

SURVIVAL OF THE FITTEST



TRAIN HARD. OUTLAST THE APOCALYPSE.

Mixed Reality

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Chosen Setting: Narrow Domestic Passage

Dimensions:

- Width: ~3.2 ft (1m)
- Length: ~10 ft (3m)
- Ceiling: ~8 ft (2.4m)

Rationale for Choice:

- **Ubiquitous:** Found in most homes
- **Mundane:** Often overlooked in daily life
- **Spatially limited:** Minimal room for lateral or large movements
- Easily **accessible** for home-based interaction design

Design Influence:

- Encouraged **on-the-spot** actions like squats and jumps
- Reinforced **forward-only progression** and time pressure
- Informed **tension**-driven narrative design

Observational Insights



Movement is heavily restricted

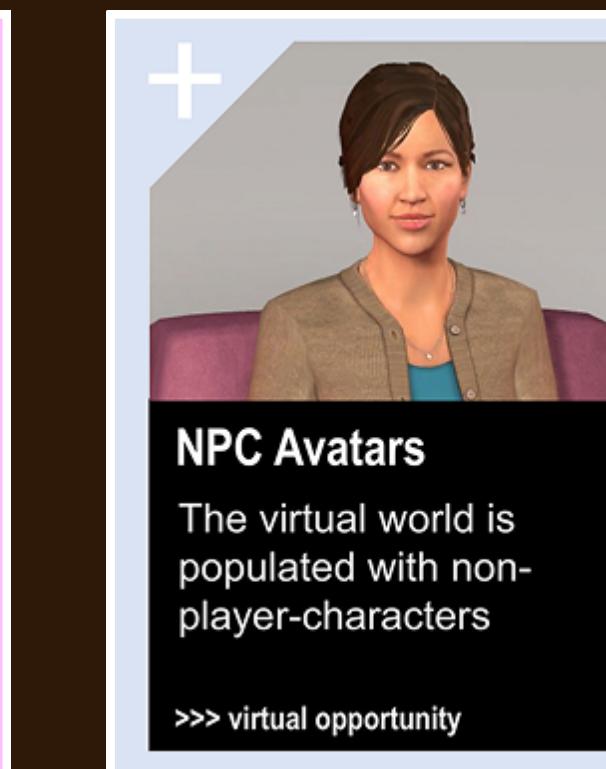
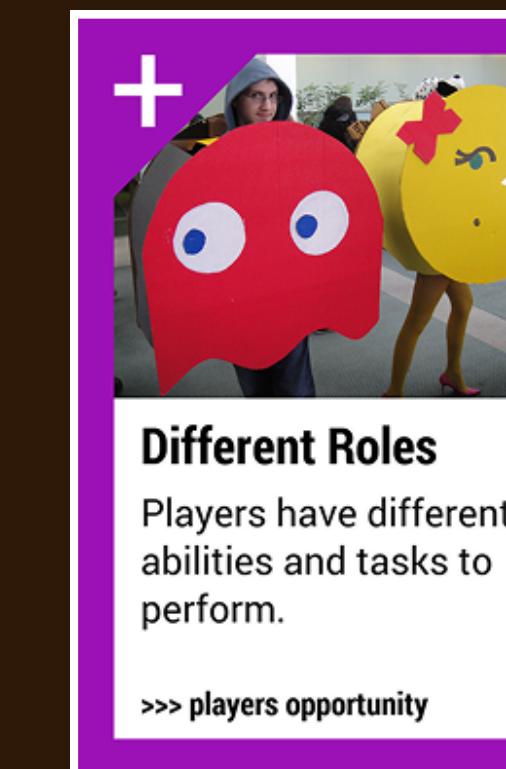
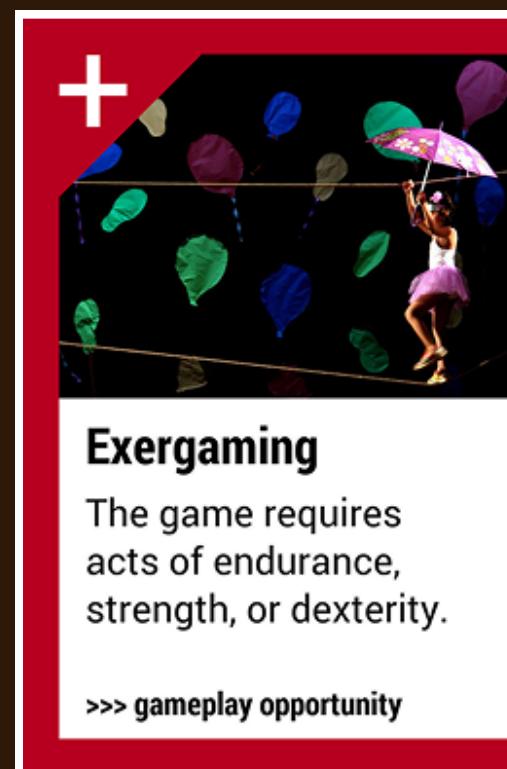
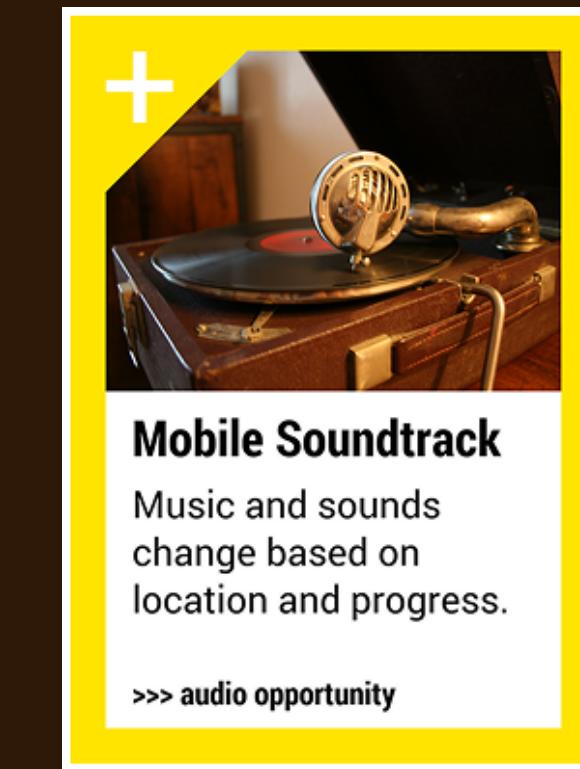
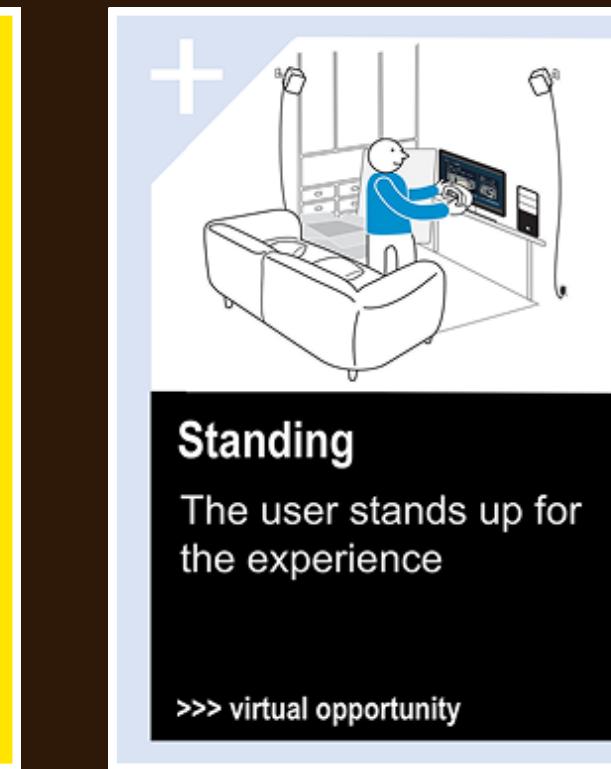
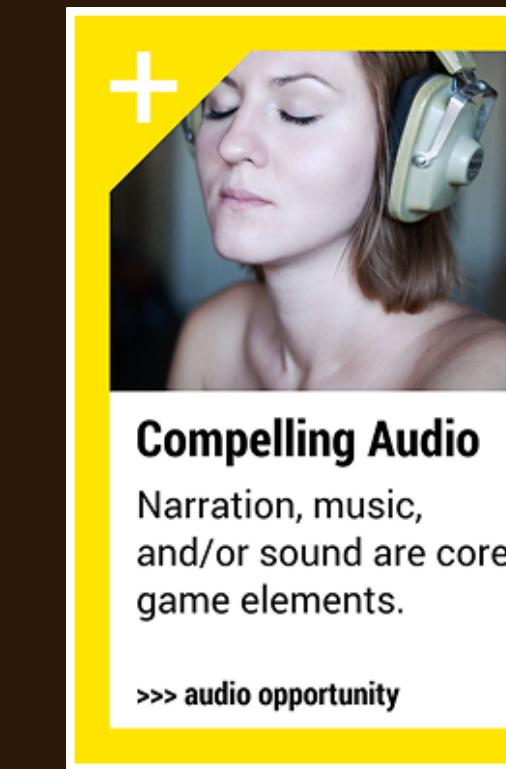
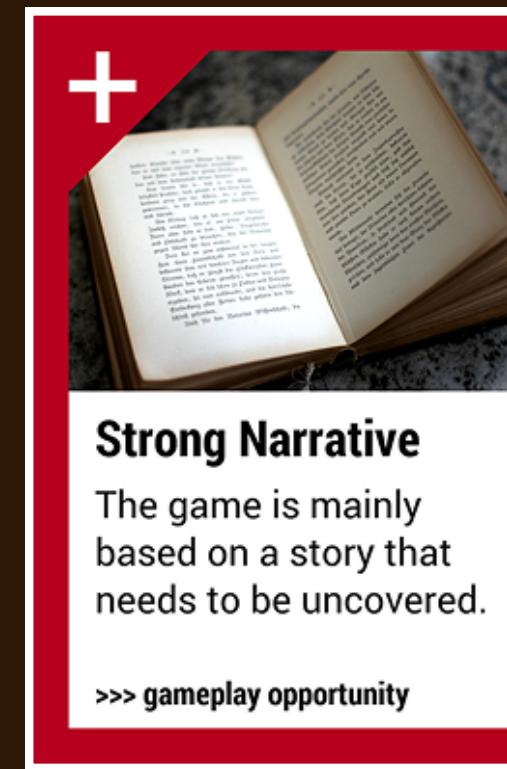
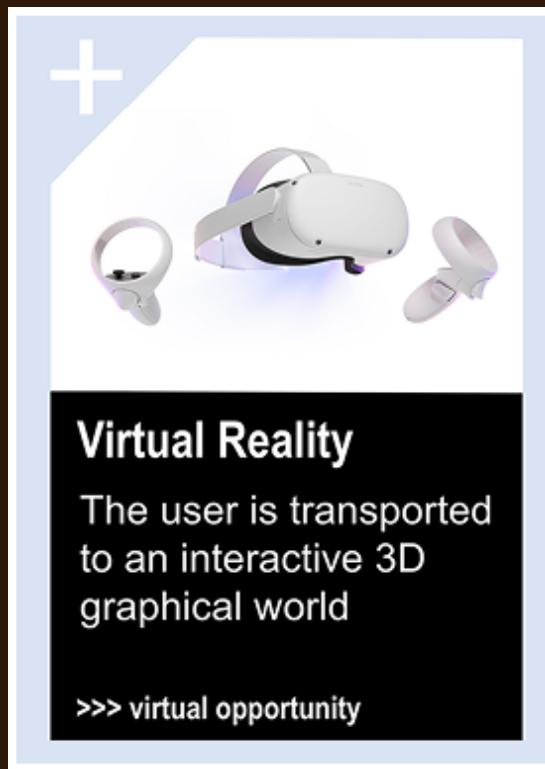
No room to turn or sidestep safely

