SOFTWARE REQUIREMENTS SPECIFICATION

for

Tour of Jangraimukh Tribal Village and Overview of Majuli River Island

Version 1.0
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Revision History

S. No.	Date	Reason for change	Version
1	05/02/2023	Original	1.0

1. Introduction

1.1. Purpose

The purpose of this document is to give a detailed description of the requirements for the virtual tour of Jangraimukh tribal village and for the overview of Majuli river island. It will illustrate the purpose and complete description for the development of the system along with the system constraints. This document focuses on all functional, non-functional requirements of the project. This document is a reference for developing the first version of the system for the development team.

1.2. Document Conventions

RAT	Rational
DEP	Dependency
Desc	Description

1.3. Project Scope

This software is meant for the people who want to explore the cultural activities of the tribal villages using virtual reality and also for those who are unable to visit the place physically but want to explore the places. This software shall also allow the users to explore the village life and cultural activities of the tribal village of the island using virtual reality and to protect its heritage.

2. Overall Description

2.1. Product Perspective

The software will be a virtual tour of the Majuli river island explicitly focusing on the tribal village. The main objective is to preserve the cultural heritage of the island from extinction. The user will be allowed to roam seamlessly around the island in the virtual environment and will get a brief history about different places of the island and be able to access multimedia demonstrating the culture of the island.

2.2. Product Functions

The product uses Google cardboard on Android to provide the user with a virtual tour of the Majuli island so that he can enjoy its cultural heritage without visiting the place physically. The user can complete the tour & watch videos at their own pace. They can also change the theme to light or dark theme depending on their own preference.

2.3. User Class and Characteristics

The targeted user group is virtual tourists. The tourists use virtual environment to explore the heritage sites and the cultural life of the tribal villages and the island.

2.4. Design and Implementation Constraints

The software should take less hardware resources and should be compatible with mobile devices.

2.5. Assumptions and Dependencies

One assumption about the product is that it will always be used on mobile phones that have enough performance. If the phone does not have enough hardware resources available for the application, for example the users might have allocated them to other applications, there may be scenarios where the application does not work as intended or even at all. It is suggested to use the software on high performance mobile devices to ensure the smoothness and continuity in the virtual tour.

3. External Interface Requirements

3.1. User Interface

The system shall provide a very intuitive and simple interface to the user so that the user can easily navigate through the island smoothly. The UI is more focused on being organized, work-oriented and user-centred.

3.2. Hardware Interfaces

The users should have all the necessary devices like VR headset and compatible mobile devices with enough specification to handle the task at hand. Also, the devices should have high performance and space to be able to run the software as a background ‘Daemon’ service.

3.3. Software Interfaces

The feedback collected from the users based on their experience of virtual tour through ratings has to be stored and analysed to improve user experience. It include Google Cardboard and Bluetooth/Wi-Fi technology to connect to VR headset.

4. Usability Requirements

4.1. Contextual Inquiry

User Group:

User groups for performing contextual inquiry are:

1. People who user VR headset to explore cultural places.
2. People who explore cultural places physically

Method of Conducting:

Users are observed while they are exploring virtual places in both active and passive mode. And based on some queries asked and closely observing, the following observations are made.

