Links : (Ctrl+Click/Right Click)

- Folder
  https://drive.google.com/drive/folders/1hBrbVpZpgRpsan8MEHRI-uXS-P9YqPst?usp=sharing
- Prototype(Figma) - https://www.figma.com/file/UTzza6VUg90z1ElklvN8b0/Final?node-id=0%3A1&t=NzATvgHinD6BACD7-1
- Prototype Report-
  https://drive.google.com/file/d/1RsOAtDP3CnXXz5Zzj4YcxJdpWKUCgrMg/view?usp=sharing
- Video Demonstration (Figma):-
  - General Features:-
    https://drive.google.com/file/d/1BT3aGDATfgXvMUUgXuwO2i9DxDT8gDX9/view?usp=share_link
  - Student/Researchers Prototype:-
    https://drive.google.com/file/d/1tkXx3lJAok91zMfCPPeII1tMQewwn3m5/view?usp=share_link
  - Cultural Enthusiasts & Tourists Prototype:-
    https://drive.google.com/file/d/1twzPs9xZx2qu9Zbu_ADj8gMI816VZLEy/view?usp=share_link
  - Senior Citizens Prototype:-
    https://drive.google.com/file/d/181T827VeOw4rUIJUe5RIPuRXH2bKvibF/view?usp=share_link

- Video Demonstration 2(Unity- Some implementations done high-fidelity wise)
  - Shot 1:
    https://drive.google.com/file/d/1blmMxEe0IxUUDFdaCLlhQQy12KJwEEKV/view?usp=share_link
  - Shot 2:
    https://drive.google.com/file/d/1J3JuQr-6hoyUROzmWlE0NFG2p5HuzHMR/view?usp=share_link

MAJULI
Virtual Tour

VR-Tour Cognitive WalkThrough Report

Jengraimukh Village, Majuli Island

Majuli Island Oil Painting

What is a cognitive walkthrough?

A cognitive walkthrough is a usability inspection method used in user experience design to evaluate the usability of a system or product. It involves a group of evaluators (in this case, these are the designers) who go through a series of tasks in the system, simulating end users. Their thought process is reported as they interact with the system. The evaluators identify potential usability problems or issues that users may face during the interaction and suggest improvements or solutions to those problems.

Cognitive walkthroughs are beneficial because they are a quick evaluation method & provide insights into how users think about the system and whether it meets their needs. They allow designers to evaluate the system from the user's perspective and to identify areas for improvement to make the system more intuitive, efficient, and user-friendly. Cognitive walkthroughs can also be used to evaluate the success of the design changes made to the system by repeating the walkthrough after the changes have been implemented. Overall, cognitive walkthroughs are an effective method for evaluating and improving the usability of a system by using its prototype and can lead to a more satisfying user experience.

Enlarged Map as shown in prototype

Requirements.

1. **A medium-fidelity and vertical prototype**

2. **Evaluator team: Vatsal Gupta, Sweeya Reddy, Pranshu Kandoi, AadarshRaj Sah, Tanveen, Siddharth H. Khincha.**

To perform a cognitive walkthrough, the evaluator assumes the role of the end-user and performs a series of tasks or scenarios that represent typical usage. The evaluator uses a structured set of questions to guide the walkthrough, focusing on the user's goals, expectations, and the actions they would take to achieve those goals. The questions often involve assessing the system's feedback to the user, the ease of learning and

remembering the interface, and the steps required to complete a task.

The approach considers human exploratory learning by recognizing that users learn through exploration, feedback, and experience. By simulating typical usage scenarios and asking structured questions, the cognitive walkthrough method can identify potential usability issues and inform design decisions that can improve the user experience. Steps taken:

1. Starts with a rough idea of the task to be accomplished
2. Explore the interface and select the most appropriate action
3. Monitor interface reactions
4. Determine what action to take next

After the evaluators have given their responses, we would evaluate the successful steps, failed steps, and any suggestions for improving any failed steps and summarise the major results.

Cognitive Walkthrough preparations

1. User population or the target audience:

Senior citizens, students, researchers, cultural enthusiasts, and tourists can use our application. Anyone with sufficient hardware requirements and software requirements to access the application can use it.

2. Representative Use Cases:

a. ***Navigation*****:** This use case is necessary to let users freely navigate the VR tour, getting guided by the map and teleporting to locations.

b. ***Using the calendar (*****cater especially to the need of tourists*****)***: This allows the users to find dates of important events and/or festivals that may happen on the island & the village and plan a visit accordingly.

c. ***Exploring culture*** **(cater especially to the need of cultural enthusiasts):** This helps the user to gather more information about the culture of the location they are present in through videos and interactive gameplay features.

d. ***Gathering information for specific sites*** **(caters especially to the needs of students & researchers):** This helps the user to learn more about the cultural, historical, ecological, and geographical features of the location they are present in.