Real-world objects (doors, walls, edges) limit user mobility

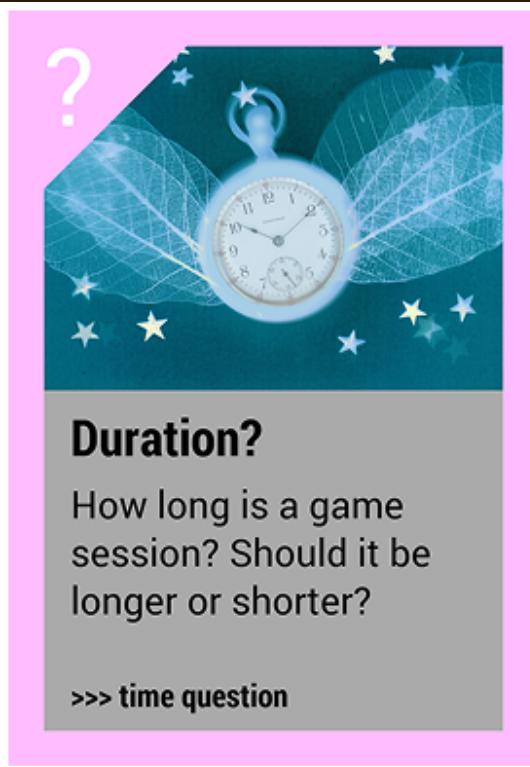
Not suited for roaming VR – must rely on stationary, deliberate actions



Opportunities



Questions



Duration?

How long is a game session? Should it be longer or shorter?

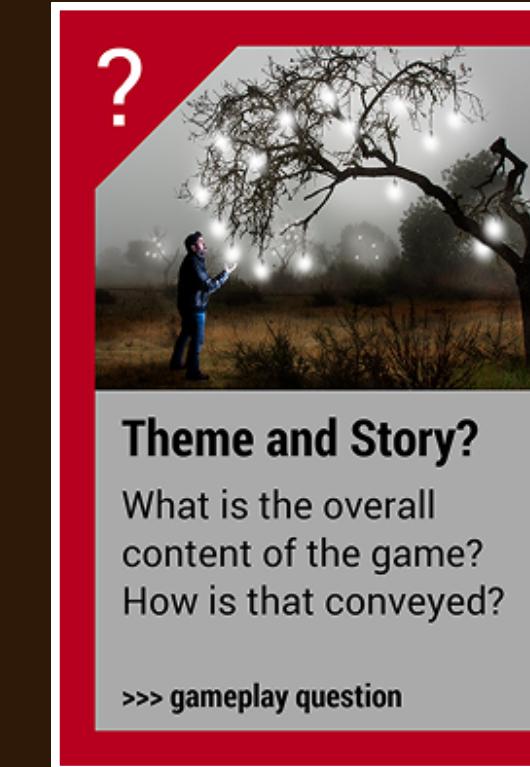
>>> time question



Experience Flow?

