Design Evaluation Report - Evaluation - 2

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Objective and Validation Metrics
Objective:
The purpose of this testing session was to see how easily users could interact with key features in the Extended Reality Video Workspace, focusing on spatial placement, hover cues, and timeline editing. In particular, I wanted to find out whether users could:

- **Place Videos in 3D Space:** Pick up floating video panels and position them anywhere in the XR environment, making sure the videos stay correctly in place.
- **Understand Hover Cues:** Recognize that videos are interactable when visual indicators, like a glowing border, appear as they hover over them.
- **Drag Videos Along the Timeline:** Move videos horizontally along the editing panel, noticing the glow effect and understanding that the videos in the editing panels can be dragged.

Validation Metrics:

Action	Success Criteria	Measurement
Grab and Place Video	Participant can grab and place a video panel accurately without it slipping.	Task completion, observation of placement errors, signs of confusion.
Hover Affordance – Floating Videos	Participant sees the glowing border and knows the video is interactive.	Verbal confirmation during think-aloud, ability to complete the task with minimal guidance.
Hover Affordance – Editing Panel	Participant sees glow on timeline videos and knows they can drag them.	Observed attempt to drag, verbal acknowledgment during think-aloud
Horizontal Dragging	Participant can drag videos along the timeline while maintaining alignment.	Task completion, observed alignment errors, confusion or hesitation.

Additional Metrics:

- **Qualitative Feedback:** Captures participants' thoughts through think-aloud and post-task interviews, providing insight into how intuitive the interactions feel, any difficulties they encountered, and suggestions for improvement.
- **Behavioral Observations:** Notes moments of hesitation, confusion, or unintended actions, which help identify usability challenges and evaluate whether the visual cues are effective.

Results

Task Completion Summary

Interaction	Success Rate	Common Observations
Grab and Place Videos	3 out of 6 participants were able to pick up and place the videos correctly	Some grabbed the video center instead of glowing edges, or expected automatic snapping to the panel.
Hover Affordance – Floating Videos	All 6 participants clearly noticed the glowing white border while hovering over the floating videos.	Most understood the glow indicated interactivity, but some didn't realize only edges were grabbable.
Hover Affordance – Editing Panel	All 6 participants noticed the glowing effect on videos placed in the editing panel while hovering.	Two new users saw the visual cue but didn't realize clips could be dragged horizontally.
Horizontal Dragging (Editing Panel)	4 out of 6 participants successfully dragged videos along the editing panel.	Some participants initially struggled to drag videos, showing horizontal movement wasn't clear.

Observed Actions

- All participants naturally tried to drag the floating videos toward the editing panel, expecting them to snap or align once placed.
- Several participants attempted to grab the videos from the center, not realizing that they could only be moved by grabbing the glowing edges.
- Many participants repeatedly hovered over the videos and mentioned that the glowing border made it clear the clips were interactive.
- None of the participants could move around freely in the XR space, as controller-based locomotion wasn't implemented. Several commented that this reduced the immersive feeling of the experience.
- Participants who had experience with video editing software quickly understood the timeline panel's purpose, while those new to editing needed more explanation to grasp the idea of horizontal dragging.

Participant Comments (from Think-Aloud and Feedback)

On Hover and Interactivity:

- "The white glowing border makes it obvious that I can interact with it."
- "I can see it glowing, but I can't seem to grab it properly."
- "It looks like I should be able to move it, but it's not responding."

On Grabbing and Placement:

- "I thought I could grab it from anywhere, not just the edge."
- "I tried placing it on the panel so it would stick, but it didn't."
- "It feels like the clips should automatically snap together."

On Timeline Interaction:

- "The glow effect helps, but I didn't realize I could drag it sideways."
- "Dragging along the line feels smoother once I got the hang of it."

On Movement in XR Space:

- "I couldn't move around, so it didn't feel like a proper VR experience."
- "I wanted to step closer to the videos or change my position.

Analysis/Insights

Theme / Observation	Evidence / Pattern	Interpretation / Insight	Design Implication
Hover Visual Cues – Floating Videos	All 6 participants noticed the white glowing border when hovering over floating videos.	Users understood that the videos were interactive, but some tried grabbing the center instead of the glowing edges.	Consider highlighting exact grab zones to make grabbing clearer.
Grabbing and Placement	Only 3 out of 6 participants successfully grabbed and placed videos. Others tried grabbing the center which didn't work.	Users understood the idea of picking and placing videos, but execution was confusing.	Add snapping, alignment guides,to make placement more intuitive and reduce errors.
Hover Visual Cues – Editing Panel	All participants noticed the glow on videos in the timeline panel.	Experienced users immediately understood that they could drag horizontally; novices didn't.	Add subtle instructions to help new users understand horizontal dragging.
Horizontal Dragging	4 out of 6 participants successfully	Some users didn't instantly	Enhance drag affordances with better

