Design Process Report – Evaluation

Wei Shao 47925957

## 1. Objective and Validation Metrics

The aim of this evaluation was to assess the usability, intuitiveness, and effectiveness of the Star River Notes prototype as an immersive spatial note-taking tool. The specific objectives were:  
• O1 Usability/Learnability: Can participants complete ' locate and link nodes' within 30 seconds?  
• O2 Navigation & Understanding: Can participants locate a target node and describe its neighbors?  
• O3 Structural Understanding/Load: Does spatial layout reduce load and improve comprehension?  
• O4 Interaction Clarity: Are single/double/right-click and ESC interactions intuitive?  
• O5 Functional Completeness: Can participants store and retrieve their content effectively?

## 2. Results

From five participants, key observations included:  
- Most could locate and link nodes, but accidental multi-selections and misclicks were frequent.  
- Participants located target nodes.  
- ESC switching for the mouse was seen as cumbersome.  
- Confusion existed around single/double/right-click logic.  
- Storage worked, but some wanted quicker or clearer access.  
- Opinions on 3D vs 2D varied: some found 3D more immersive and memorable, others found it less clear.  
- Missing features noted: delete/undo lines, drag/move planets, custom number of nodes, preview contents.

## 3. Analysis / Insights

• Frequent misclicks indicate lack of clear visual feedback on node selection.  
• Input process is too complex; reliance on ESC and multiple clicks increases cognitive load.  
• Navigation burden is high in dense maps, suggesting the need for zoom.  
• Due to inconsistent click logic, the interaction feels counterintuitive.  
• Missing functions reduce freedom and exploratory potential.  
• 3D adds immersion and memorability, but lacks efficiency in quick retrieval compared to 2D.

## 4. Evaluation of Aims

• O1 Usability: Partially achieved – tasks were completed but misclicks slowed progress.  
• O2 Navigation: Partially achieved – participants found nodes but often inefficiently.  
• O3 Structure/Load: Not fully achieved – users enjoyed immersion but reported added effort.  
• O4 Interaction Clarity: Not achieved – click/ESC logic was the biggest barrier.  
• O5 Functionality: Mostly achieved – storage worked, but lacked intuitiveness.

## 5. Concept Iteration

Based on existing insights, subsequent prototype iterations should progressively achieve:  
- Add visual highlights to selected nodes.  
- Simplify editing: remove ESC reliance, allow direct edit-on-click.  
- Unify click logic to avoid confusion.  
- Implement undo/delete functions.  
- Support drag-and-drop and customizable node numbers.  
- Provide hover previews of node content.

## 6. Reflection

The test revealed complexity in interaction design within XR, showing that immersive environments must balance engagement with efficiency.

The evaluation demonstrated that immersion does not equate to clarity, and highlighted the importance of iteration. In the next phase, the focus will be on simplifying input methods, improving navigation, and validating whether these changes enhance usability and comprehension.

# Appendices

Raw Test Notes and Transcripts

**Test1**

Yeah, and this is your mouse and you can WSE to control your OK control.  
These are stars pretending to be stars, and these are the planets around them. The stars are used to store our main name, while the planets are used to store the knowledge points we need. You can now connect them by clicking on the two planets.  
Press ESC to bring out the mouse.  
Yes, yes, this way they form a complete knowledge framework. Then click on one of them, and then click on the book, and you can open it.  
The difference between single-clicking, double-clicking, and right-clicking. We are not ready for this now, but in the future, we can place this book directly on the ball.

**Test2**

Then you can casually cap one.  
And try to type something here, yeah.  
You can click on one star and then click on another star to connect them. This way you can see which items you have stored are related to each other.  
Then the large planets can only point outward from within, and you can connect them to each other, forming a ring or a constellation.  
This is all, thank you, thank you. As for the feature to retract, it hasn’t been implemented yet.

**Test3**

I'll handle it myself, okay?  
If you want to, you need to press ESE instead of the mouse.  
Yes, and this way it is connected.  
Well, every time I switch to this planet and open this notebook, it becomes very troublesome. You absolutely have to run to the bottom left corner. Because I found that the button for the standalone mode conflicts with the button for my connection.  
Perhaps its because every sudden moment, when you connect each point and take a look, you see that nothing much is happening. Its still the same when you open it; it doesn’t have much significance.

**Test4**

OK, so I think the current man usually is like this. I'm not sure whether it's left it because once I click it, there is like it doesn't show any like effect or change.   
I accidentally connect them because I thought I was only connecting this star, but actually another was also selected.  
I would say maybe have some indicator to show what is currently selected.  
I feel a little bit complicated. When we want to edit the notes, we need to click and then click the book first. I kind of feel like it should just be a double click.  
But I do think you have a book and the note page helps to increase the mysterious life. But the interaction is still a little bit hard.

**Test5**

First, let’s start the operation. After you click on it, you can use the mouse to click on this star.  
After clicking on that dictionary, you can input things inside it.  
There is a large planet, right? This is our topic. We can store any text here, and then you can click on the two planets to connect them.  
Is there any idea about whether it's easy to use? I feel that having to press ESC every time to switch to the mouse is too cumbersome.   
It may not be more intuitive, but it is indeed interesting to remember. In a VR environment, one like this is definitely more interesting and useful than a flat 2D image.