

PROTOTYPE AND EVALUATION

VIRTUAL REALITY TOUR OF MAJULI ISLAND ASSAM

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1 Prototype

We have created a **Medium Fidelity** and **Vertical prototype** to express our design of the virtual tour of Majuli island.

We have built the prototype using figma tool for frequent use cases of the system.

Those use cases/functionalities of the system are the following:

1. Account Login and Sign up(create an account).
2. Selection of user class.
3. For each user class, the following functionalities are:-
 1. Navigation.
 2. Teleportation through the world in miniature map.
 3. Description of locations and interesting pop-up facts.
 4. Ability to watch ritual videos.

We have made a demonstration video of the prototype for each user class.

Link to the Figma prototype:

<https://www.figma.com/file/TDfjG4FAhBVzg9rn5m5BbC/Majuli?node-id=0%3A1&t=4hsvj8Dp3p1Npa6C-1>

Link to the Video demonstration of the prototype for user class 1 (TOURIST):

<https://drive.google.com/file/d/1uVV65a8HhdTDIcshx6gXt3WIITQwMnCK/view?usp=sharing>

Link to the Video demonstration of the prototype for user class 2 (STUDENT):

<https://drive.google.com/file/d/1VaQ8b-s5ijq51KGBNT2SmDxfy-Wslvi/view?usp=sharing>

Link to the Video demonstration of the prototype for user class 3 (PILGRIM):

<https://drive.google.com/file/d/11QGya4hm1FcFvcuun7a-680s4IGQU7hQ/view?usp=sharing>

2 Evaluation

This report contains results from an evaluation performed using the **Cognitive Walkthrough method**. We used this method to evaluate the usability of the system by assigning tasks to our evaluation team.

2.1 Introduction

We inspected the usability of the system using the **Cognitive Walkthrough method** which is a type of expert evaluation. It is a **usability inspection method** in which tasks are given to the evaluation team members who walk through each step of a task flow and answer a set of prescribed questions. The questions include matching the system to the target user's mental model, visibility, and ease of learnability.

2.2 Methodology (Evaluation Process)

1. What is the cognitive walkthrough?

It is a task-based Usability Inspection method that involves an evaluation team walking through assigned tasks and answering a set of questions.

2. What is the purpose of the cognitive walkthrough?

The purpose of the cognitive walkthrough method is to identify usability issues of the system. The focus is on the user's ease and ability to learn and understand the system as a laymen user.

3. Steps that we completed for the cognitive walkthrough:

- A. We identified and defined the users who are most likely to use the application.
- B. We studied the most important task for each user class.
- C. We organized all the major tasks and noted the steps needed to accomplish all of these tasks.
- D. We walked through each task and answered the four questions outlined by WHarton's cognitive walkthrough paper.

2.3 Preparatory (Understanding the user and what is his/her most important task)

2.3.1 Target User

The target users of this system are assumed to be novice/intermittent users or infrequent users who are interested in exploring. A user can belong to one of these user classes: a student(learner), a tourist or a pilgrim.

2.3.2 Scenario

1. A student uses this system to learn more about the Majuli island and its culture.
2. A tourist uses this system to visit various places in Kamalabari Satra.
3. A pilgrim uses this system to visit and watch the various festivals and rituals of the temple.

2.3.3 Core Tasks

1. Navigation (moving about the premises of the temple).
2. Teleportation using a world in miniature map.
3. Gaining more information about the island's culture and heritage.

2.3.4 Importance of these tasks

1. Navigation and teleportation is important to gain an immersive virtual perspective of the application.
2. The ability to gain historical/cultural knowledge about the places is very important to a student/tourist.
3. The ability to view the rituals and festivals makes the overall system very immersive.

2.3.5 The evaluator will then answer the following four questions during each sequence of the assigned task

1. Will the user try to achieve the desired effect?
2. Will the user notice that the correct action is available?
3. Will the user associate the correct action with the effect that he/she is trying to achieve?
4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

2.4 Individual Steps

2.4.1 Task 1

Navigation (moving about the premises of the temple).

1. User uses the arrows(in the UI) to move forward and backward.
2. User uses the arrows on the left and right sides of the scene to rotate.

2.4.2 Task 2

Teleportation using a world in miniature map.

1. User clicks on the minimap button.
2. User can see his location in the mini-map.
3. User clicks the place, where he wants to teleport to.

2.4.3 Task 3

Gaining more information about the island's culture and heritage.

1. User will click on the 'GUIDE' button, then the menu will pop up.
2. User will select an option about what he/she wants to know.
3. User can close the description box using the close button.

2.5 Analysis

2.5.1 Task 1

Navigation (moving about the premises of the temple).

Step 1:

User uses the arrows(in the UI) to move forward and backward.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the desired effect?

Yes, the user will try to find the buttons to move forward/backward.

2. Will the user notice that the correct action is available?

Yes, mostly every game uses the arrows to go forward/backward, so the user will definitely notice that the correct action is available.