	dragged videos along the editing panel.	understand the horizontal drag concept; familiarity with editing software influenced performance.	visual cues.
XR Locomotion	No participants could move freely in the XR space. Several mentioned this reduced immersion.	Lack of spatial freedom limited the VR experience and exploration.	Implement basic locomotion, or simple controller movement to improve immersion.
Behavioral Patterns	Participants repeatedly hovered, attempted grabbing from incorrect areas, or expected snapping.	Users rely heavily on visual cues but need clear feedback about which areas are interactive.	Add visual feedback to reduce errors and clarify interactions.

Evaluation of Aims

- **Grab & Place Videos:** ***Partially achieved.*** **Half** of the participants could grab and place videos correctly, while the others struggled because they weren't clear on where to grab. The concept works, but the current setup needs improvement.
- **Hover Affordance Recognition:** ***Mostly successful.*** **All** participants noticed the glowing visual cues on both floating and timeline videos, and understood that these cues meant the videos were interactive. This shows the design intention for hover feedback is working well.
- **Timeline Editing / Horizontal Dragging:** ***Partially achieved.*** **Four** participants successfully dragged videos along the timeline, but **two**, particularly those new to editing, did not immediately realize the videos could be dragged horizontally. The visual cues are effective but could be clearer for novices.
- **XR Locomotion:** ***Not achieved.*** **None** of the participants could move freely in the XR environment, which reduced immersion and limited the overall experience.

Concept Iteration

1. **Grab & Placement Improvements:** Make grab zones more obvious using visual or subtle haptic feedback, Add snapping and alignment guides when placing videos to reduce placement errors.
2. **Refining Hover Affordances:** Keep the glowing borders on floating and timeline videos, Introduce increased glow intensity when pointing at a grab area to clarify interactivity.
3. **Enhancing Timeline Editing:** Add subtle hints to help new users understand horizontal dragging, Include drag handles or visual indicators on timeline videos to guide horizontal movement.
4. **Enable XR Locomotion:** Add controller movement option so users can move around the XR space, This will improve immersion and allow participants to interact with videos from better positions.
5. **Support for Novice Users:** Provide visual instructions to help first-time users understand grabbing, placing, and dragging videos.

Reflection on Concept, Design, Methodology, and Future Testing

- **Strengths:** Hover affordances and visual cues clearly communicate interactivity, Think-aloud sessions gave valuable insights into participant behavior, Prototype effectively demonstrated XR concepts like floating panels and timeline editing.
- **Limitations:** Grab-and-place and horizontal dragging were inconsistent, especially for users unfamiliar with editing tools, Lack of XR locomotion reduced immersion and limited interactions, Some users expected snapping of videos in the editing panel, which wasn't implemented.
- **Learnings:** Clear visual and haptic feedback is crucial in XR to guide interactions, Users' prior experience affects how easily they understand XR interactions, Iterative testing with both novices and experienced users is essential to validate usability.
- **Next Steps:** Implement proposed improvements (grab zones, snapping, drag cues, locomotion), Conduct another testing round with 6–8 participants, including both new and experienced users, Record think-aloud sessions carefully to capture more detailed feedback.

Appendix

Table 1: Task Completion Rates

Task	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6	Completion Rate(%)
Grab & Place Video	Completed	Not Completed	Completed	Not Completed	Not Completed	Completed	**50%**
Hover – Floating Videos	Completed	Completed	Completed	Completed	Completed	Completed	**100%**
Hover – Editing Panel	Completed	Completed	Completed	Completed	Completed	Completed	**100%**
Horizontal Drag	Completed	Not Completed	Completed	Completed	Not Completed	Completed	**67%**

Table 2: User Errors

Task	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5	Participant 6
Grab & Place Video	Grabbed center, couldn't move	Expected snap-to-panel, failed placement	Grabbed center, couldn't move	Tried snapping, failed	Misaligned placement	Successfully placed
Hover – Floating Videos	None	None	None	None	None	None
Hover – Editing Panel	Understood cue	Understood cue, unsure about dragging	Understood cue	Understood cue	Couldn't realize horizontal drag	Understood cue
Horizontal Drag (Editing	Successfully dragged	Couldn't drag initially	Successfully dragged	Successfully dragged	Couldn't drag initially	Successfully dragged

Panel)						

ACKNOWLEDGMENT OF AI

I have used Open AI's Chatgpt (www.chatgpt.com) to fix grammatical errors and replace a few words with their synonyms in the content.