How do players journey through the game?

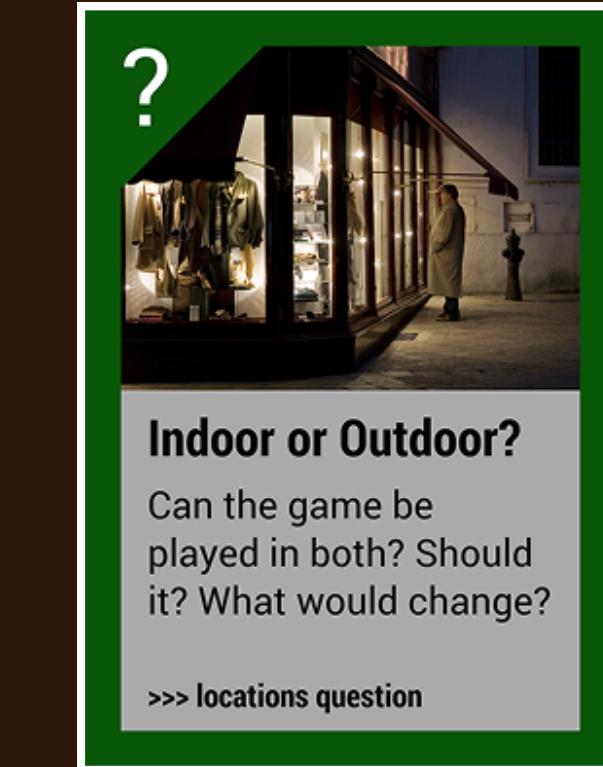
>>> gameplay question



Theme and Story?

What is the overall content of the game? How is that conveyed?

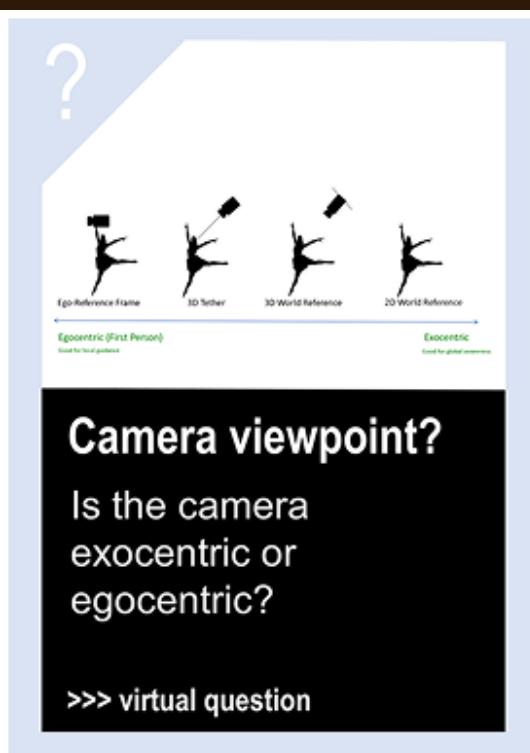
>>> gameplay question



Indoor or Outdoor?

Can the game be played in both? Should it? What would change?

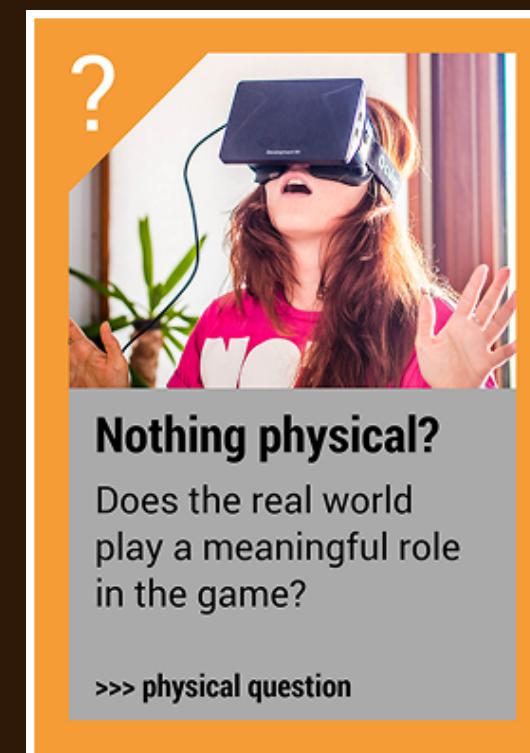
>>> locations question



Camera viewpoint?

Is the camera exocentric or egocentric?

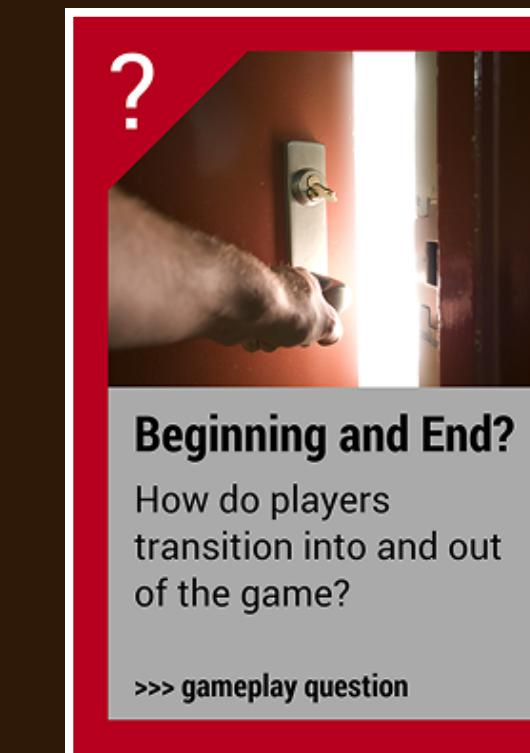
>>> virtual question



Nothing physical?

Does the real world play a meaningful role in the game?

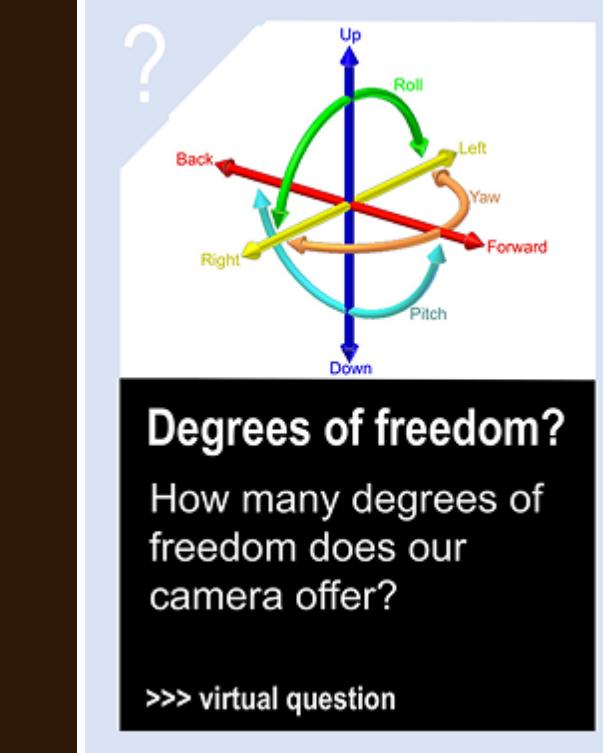
>>> physical question



Beginning and End?