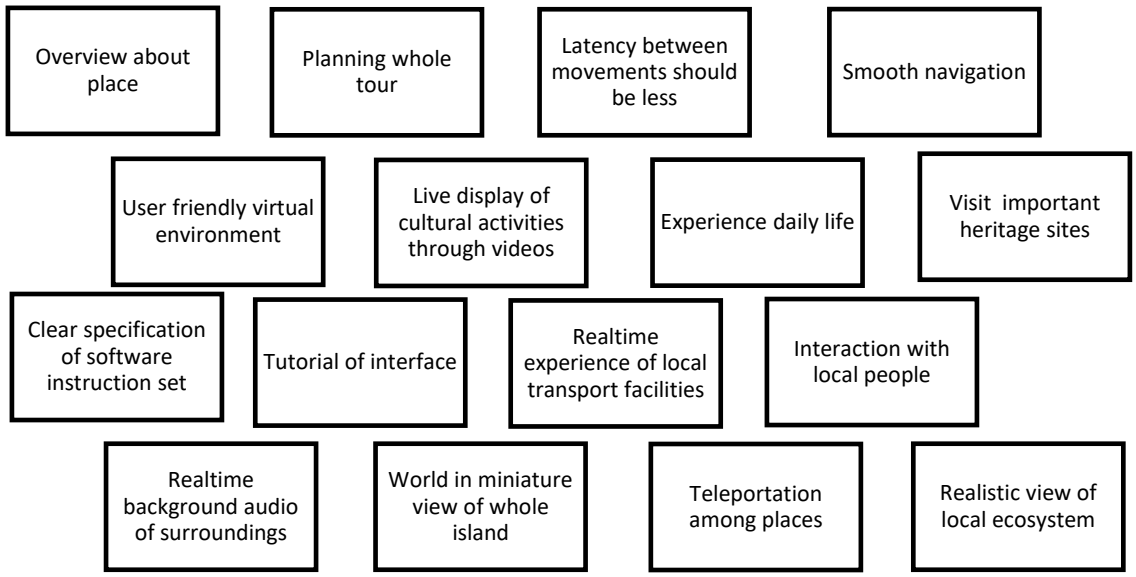
4.2. Observations from Contextual Inquiry:

1. Needed some overview/brief introductions about the place
2. Planning of the whole tour systematically
3. Delay/latency between movements should be less
4. Smooth navigation through the application should be provided
5. Better user-friendly interactions are expected
6. Live performance of cultural activities is expected instead of manual description
7. Expected to experience daily life also instead of only tourist places or famous destinations
8. Clear specifications of the instruction set to use the software
9. Overview or a tutorial of the interface should be provided
10. Users should be able to get a real-time experience of local transport facilities present there
11. Try to create models for different activities to give a more realistic essence to the user
12. Interaction with local people
13. Real-time audio should be present
14. World in miniature view of whole island is preferred
15. Teleportation among places is used
16. Realistic view of local ecosystem

