# Application Technology

Augmented experience setup includes following components AR Node, Moderator Node, OSC Node, Wi-Fi Router. These nodes are also in connection to sound processing station responsible for spatial audio rendering for specific values and upon receiving information from AR Node.

In following architecture all components are visible with their possible configurations.

Diagram

Description automatically generated

Figure System Architecture & Components

## Augmented Reality (AR) Node

Mobile/Tablet running with application and connected to Wi-Fi Router. This will be in the hand of the observer of show and the user will see the rendered character using camera and other device built-in AR sensors. As, this experience has been designed as combination of both manual and auto behavior control of rendered character in AR world. For auto-behavior mode, if user will reach in the action zone around the character, then system will calculate the distance and will react to specific situation in this case character will charge on the observer and as soon as observer will maintain the safe distance from character then it will go to rest state. In manual behavior mode external moderator can provide command to character using OSC Node for performing different kind of activities.

## Moderator Node

This node is another mobile/tablet device running with the same version of app but will be logged in to the channel as moderator. From where the moderator will be able to provide the voice over / external voice which will be transmitted to AR Node (using VIVOX as communication service) and observer will be able to hear the audio from the handheld device.

## OSC Node

This node is also a device running with OSC layout that has different action buttons and each one is associated to send the command over network specifically to AR node for character manual control. Moderator can also enable auto, or manual behavior control depending on situation or can initiate specific sequence of actions in our case sit, howl, stand etc.

## Wi-Fi Router

This will create the local network through which all other components of the system will be connected, and it will also provide the internet services for VIVOX services for transfer of moderator voice to observer.

## Sound Processing Station

This node is workstation which will also be the part of network and will sense the values which will be transmitted to network using OSC protocol. The values include position of observer and position of creature, state of creature, start/stop signal for each sequence or set of sequence. These values will then be used to generate spatial audio to played over speaker.

## In-App 3D Sound

3D audio has been implemented in the system and audio intensity will be affected by the distance of observer from the character and direction in which user is pointing the phone that will affect the stereo rendering of the audio.

## Application Screens

Here are screen shots from application which shows the different possibilities of this whole designed system there are different modes in same application for moderator to transmit audio and for receiver to receive the audio through the device using VIVOX. Stage dimensions and floor configuration has been developed for this system which will help the creature to bound the rendered creature in that dimensions. There are two type of network selection has been developed Local mode with moderator and OSC node without the need of sound processing station available to network which is required in host-based connection.

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| Graphical user interface  Description automatically generated  Figure Communication Node Selection | Graphical user interface  Description automatically generated  Figure Transmitter Node (Moderator) | Graphical user interface  Description automatically generated with medium confidence  Figure Receiver Endpoint |