How do players transition into and out of the game?

>>> gameplay question

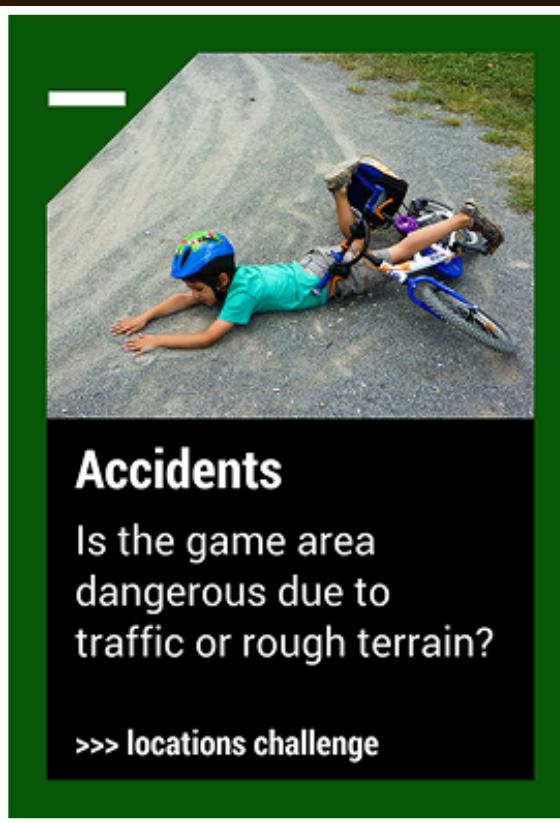


Degrees of freedom?

How many degrees of freedom does our camera offer?

>>> virtual question

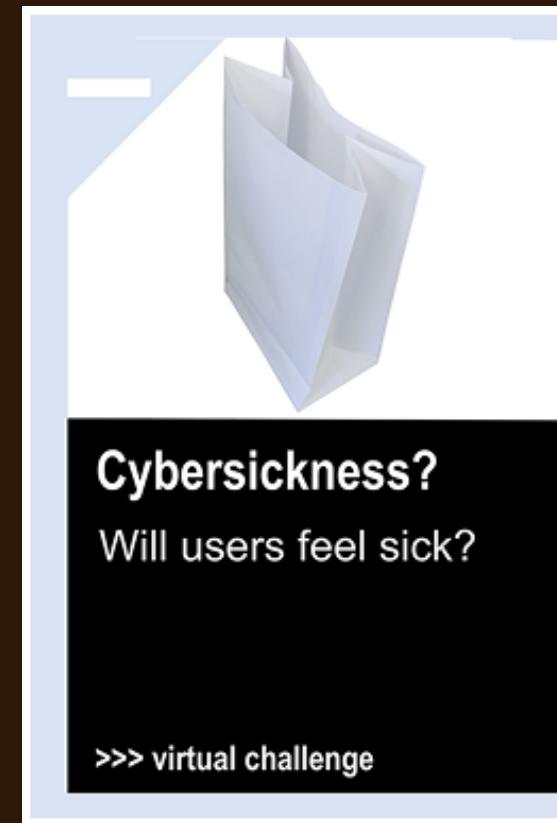
Challenges



Accidents

Is the game area dangerous due to traffic or rough terrain?

[">>>> locations challenge](#)



Cybersickness?

Will users feel sick?

[">>>> virtual challenge](#)



Feature Creep

Does the game try to include too many different elements?

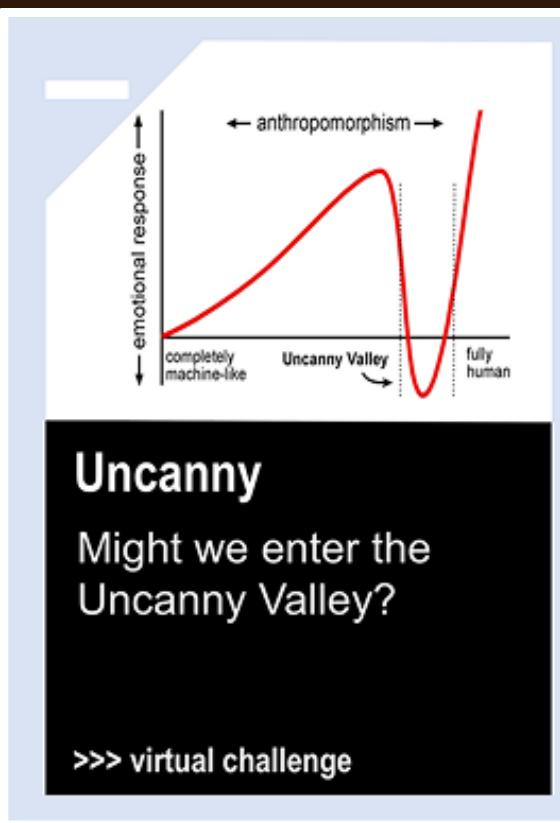
[">>>> gameplay challenge](#)



Getting Lost

How likely is it that players will wander in the wrong direction?

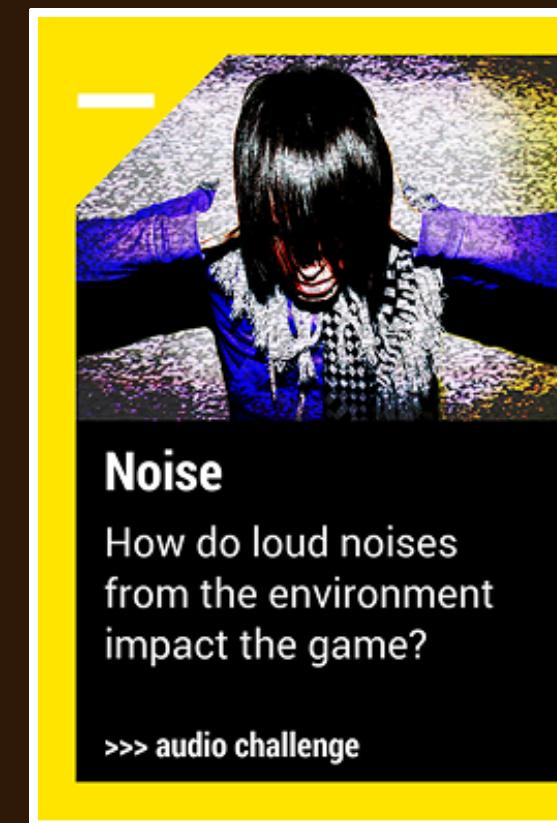
[">>>> locations challenge](#)



Uncanny

Might we enter the Uncanny Valley?

[">>>> virtual challenge](#)



Noise

How do loud noises from the environment impact the game?