3. Prototype:

Please find the attached prototype video demonstration link with this document in the assignment submission.

https://www.youtube.com/watch?v=eNImnjuFmts
You can access the prototype made in figma. Press the present button at the top right corner to start the execution of the prototype.
A video demonstration of the same has also been submitted.

Representative tasks and Action Sequences

Task 1 (Navigation & Teleportation)

You found out that the Majuli River Island is culturally diverse. There are some specific cultural hotspots in the tour application; you want to visit some of these and figure out their locations in the modeled village which can then guide you in a real-world scenario.

Interface-level Tasks

1. Estimate your current location with the help of the minimap in the bottom right corner.
2. Click on the minimap and see the enlarged view of the map with certain icons(indicating infobox , gameplay, or geo-location video) and your own cursor position & location.
3. Click on the icon to teleport to the cultural location.
4. Click on confirm jump in the pop-up dialog box to confirm your teleportation.
5. To understand the path you may have to take in a real-world scenario, move to that location by walking instead.

Questions

1. **Was it easy for you to know your own location?**
   Expert_1: Yes, the cursor in the minimap made my location apparent to me; the same in the enlarged map also facilitated me in knowing my location.
   Expert_2: Although I could see my own location through the minimap, the cursor on the minimap could've been bigger, and the cursor could instead be an arrow to let the user know the direction he is facing.
   Expert_3: Yes, the location was easily visible, and the landmarks around me corresponded exactly with the minimap allowing me to navigate easily.

2. **Were you able to see the icons clearly, and was the location easily identifiable to you?**
   Expert_1: Yes, the icons were clearly visible, and I was able to understand their pinpoints quite clearly and the inference of the icons is quite self-explanatory to the previous applications I have used.
   Expert_2: Yes, I could locate the cultural locations quite easily.
   Expert_3: Although I could see the icons clearly, it would be better to know what each icon corresponds to by having a legend to the side, as many 3d games which follow a map strategy do.

3. **Was the access to the teleportation facility apparent & easy?**
   Expert_1: No, there should be an information box placed strategically to capture the person's attention using the map to navigate to the location easily, and there should be visual cues to facilitate the use of this facility; this is especially crucial for senior citizens.
   Expert_2: Yes, clicking on the location you want to navigate to is quite intuitive and can be done quite easily.
   Expert_3: The teleportation facility was provided and explained thoroughly in the tutorial and was hence quite apparent on using the map.

4. **Was the teleportation smooth?**
   Expert_1: Yes, I liked the transition that was given.
   Expert_2: Yes, the confirm location option was quite good for preventing accidental teleports.
   Expert_3: Yes, the teleportation was very smooth.

5. **Was the exit enlarged map feature apparent to you?**
   Expert_1: Yes, the exit map option was placed similarly to other maps in games I have used before.
   Expert_2: Yes, going back to the previous view was easy.
   Expert_3: The exit map feature was very easy to notice; the larger buttons & contrasting schemes given for aged users made it easy to get cues to exit this view.

Task 2

You found out that the Majuli River Island has many festivals and cultural events, and you want to find out their dates so that you can visit the island then. You want to figure out where you can find these dates.
Note: This task caters especially to the need of tourists.

Interface-level Tasks

1. Press the calendar button on the top right corner of the gameplay screen.
2. Explore various festival and event dates highlighted on the calendar grid and select the event date which you want to find out more about.
3. After going through the information provided, click the back button on the bottom to go back to the calendar screen.
4. You can explore more dates, or exit the calendar by clicking on the exit calendar button on the top right corner of the calendar.

Questions

1. **Are you able to locate the calendar button easily?**
   Expert_1: Yes, the calendar button was clearly visible on top of the gameplay screen, and it was easy to locate because of its consistent position, similar to other applications I use.
   Expert_2: The calendar button is easily locatable with the calendar logo. Also the placement of the calendar button is also appropriate.
   Expert_3: Yes, the calendar button was easy to find.

2. **Were you able to find the highlighted date of your choice easily?**
   Expert_1: Yes, the dates were clearly highlighted with blue color.
   Expert_2: Yes, I had no issues with finding the date I wanted, but I suggest a jump month/year feature to be present instead of clicking on the next button every time I want to go to the next month.
   Expert_3: Although the dates are clearly visible, it was difficult to determine which date a particular festival was on. A list with the date and the festival name would be helpful.

3. **Was the information text and back button clearly visible on the information screen?**
   Expert_1: Yes, the back button was clearly visible on the bottom, and the information text was clearly visible because of the dark mode.
   Expert_2: The back button is easily locatable, with the back logo and the text was visible too.
   Expert_3: The back button was easy to find, and I liked that the high contrast setting enabled senior citizens to see the information clearly and that the information was limited. Also, the button was made larger making it easier to use.

