# **Paint360**

**Testing Plan for Interactive Prototype 3**

### **Project Description**

Paint360 is an immersive drawing and painting prototype built in Unity for the Meta Quest using hand-tracking and voice interaction. Users can draw with pinch gestures, mix colours using their non-dominant hand, paint objects through raycasting, erase with palm swipes, and preview their palette through spatial UI feedback.

In this iteration, Paint360 introduces voice commands (powered by the Meta Voice SDK) to trigger actions such as resetting the scene or switching environments, as well as a Passthrough Mode, allowing users to toggle between a designed virtual environment and their real-world surroundings as the drawing backdrop.

The goal of this prototype is to evaluate whether combining gesture-based input, voice control, and environmental flexibility enhances the intuitiveness, expressiveness, and accessibility of creative interaction in VR.

## **Testing Objective**

From my updated concept, I want to evaluate:

* Can users intuitively understand and use the **refined** drawing feature with the crosshair style implementation.
* Can users intuitively understand and find it easy to use the refined eraser feature?
* Can the user trigger the voice commands in loud environments with background noise?
* Does the active tool UI help to ease confusion and mistakes?

## **Methodology**

* **Observational usability testing** with think-aloud protocol.
* Participants complete drawing and painting tasks using hand gestures while I observe.
* Collect task completion time, hesitation, errors, and verbal feedback.
* Short debrief interview afterwards.

## **Prototype Description / Requirements**

The VR prototype supports:

* **Draw Tool:** Right thumb + right index pinch triggers drawing crosshair dot and creates stroke with hand movement.
* **Colour Palette:** Left-hand thumb, index, and middle pinches mix red, green, and blue; preview sphere/ring shows current mix.
* **Object Painting:** Right thumb+middle pinch raycasts forward with visible pointer; target objects glow yellow before being painted.
* **Eraser:** Left thumb+pinky enables erase mode; right palm wipes away strokes in its radius without having to hit strokes at a certain angle.
* **Visual Feedback:** Active tool UI at the top of the HUD.
* **Voice Command:** New to reset scene and Mode to toggle into passthrough.

## **Data Collection**

During testing I will:

* Observe gesture accuracy, hesitation, and confusion.
* Record task completion times.
* Log comments from participants.
* Capture video/screen recording (with consent).
* Note whether visual feedback (pointer, highlight, preview sphere/ring) supports understanding.

## **Testing Setup**

* Meta Quest headset with Unity build installed.
* Clear VR play area.
* Notebook or spreadsheet for logging observations.
* Testing script with tasks prepared.
* Phone or OBS capture for recording (if consent).

## **Testing Process (Approx. 6–7 min total)**

**Introduction (30 sec)**Explain the prototype and changes to the tools and gestures, introduce new features and how to use them.

**Orientation (1 min)** Demonstrate gestures briefly:

* Right index pinch = draw.
* Left hand = colour palette (sphere/ring).
* Right thumb+middle = paint object with pointer ray.
* Left thumb+pinky + right palm = erase.

### **Tasks**

**Task 1: Draw Tool (1 min)**

* Ask participants to bring their right thumb and index together and ask them if they can see the dot in between.
* Ask them to select a colour they want and to draw a stick man.
* Observe colour mixing and drawing intuitiveness.

**Task 2: Eraser (30 sec)**

* Ask participants to activate eraser mode (left thumb+pinky).
* Use your right palm to wipe away their drawing.
* Observe how natural the wipe feels.

**Task 3: Voice Command (20 sec)**

* Ask participants to say mode, and then mode again and then new.
* Observe if transitions are smooth and without issue.

**Task 4: Active Tool UI (20 seconds)**

* Ask the participant to choose the eraser tool
* Ask the participant to choose the drawing tool
* Ask if they notice the active tool UI changing

## **Time on Task (sample logging)**

* Task 1 (Draw Tool):
* Task 2 (Erase Tool):
* Task 3 (Voice Command):
* Task 4 (Active Tool Ui):

## **Debrief Questions**

**General Impressions**

* How did you find the changes to the tools, did they make creation easier and were they intuitive?

**Specific Tools**

* Was the crosshair on the drawing tool helpful for preciseness?
* Is the eraser tool working more smoothly now than before?
* How did you find the active tool UI? Did it help reduce confusion or mistakes?
* Did you find the voice commands useful or would you prefer to have these functions on a menu?

**Workflow & Efficiency**

* Did switching between scene and passthrough mode work well?