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, the user will be able to go forward/backward by pressing the arrows.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, there will be change in the position of the user because of the change in perspective.

Step 2:

User uses the arrows on the left and right sides of the scene to rotate.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the right effect?

Yes, the user will attempt to find the left/right buttons in order to change the directions.

2. Will the user notice that the correct action is available?

Yes, because most of the children are exposed to left and right buttons, to move in the respective directions

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, because there are no other buttons to move the directions.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, there will be a change in perspective after continuously pressing the buttons.

2.5.2 Task 2

Teleportation using a world in miniature map.

Step 1:

User clicks on the “minimap” button.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the right effect?

Yes, since the button is named “mini-map”, the user will get an idea what it is used for.

2. Will the user notice that the correct action is available?

Yes, since there are no other options related to mini-map, the user will end up using the correct button.

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, the user would get the mini-map of the island.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, a mini-map would pop-up on the screen.

Step 2:

User can see his/her location in the mini-map.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the right effect?

Yes, since the user location is marked red, it would be hard not to notice.

2. Will the user notice that the correct action is available?

Yes, the actions of the user are updated simultaneously in the minimap and the scene.

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, the user would get his position in the map.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, the user location is updated in real-time.

Step 3:

User selects the place, where he wants to teleport to.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the right effect?

Yes, the landmarks will get highlighted whenever the mouse pointer goes near. The user will try to click on the locations.

2. Will the user notice that the correct action is available?

Yes, the landmarks are clickable.

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, upon clicking the landmark, the user will get teleported to the desired location.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, upon selecting the landmark, there will be a change in the user's position.

2.5.3 Task 3

Gaining more information about the island's culture and heritage.

Step 1:

User will click on the guide button and a menu will pop up.

There were no main issues found with this step. Everything checked out clear and free.

Answers to questions:

1. Will the user try to achieve the desired effect?

Yes the user can easily see the guide icon and will click it in order to get more information about places.

2. Will the user notice that the correct action is available?

Yes, the button is properly labeled and easily visible on the right side of the screen.

3. Will the user associate the correct action with the effect that he/she is trying to achieve?

Yes, the user will associate correct action with the effect.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

The user will see a menu pop up and hence will be able to see the progress.

Step 2:

User will select the desired option and a sub menu/appropriate action will be performed.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the desired effect?

Yes, the user will try to select the options available on the menu to know about the island.

2. Will the user notice that the correct option is available?

Yes, the option is easily visible in the center of the screen.

3. Will the user associate the correct option with the effect that they are trying to achieve?

Yes, the labels of the menu options are easy to understand and hence users will be able to associate the correct option with the desired effect.

4. If the correct action is performed, will the user see that progress is being made toward a solution of his/her task?

Yes, another pop up menu / appropriate results will appear that will inform the user about the progress being made.

Step 3:

Users can close the description box using the close button.

There were no main issues found with this step. Everything checked out clear and free.

Answer to questions:

1. Will the user try to achieve the desired effect?

Yes, the user will eventually need to close the description and hence will try to close it to return to the scene.

2. Will the user notice that the correct option is available?

The close button is located at the top right corner which is the usual location for such a button, which will make it easier for the user to notice it.

3. Will the user associate the correct option with the effect that they are trying to achieve?

Yes, since the icon used for the close button is commonly used for that purpose users will be easily able to associate the correct option with the desired effect.

4. If the correct action is performed, will the user see that progress is being made towards the solution of his/her task?

Yes, the description box will disappear, and the user will return to the original scene. And hence the task is completed.

2.6 Representative Use cases

We chose 3 representative use cases: navigation (moving about the premises of the temple), teleportation using the world in miniature map and gaining more information about the island's culture and heritage, as they are the most frequent use cases of our system.

2.6.1 Reason for choosing “navigation (moving about the premises of the temple)” function:

Our VR tour system is focussed on providing an immersive and interactive experience to our users, thus choosing navigation as one of the most frequent use

cases seems an obvious choice. Allowing the users to have navigation control throughout the VR tour gives them the sense of control over the system, hence choosing navigation as one of the frequent use cases is ensuring usability.

2.6.2 Reason for choosing “teleportation using the world in miniature map”:

This function allows the user to know about his/her current location and teleport to a desired location using the world-in-miniature map, it lets the user move to another location quickly and efficiently. Hence, choosing this function as one of the representative use cases ensures usability and provides an immersive experience for the user.

2.6.3 Reason for choosing “gaining more information about the island's culture and heritage”:

Since we have different user classes with different interests, we have this function to allow them to gain knowledge about the places on the island and its culture for their best interests. The student would love to know about the creation of this island and how some significant movements like Neo-Vaishnava Bhakti happened. The tourist would want to know more about the attractive places, culture and the arts of the Majuli island. The pilgrim would love to know about the culture, rituals and gain knowledge through a good and immersive experience. This function ensures the goals of the user. Hence, we chose this function as another representative use case.