4. **Was the exit button on the calendar screen clearly visible?**
   Expert_1: Yes, the exit button was clearly visible on the top right corner of the screen, and it was easy to locate because of its consistent position, similar to other applications I use.
   Expert_2: The exit button is easily locatable, with “Exit” written over it. Also, the placement of the exit button is appropriate.
   Expert_3: Yes, the exit button was easy to find.

Task 3 (Exploring Culture)

You found out that Majuli Island is culturally diverse and wanted to know about the local activities of the village and interact with them. Thus you want to figure out how to access the features available to explore cultural diversity and experience the village in real-time once you have navigated to the location where a video/ gameplay feature is available. You mainly want to be able to play the video and/or access the game.
Note: This task caters especially to the need of cultural enthusiasts.

Interface-level Tasks

1. Click the video /gameplay icon
2. Click the highlighted information logo on the video/gameplay card to hide the information card and to only display the video/gameplay card.
3. Click the information logo on the video/gameplay card to show the information card along with the video/gameplay card.
4. Click the volume icon on the bottom of the information card to listen to the text on the information card (for senior citizens)
5. Click on the video play button to play the video in a pop-up screen. Similarly, click on the game icon to launch the game.
6. Close both the information and the video/gameplay card by clicking the cross button on the top right corner of the card.

Questions

1. **Are you able to locate the video/gameplay icon easily?**
   Expert_1: Yes, the icon on the map was easily locatable and the icons themselves were self-explanatory for a game or a video feature.
   Expert_2: Yes, the icon was easily found.
   Expert_3: Yes, due to the flickering nature of the icon, there were sufficient visual cues to draw attention to it.

2. **Were there sufficient controls on the video and was it easily accessible?**
   Expert_1: Yes the video was quite apt in capturing the overview of the culture and was accessed and controlled as per requirement easily.
   Expert_2: Yes. I could access the video easily. However, there can be some additional features provided for the video like attaching subtitles for some videos where there is a voice.
   Expert_3: Yes, it was quite similar to other video-playing apps I have seen before making the experience easy-going.

3. **Was the gameplay feature accessible easily?**
   Expert_1: Yes, I just had to click on the card after clicking on the icon this was quite intuitive.
   Expert_2: No, it would've been better to have some visual cues to access the game more easily and to have to go through a lesser number of screens to launch the game.
   Expert_3: Yes, the gameplay feature was easily accessible also I liked the fact that confirmation was asked before entering the game mode to prevent launching it accidentally.

4. **Was the transition to access the video smooth and easy to exit?**
   Expert_1: Yes the video faded in and it was easy to find the back button in the top corner.
   Expert_2: The transition was smooth and I liked that the back button was made larger for senior citizens.
   Expert_3: No, it would've been better to have ways to directly exit the video like clicking outside it.

Task 4

You want to learn more about the cultural, historical, ecological, and geographical features of the location you are present in. You are trying to find out how you can acquire this information once you have navigated to the necessary location.
Note: This task would cater especially to the need for researchers and students

Interface-level Tasks

1. Click the P.O.I. (Point Of Interest) icon to read more about the object on which the circle is.
2. Click the highlighted information logo on the image card to hide the information card and to only display the image card.
3. Click the information logo on the image card to show the information card along with the image card.
4. Click the volume icon on the bottom of the information card to listen to the text on the information card (for senior citizens)
5. Close both the information and the image card by clicking the cross button on the top right corner of the image card.

Questions

1. **Are you able to locate the information icon easily?**
   Expert_1: Yes, the P.O.I. icon was easily locatable, but it did not mention that this icon was used for providing information. It would've been better to have the text "Information" near the logo.
   Expert_2: Yes, the P.O.I. icon was readily found, and I liked the usage of bright yellow and white colors, which helped me to identify it easily.
   Expert_3: Yes, due to the moving P.O.I. icon, it was easy to find.

2. **Are the hide and unhide information card features easily visible?**
   Expert_1: No. Due to its small size, I could not find it; I assumed it to be a non-clickable logo. It would've been better to have the text "Hide Info" or "Show Info" along with the logo.
   Expert_2: Yes. Locating this was not a problem. However, this might not be as easy for people who have not been instructed, as its position is not intuitive.
   Expert_3: Yes, the hide and unhide information card features are easily visible with the info button.

3. **Was the listen-to information feature easily accessible?(For senior citizens)**
   Expert_1: Yes, the sound icon was clearly visible on the bottom of the information card, but due to its small size, it was difficult to find. A button with "Listen To" written on it would be easier to locate and would give a better understanding of its functionality.
   Expert_2: The listen-to information is easily locatable with the sound logo, but it can be confused with the volume increase/decrease symbol with the bar on the right side indicating the volume.
   Expert_3: Yes, the sound button was easy to find.