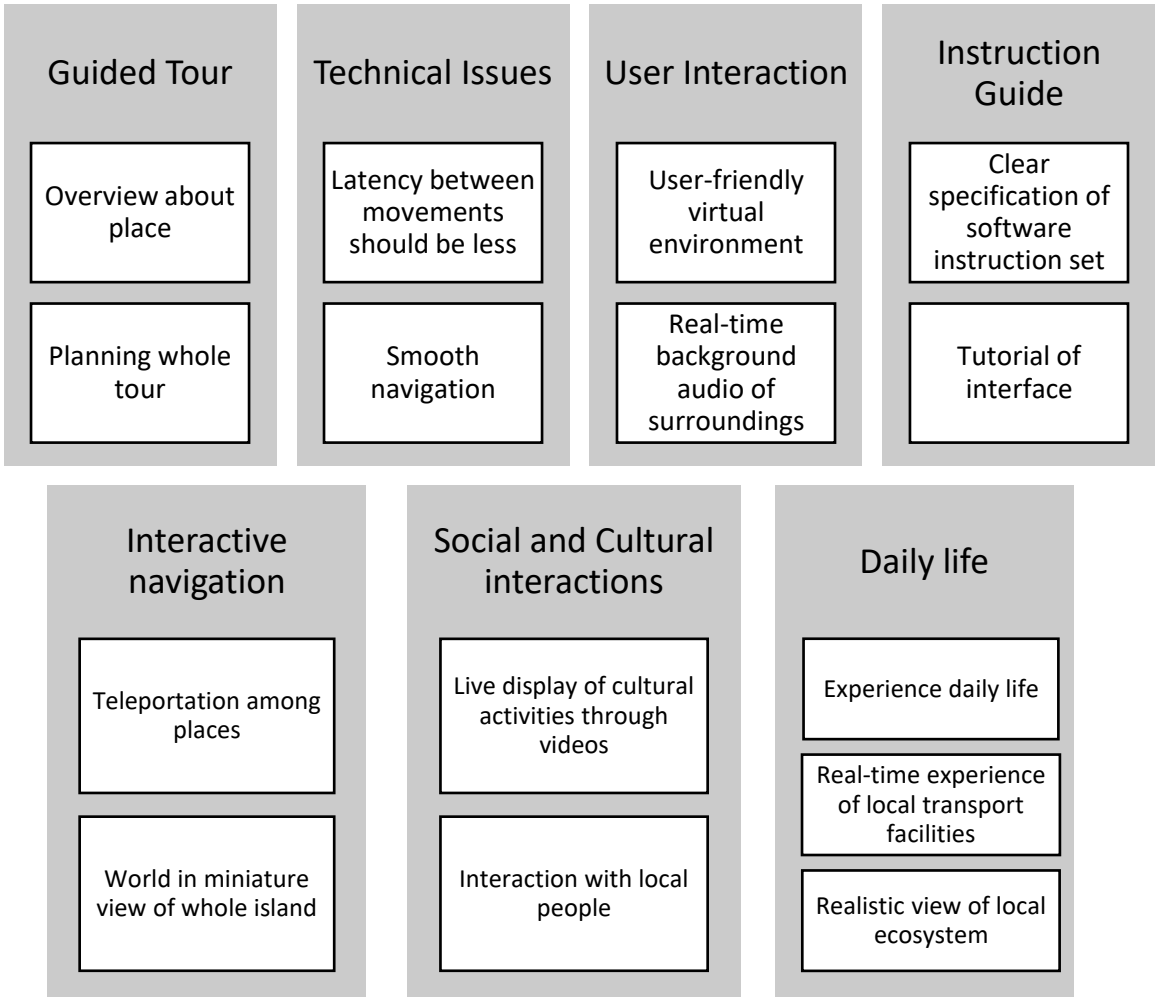
These observations are analysed using affinity diagram method

