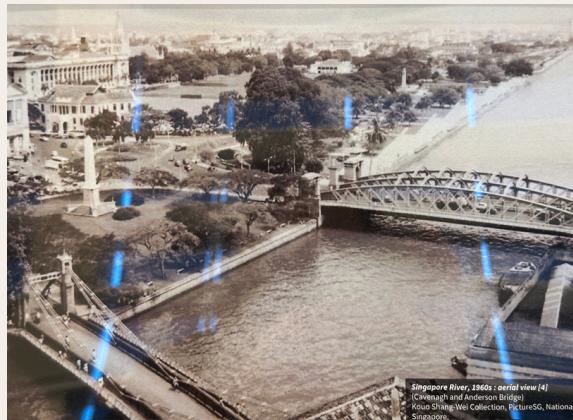
Traditional Coffee Shop



Rickshaw

REFERENCE IMAGES

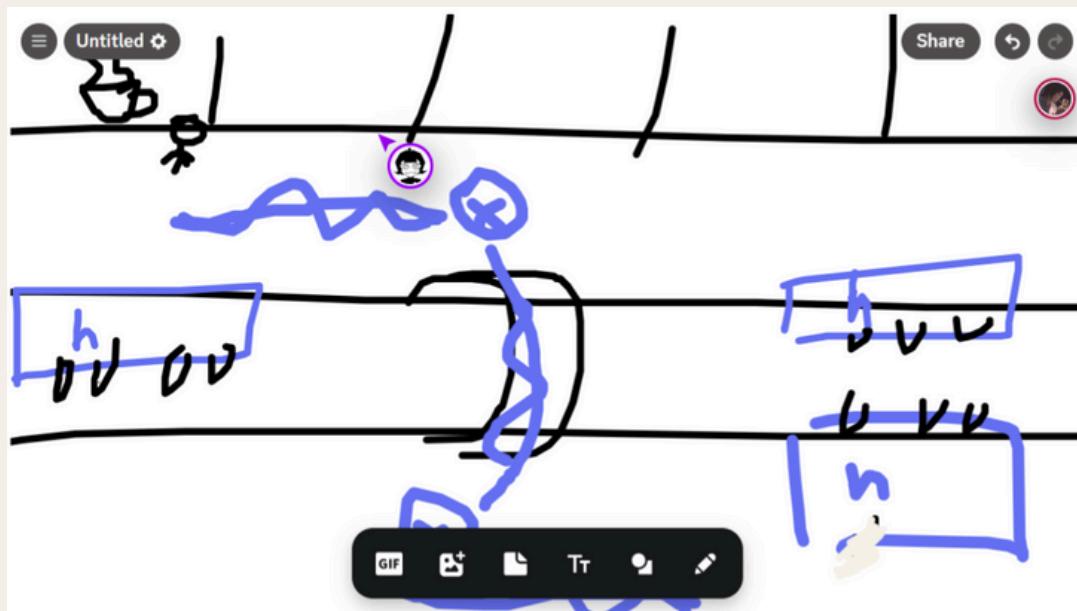
Singapore River



WIREFRAME & SKETCHES



A rough sketch on how our past Singapore River will look like.

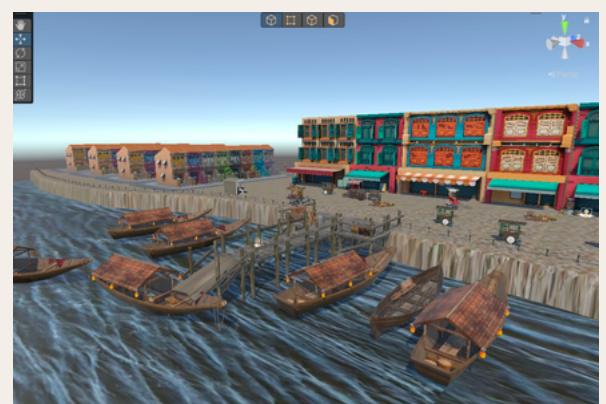
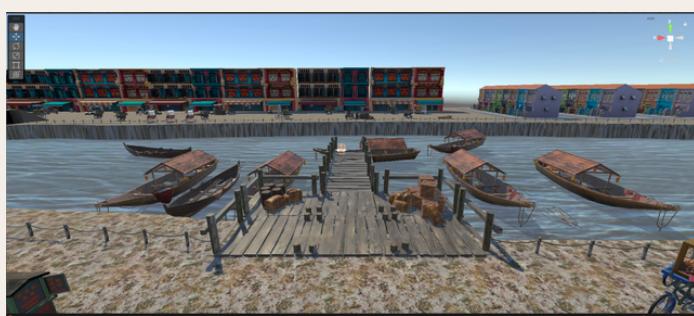
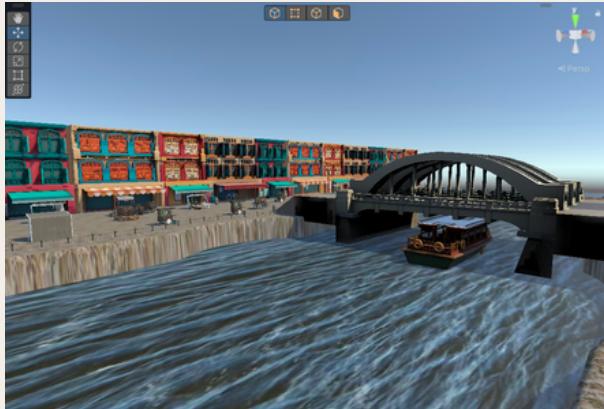


SCREENSHOTS FROM YOUR ITD UNITY PROJECT

Present Scene



Past Scene



REFERENCE LIST

<https://www.youtube.com/watch?v=Hhx-S-BCNdE&feature=youtu.be>

<https://www.youtube.com/@SegaAmusements>

<https://www.meta.com/experiences/3635172946605196/>

<https://www.youtube.com/@wearemajormega>

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<https://www.youtube.com/@wearecreativeworks>

<https://www.meta.com/experiences/3931148300302917/>

<https://www.youtube.com/@MoviePowerVR>

<https://segaarcade.com/games/vr-agent>

<https://thevrcollective.com/product/spongebob-squarepants-vr-dynamic-duo/>

<https://majormega.com/spongebob-vr/>

<https://movie-power.com/product/vr-super-360-flight-simulator/>

Singapore River Images - A River Transformed [Book] &
Singapore Museum