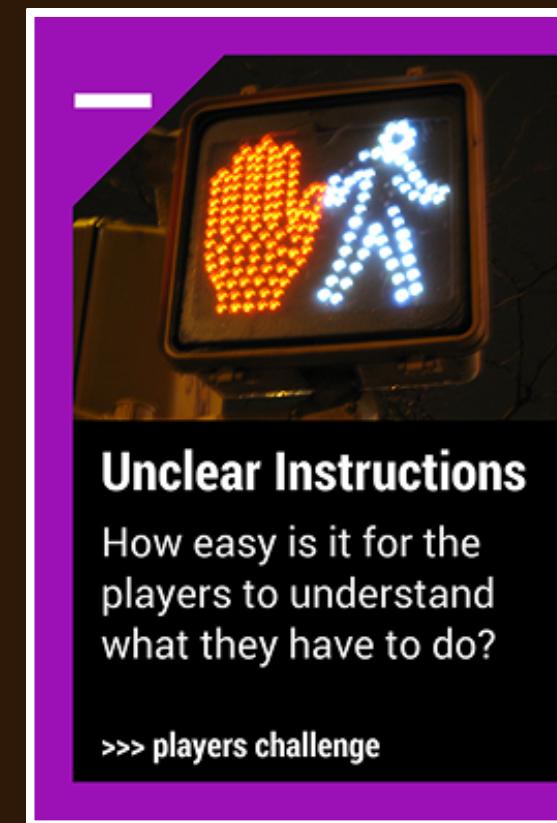
[">>>> audio challenge](#)



Unintended Race

Will players who always run be more successful?

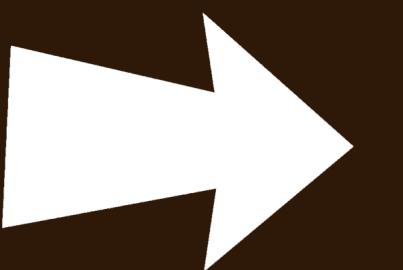
[">>>> gameplay challenge](#)

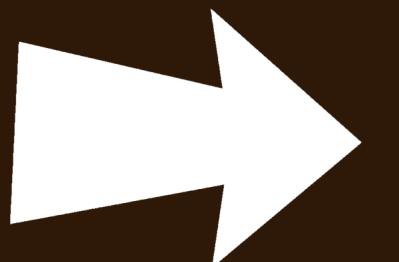


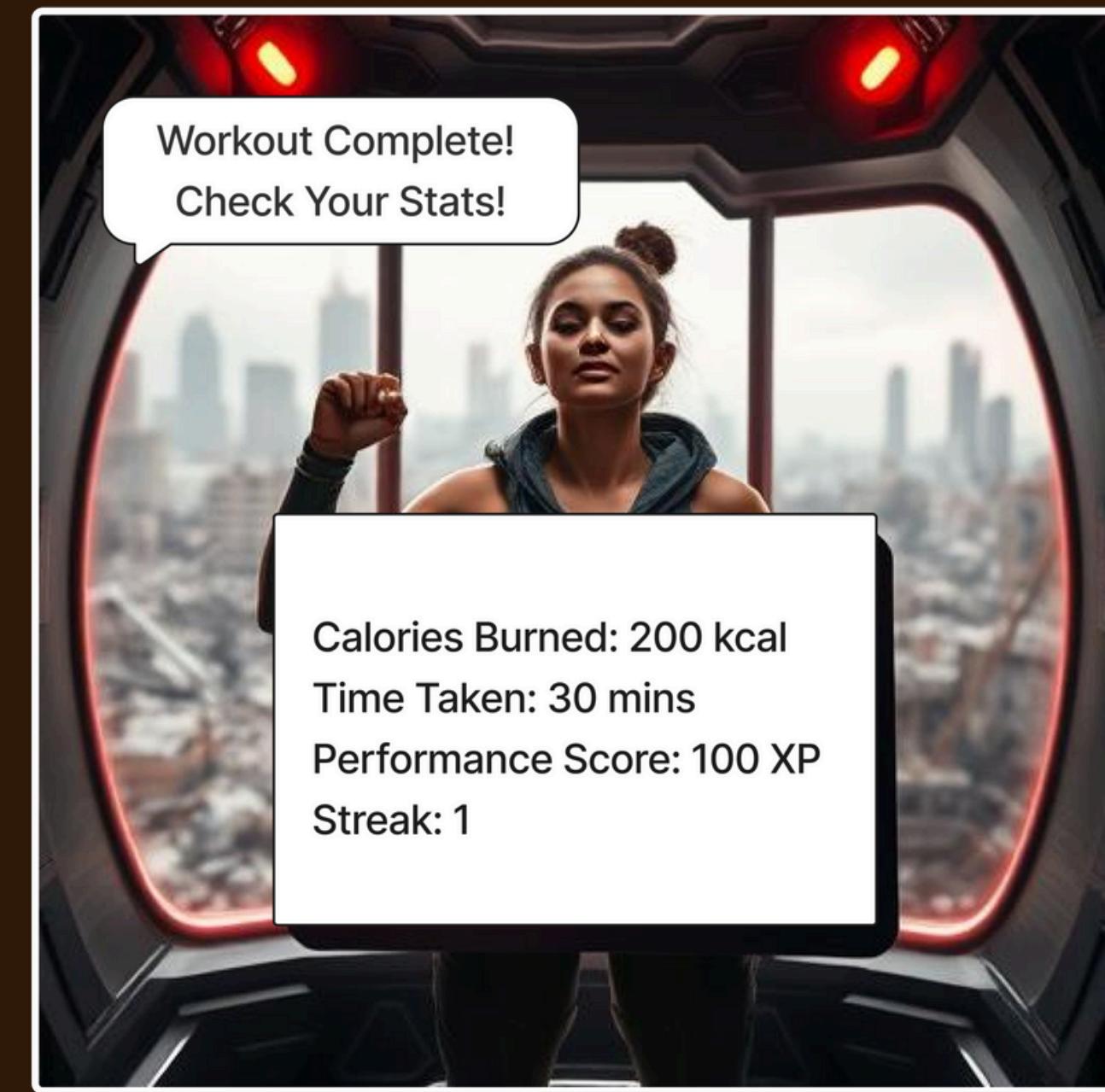
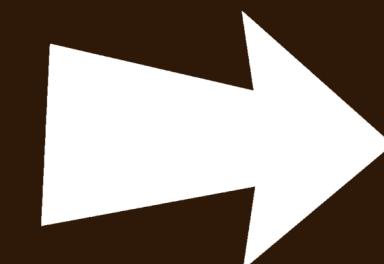
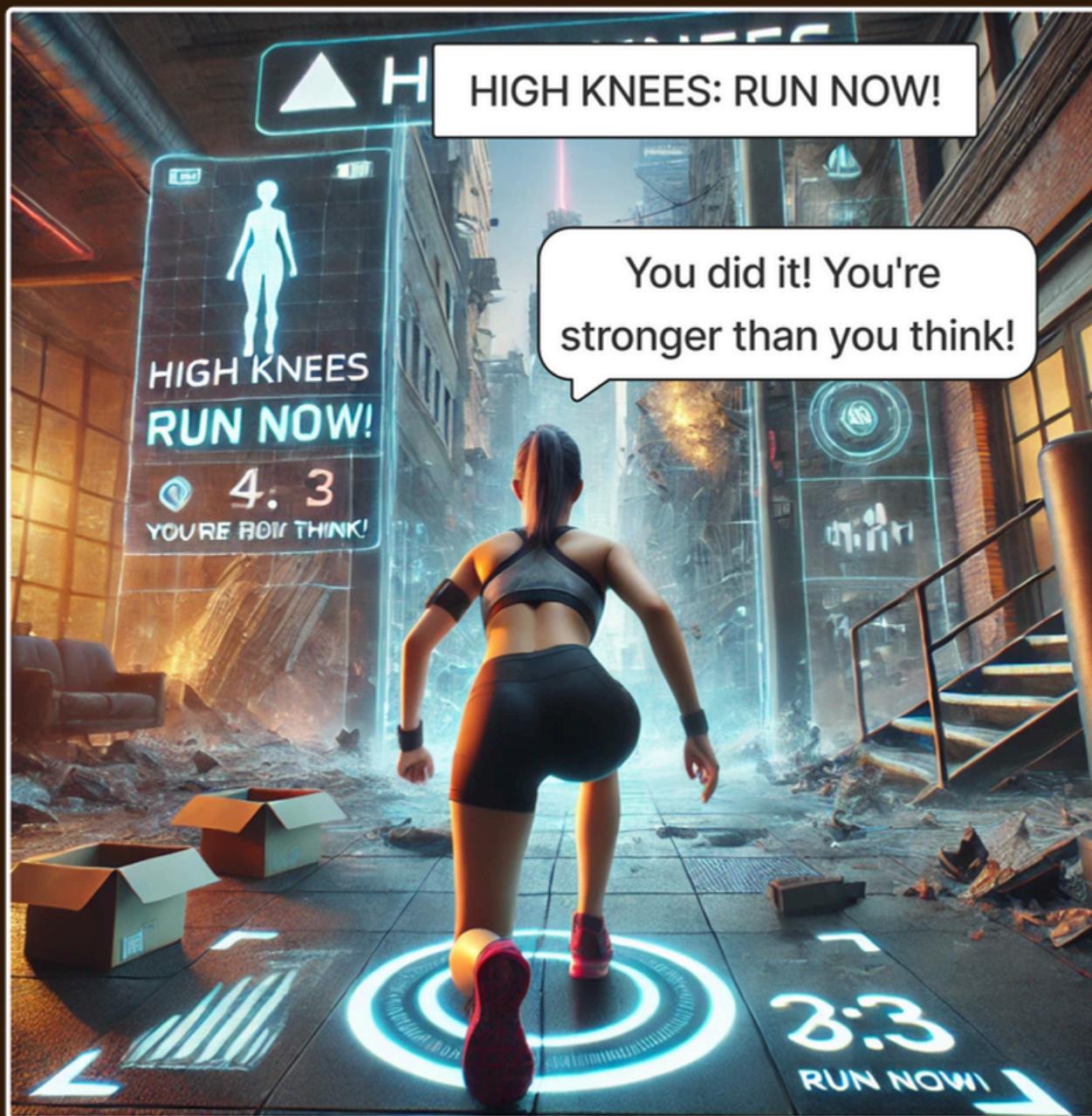
Unclear Instructions