4. **Was the information given easy to read?**
   Expert_1: Yes, the information text was clearly visible, especially because of the dark mode.
   Expert_2: The information provided was easy to read, and I liked that the high contrast setting enabled senior citizens to see the information clearly.
   Expert_3: Yes, the information provided was easy to read and comprehend, and the listen-to feature enabled disabled and old people to listen to the text. I could do other work simultaneously while listening to the information audio.

5. **Was the exit button on the top right corner of the image card easily visible?**
   Expert_1: Yes, the exit button was clearly visible on the top right corner of the image card, and it was easy to locate because of its consistent position, similar to other applications I use.
   Expert_2: The exit button is easily locatable, with a cross icon. Also, the placement of the exit button is appropriate.
   Expert_3: Yes, the exit button was easy to find.

Heuristic Evaluation

For this report there were three heuristic lists to choose from. The Lund, Shneiderman and Nielsen lists. Of these three lists, the Nielsen Heuristic List seemed the most appropriate for analysing tasks run on form sections of the website. The Nielsen list can be viewed below.

1. **Visibility of system status:** The system should always keep users informed about what is going on, through appropriate feedback within a reasonable time.

2. **Match between system and the real world:** The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

3. **User control and freedom:** Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

4. **Consistency and standards:** Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

5. **Error prevention:** Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

6. **Recognition rather than recall:** Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

7. **Flexibility and efficiency of use:** Accelerators—unseen by the novice user—may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

8. **Aesthetic and minimalist design:** Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

9. **Help users recognize, diagnose, and recover from errors:** Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

10. **Help and documentation:** Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such 4 information

should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

For the previous tasks, we went through some of these heuristics and gave a severity rating and an ease of fix rating. The details of this aren't given in the report though a broad evaluation has been conducted.

Severity rating

- **S0 Violates a heuristic** but doesn't seem to be a usability problem.
- **S1 Superficial usability problem** as itmay be easily overcome by the user or occurs extremely infrequently. Does not need to be fixed in the next iteration unless extra time is available.
- **S2 Minor usability problem** as it may occur more frequently or be more difficult to overcome. Fixing this should be given low priority for the next iteration
- **S3 Major usability problem** as it occurs frequently and persistently or users may be unable or unaware of how to fix the problem. Important to fix by the next iteration, so should be given high priority.
- **S4 Usability catastrophe** as it seriously impairs use of product and cannot be overcome by users. Imperative to fix this by the next iteration before the product can be released.

Ease of Fix Rating

- **E0 Problem would be extremely easy to fix.** Could be completed by one team member before the next iteration.
- **E1 Problem would be easy to fix.** Involves specific interface elements and the solution is clear.
- **E2 Problem would require some effort to fix.** Involves the implementation of changes to multiple aspects of the interface before the next iteration.
- **E3 Usability problem would be difficult to fix.** Requires concentrated development effort to finish before the next iteration, which involves the implementation of changes to multiple aspects of the interface. The solution may not be immediately obvious and/or may be disputed.

We found no usability catastrophe(S4) and found our prototype to be of good use.

User Feedback & Analysis

The feedback received by the experts was very useful. A lot of usability issues were discovered and shall be rectified in the final product. A summary of these issues follows.

The experts generally found the minimap and enlarged map view easy to use and understand, with clear location and icon visibility. The teleportation feature was generally smooth and intuitive, with experts appreciating the confirm location option. Experts found the calendar button easy to locate, with clear highlighting of event dates.
It was a good suggestion that the cursor on the minimap could be improved with an arrow to indicate the user's facing direction. The suggestion that there could be more visual cues to facilitate the use of the teleportation facility, especially for senior citizens was also appreciated. We can also include a legend for the icons on the map and a list of festival names and dates in the calendar could be helpful. The next prototype can also involve the inclusion of a jump month/year feature in the calendar view.
Overall, the experts seemed to have a positive experience with the application, with most issues being minor improvements that could enhance usability.

Tabulating

No.	Task	Issue	Recommendation
1	Indicating teleportation	A new user may not know that the teleportation feature is available if they haven't seen the tutorial	Attach an info box to the bottom of the map indicating that teleportation can be done by simply clicking on the location
2	Showing direction	The user doesn't know which direction he is facing towards	A directed arrow  cursor can be included in the map instead of the currently used circle 
3	Indicating event dates	The user needs to go through each highlighted date to find a festival	A list can be provided next to the calendar listing the date for each festival
4	Indicating feature corresponding to a cultural hotspot	The user may not know that an icon corresponds to like  means handicrafts (scarf)	A legend needs to be created next to the map explaining each icon's locational-feature, preventing the need to teleport first.
5	Date Jump	The user can not jump to a date directly	An additional option to jump to a specific date can be provided in the calendar.

A full report justifying the prototype implementation has been done. Kindly find the necessary document in the link.

THANK YOU

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