4.3. Affinity diagram method:

1. Generate and display ideas:

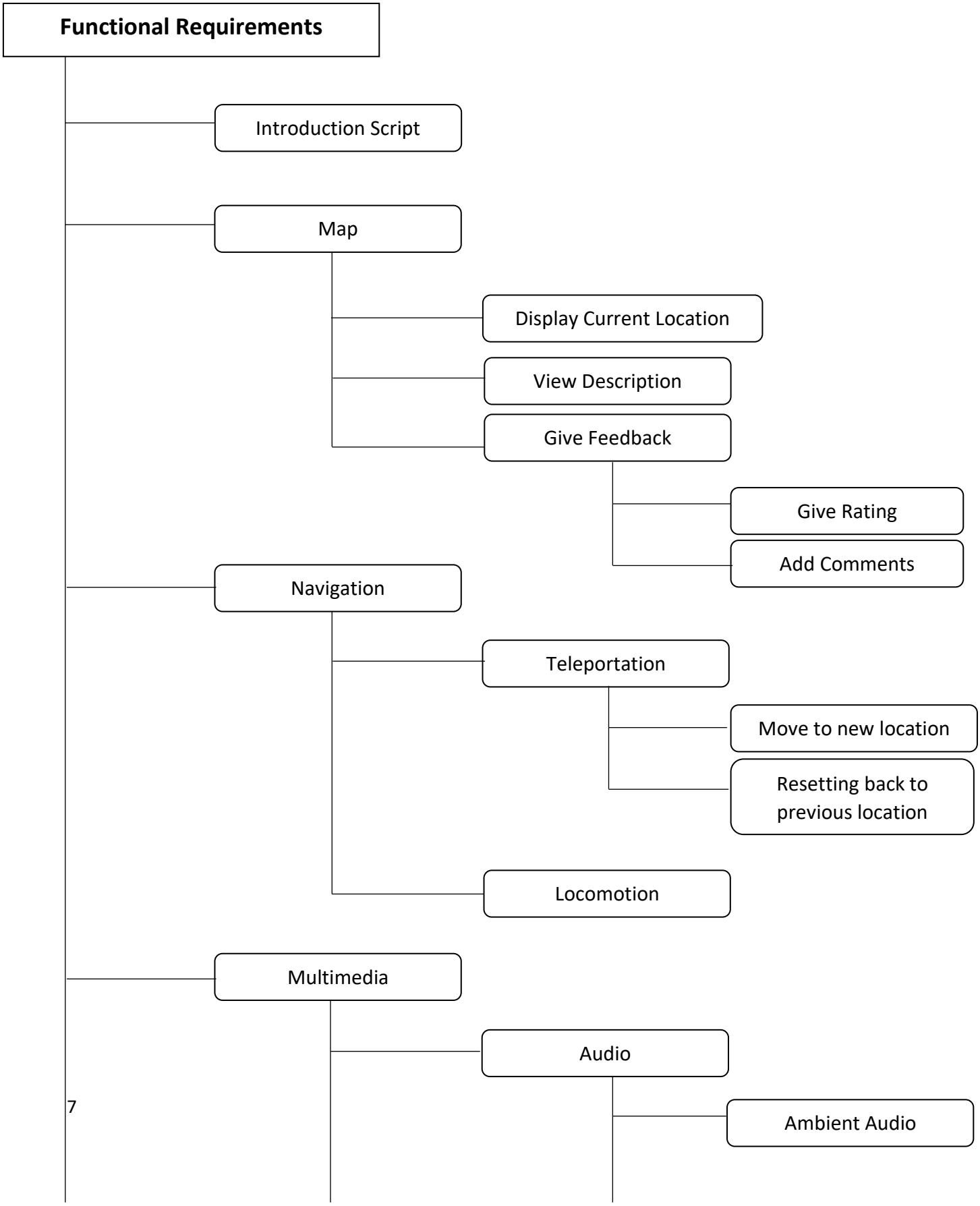


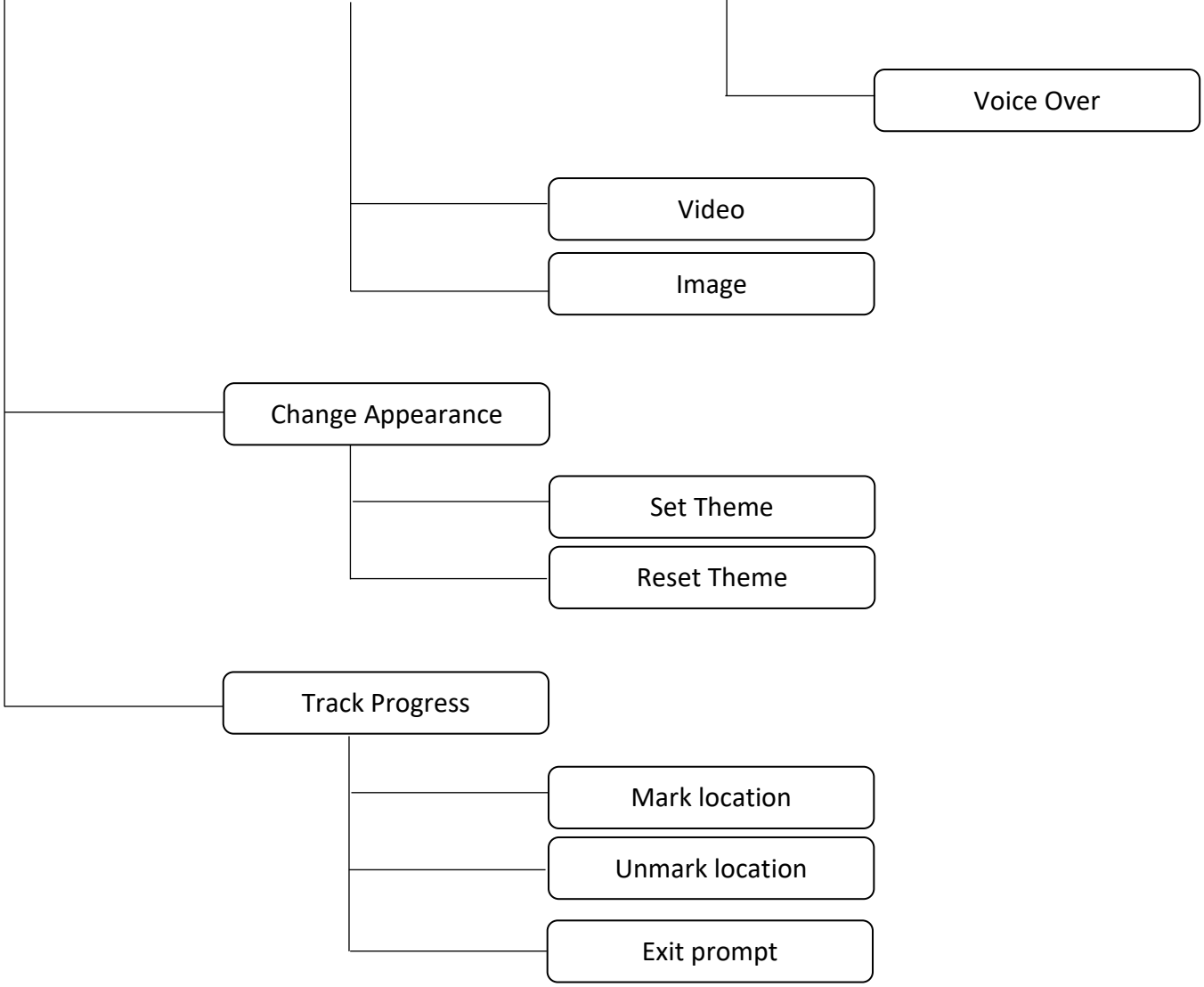
2. Sorting into groups and assigning group headers:



First, Fifth and Sixth group of observations are changed to the functional requirements and remaining observations are added to the guidelines under non-functional requirements.

5. Functional Hierarchy




Voice Over
Video
Image
Change Appearance
Set Theme
Reset Theme
Track Progress
Mark location
Unmark location
Exit prompt

6. Functional Requirements

1. **Introduction Script**
   ID: R1
   Input: App icon
   Output: Introduction video
   Desc: Start application with an overview of important places of Majuli river island.

2. **Map**
   ID: R2
   Input: Location
   Output: Mini map
   Desc: World in miniature view of the island.

2.1 Display Current location
ID: R2.1
Input: Current location in the virtual world
Output: Current location in the mini map
Desc: This function displays mini map containing a pointer to the current location.

2.2 View Description
ID: R2.2
Input: Location in mini map
Output: Description
Desc: This function gives a brief description of the location along with its rating based on past user experience.

2.3 Give feedback
ID: R2.3
Input: Location in mini map
Output: Feedback
Desc: In this function user can give their feedback of the location so that we can improve user experience.

2.3.1 Give rating
ID: R2.3.1
Input: Location in mini map
Output: Rating
Desc: In this function the user can rate his experience of the virtual tour of that location.

2.3.2 Add comments
ID: R2.3.2
Input: Location in mini map
Output: Comments
Desc: In this function the user can describe his experience of the virtual tour of that location.