How easy is it for the players to understand what they have to do?

[">>>> players challenge](#)







Player Actions



Jumping Jacks

To move forward by 0.8m in
the virtual world



Bodyweight Squats

To move forward by 1.5 m in
the virtual world



Shadow Boxing

To punch through walls in
the virtual world



Scene 1: Warm Up Sequence









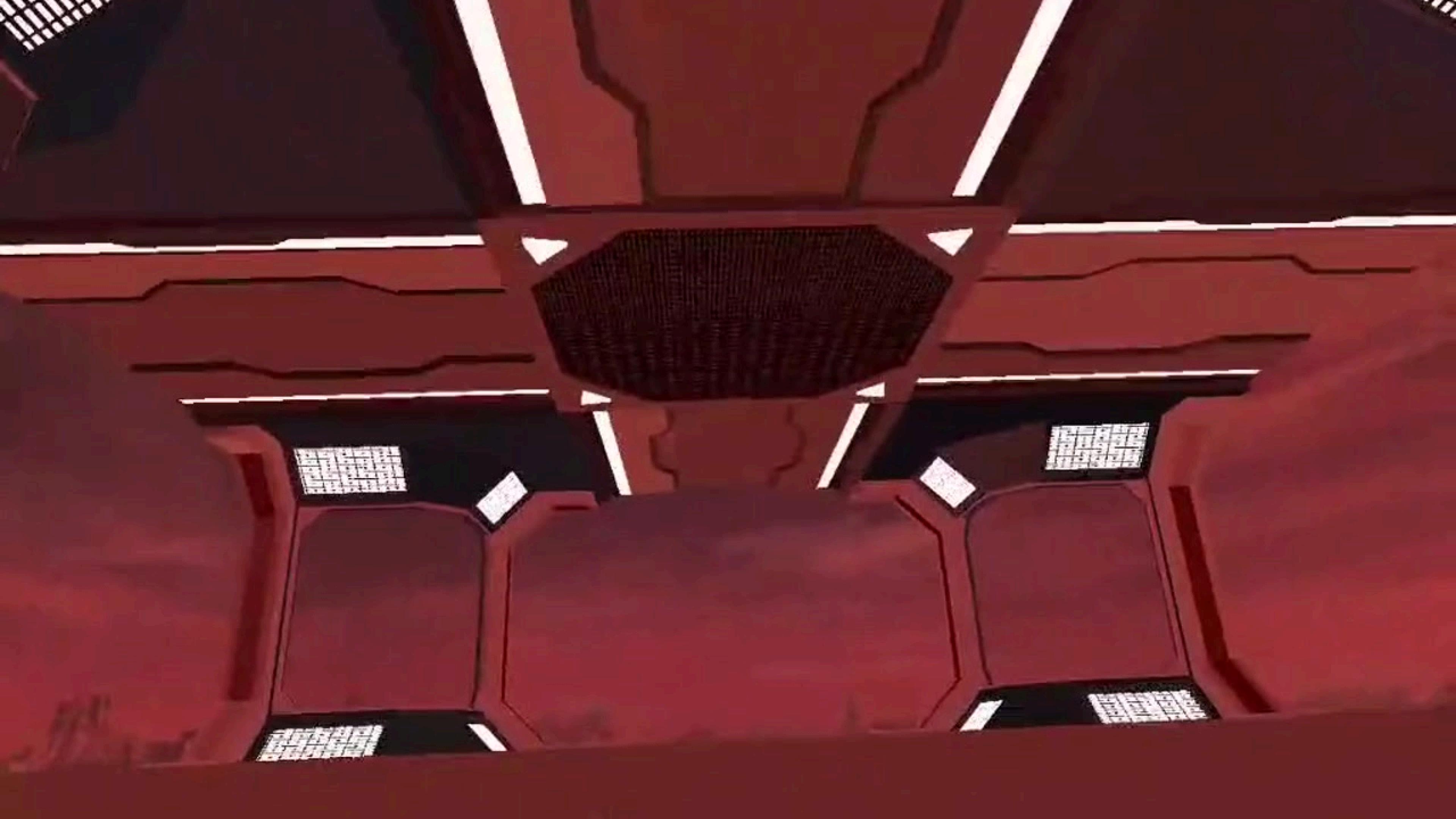
Scene 2: Main Mission Start

Jumping Jacks → 0.8 m forward

Squats → 1.5 m forward



Scene 3: Mission Accomplised

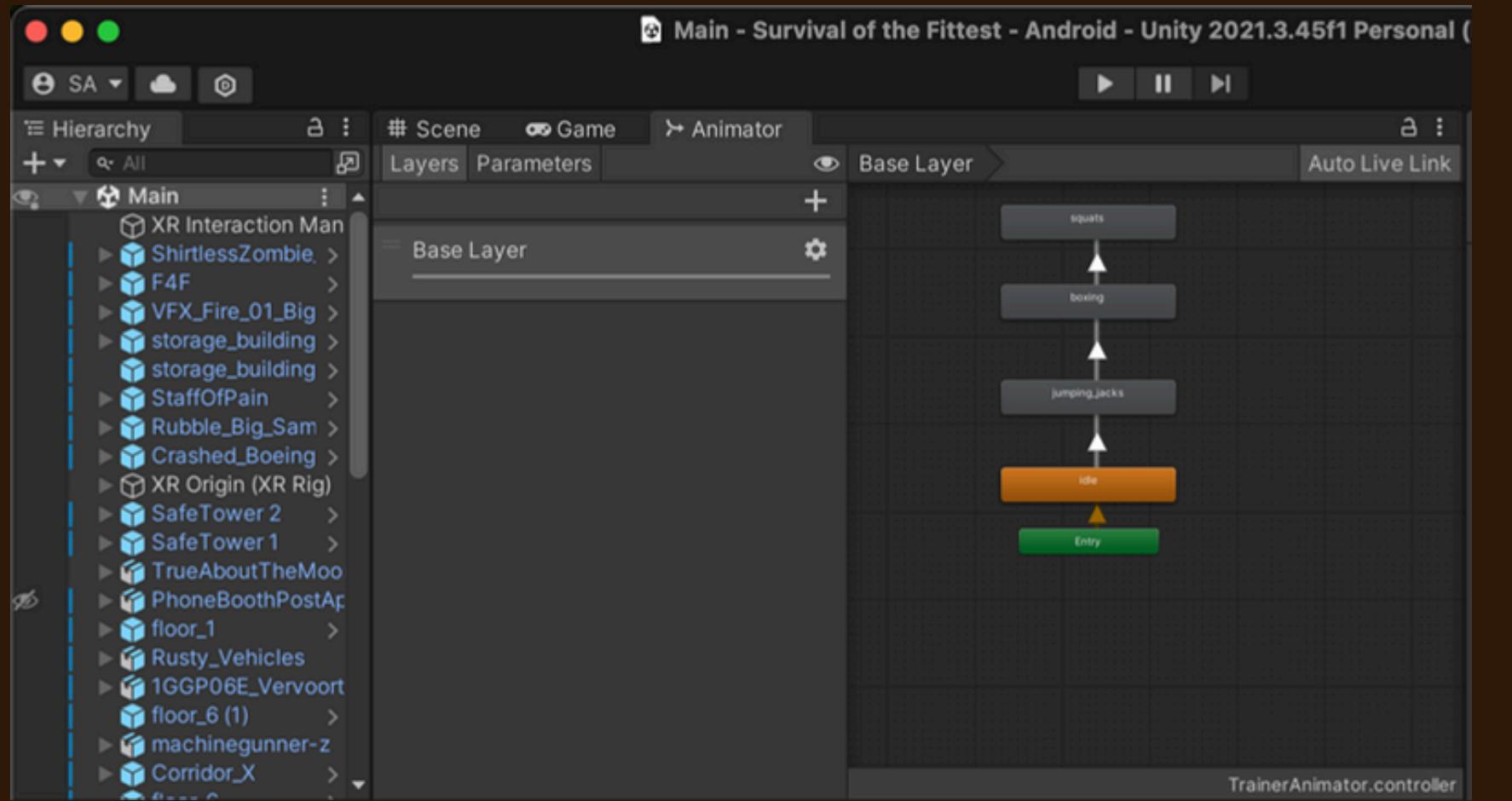


Tools Used

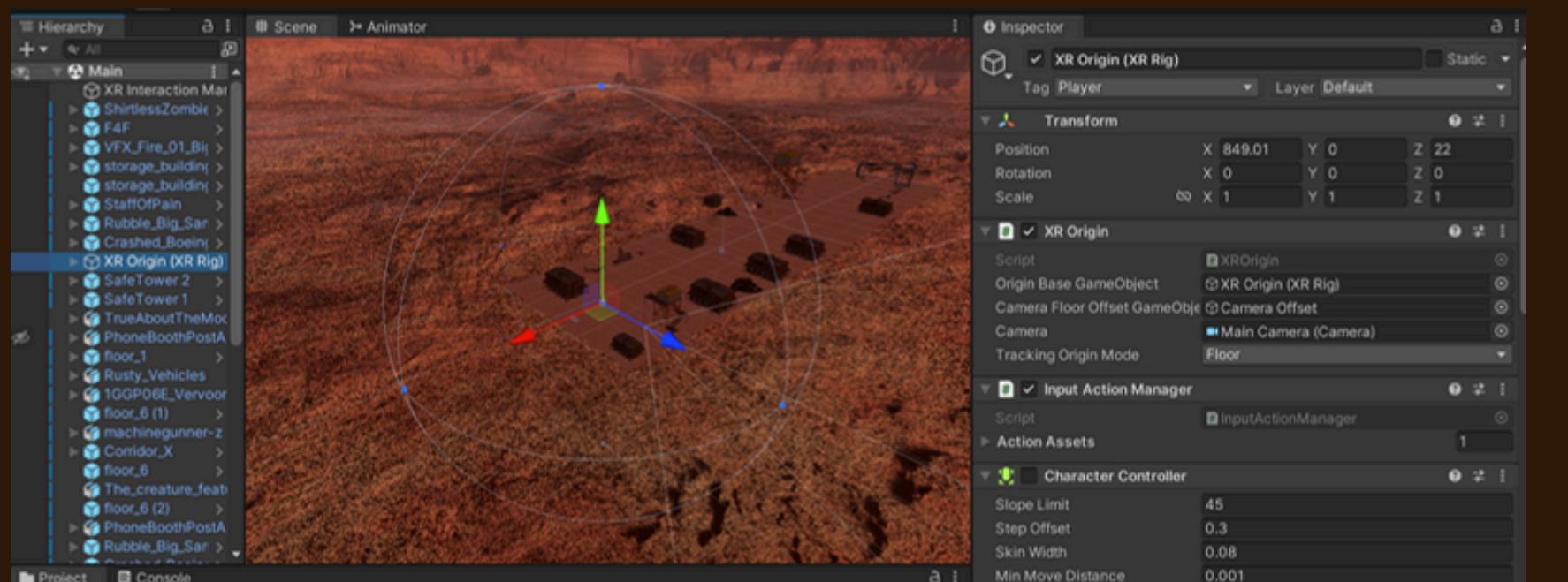


- 1 **Engine:** Unity 2021.3.45f1
- 2 **VR:** Meta Quest 2
- 3 **Toolkit:** XR Interaction Toolkit
- 4 **Animation:** Mixamo
- 5 **Assets:** Unity Asset Store