3. **Navigation**
   ID: R3
   Input: Location
   Output: Respective location
   Desc: This function allows the user to navigate to a particular location in the virtual world either by teleporting or by moving step by step in any direction.

3.1 Teleportation
ID: R3.1
Input: New location in map
Output: Respective location in virtual world
Desc: This function allows the user to reach the desired location instantly

3.1.1 Move to new location
ID: R3.1.1
Input: New location in map
Output: New location in virtual world
Desc: This function allows the user to reach the new location instantly

3.1.2 Resetting back to previous location
ID: R3.1.2
Input: Previous location in map
Output: Previous location in the virtual world
Desc: This function allows the user to retract to the previous location instantly.

3.2 Locomotion
ID: R3.2
Input: Current location in virtual world and head orientation
Output: New Location in virtual world
Desc: Moving step by step in the direction of head to reach the new location

4. **Multimedia**
   ID: R4
   Input: Location
   Output: Audio/Video corresponding to that location
   Desc: Provides audio or video of the location to make interaction better

4.1 Audio
ID: R4.1
Input: Current location
Output: Audio corresponding to that location
Desc: Provides audio corresponding to the current location

4.1.1 Ambient Audio

ID: R4.1.1
Input: Current location
Output: Ambient Audio of the location
Desc: Provides ambient audio of surroundings corresponding to the current location

4.1.2 Voice over

ID: R4.1.2
Input: Image/Text
Output: Audio corresponding to the image/text
Desc: This function provides voiceover describing the contents in the image/text

4.2 Video

ID: R4.2
Input: Specific sites within the virtual world
Output: Video corresponding to that site
Desc: Video displaying the activities corresponding to that particular site

4.3 Image

ID: R4.3
Input: Specific sites in the virtual world
Output: Respective image
Desc: Images describing that particular site

5. Change appearance

ID: R5
Input: Theme
Output: Virtual environment with chosen theme
Desc: In this function, the user can set/reset theme of the virtual environment

5.1 Set Theme

ID: R5.1
Input: Theme
Output: Virtual environment with chosen theme
Desc: In this function, the user can set theme of the virtual environment

5.2 Reset Theme

ID: R5.2
Input: Theme
Output: Virtual environment with chosen theme
Desc: In this function, the user can reset theme of the virtual environment

6. **Track progress**
   ID: R6
   Input: Current location
   Output: Updated mini map
   Desc: This function keeps track of the places visited and marks them visited on the mini map

6.1 Mark location
ID: R6.1
Input: Location
Output: Updated mini map
Desc: This function mark the input location as visited in mini map so as to keep track of the visited places

6.2 Unmark location
ID: R6.2
Input: Location
Output: Updated mini map
Desc: This function unmark the input location in mini map if he wish to so that he can reschedule his tour

6.3 Exit prompt
ID: R6.3
Input: Mini map
Output: Prompt message
Desc: This function processes the mini map and if all the places are visited then it will give pop up message asking user if he/she wish to exit the application

7. Non-Functional Requirements

7.1. Performance Related

7.1.1. Reliability

- The virtual tour should track the user's progress so that they can easily resume their tour from where they left off
- The tour is consistently available and accessible to users without any downtime or errors.

7.1.2. Response Time

- Movements should be fast enough to be realistic.
- The virtual tour should have minimal loading time for a seamless experience

7.2. Compatibility Constraints

- The application must be compatible with google cardboard and run on android devices.
- The application must be optimized to minimize the storage space required on the user's device.

7.3. Life-Cycle Requirements

- The application should be developed for smartphones with Google cardboard
- The software should be more user centric

7.4. Interfaces Issues

- Virtual Tour should be user-friendly and easy to navigate.
- Instructions about the Usage of Interface should be provided at the beginning of the tour

7.5. Usability Requirements

- Better user-friendly interactions are expected
- Users should experience the Daily life activities and cultural activities of the village along with some of their mediums of transport
- Be more reliable & faster, and be sure to give a glitch-free environment