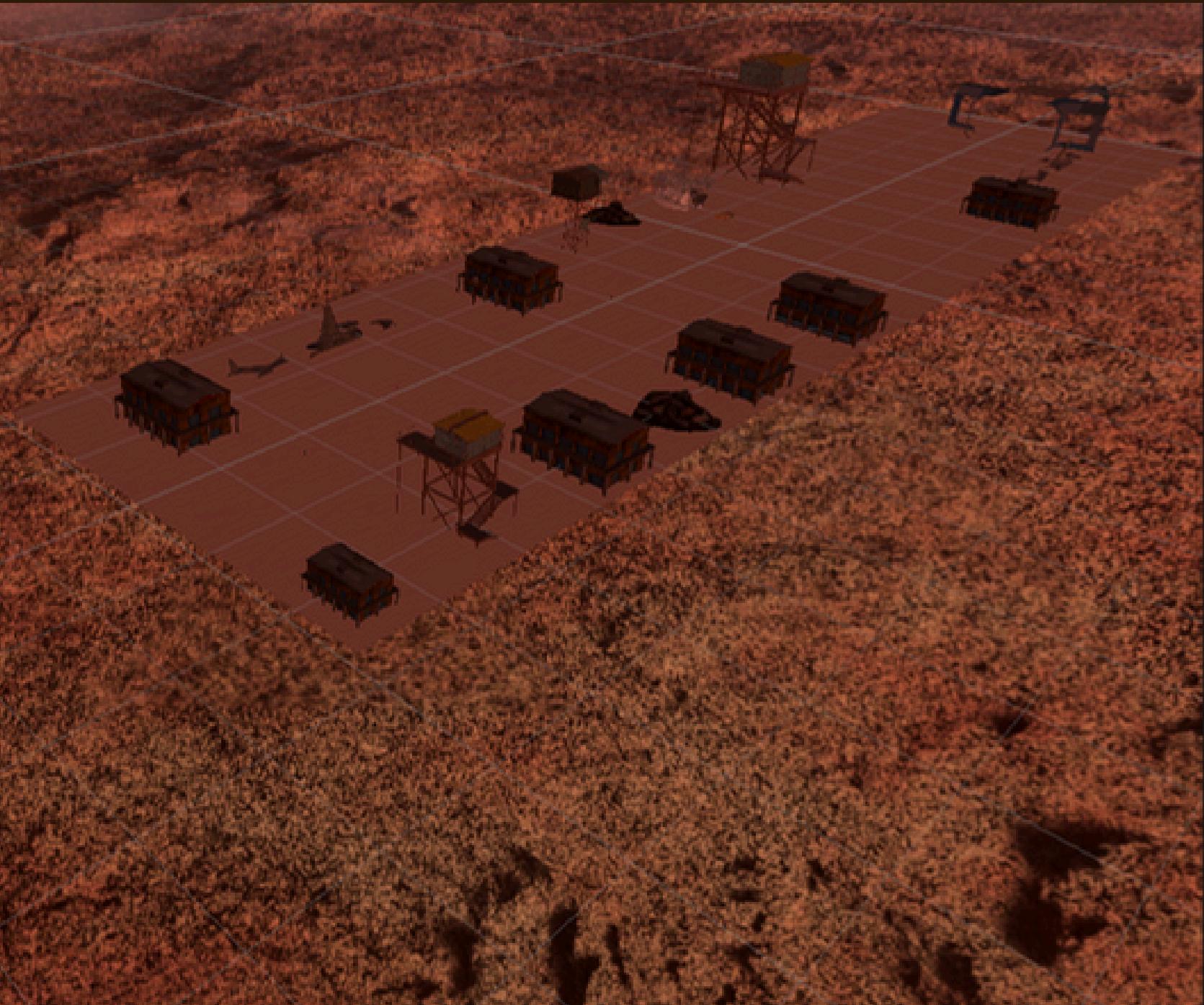
Behind the Scenes



Warm-up animator sequence



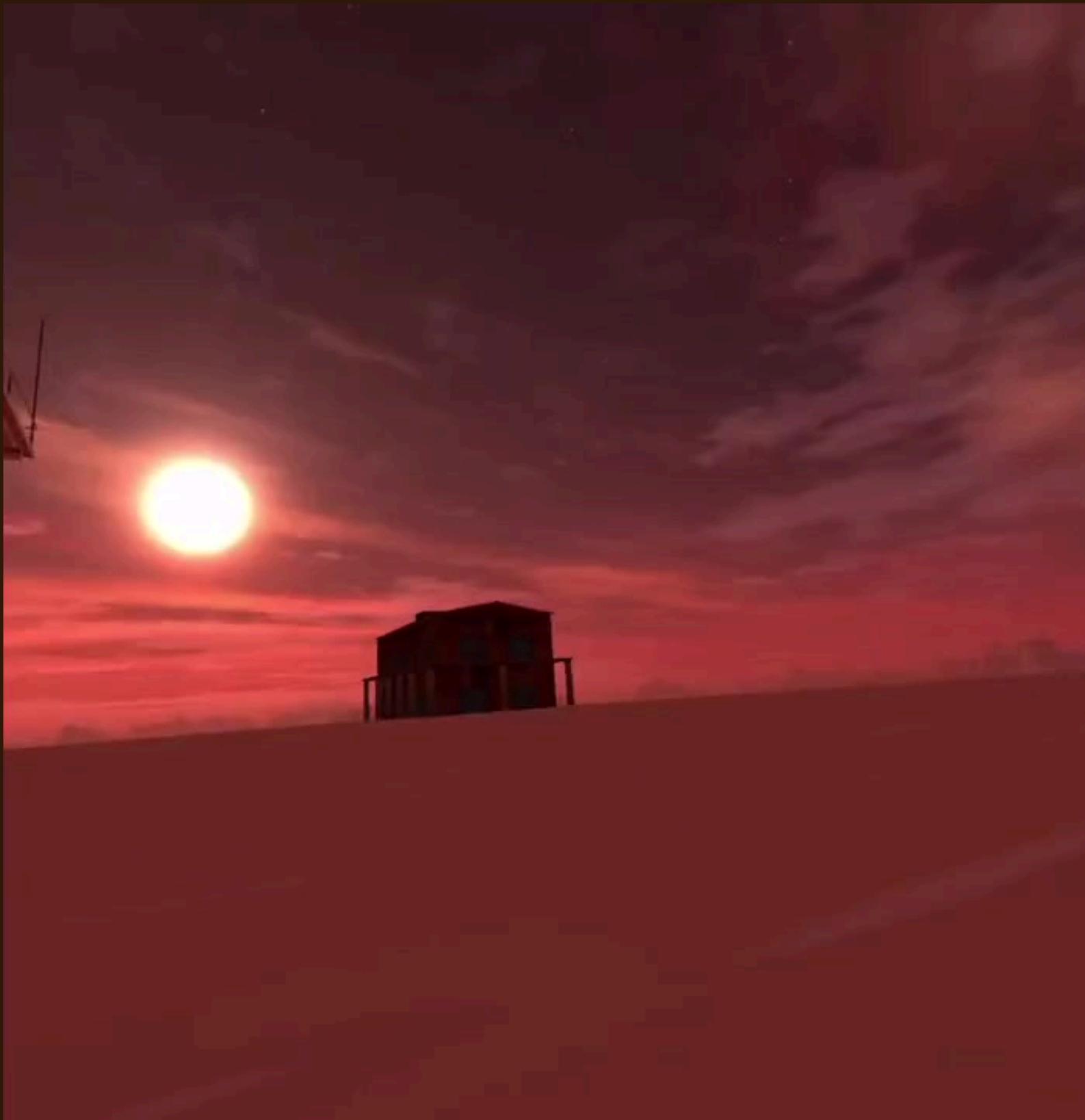
XR Origin Positioning



Post Apocalyptic Passage



Tester 1





SUS Questionnaire

Instructions:

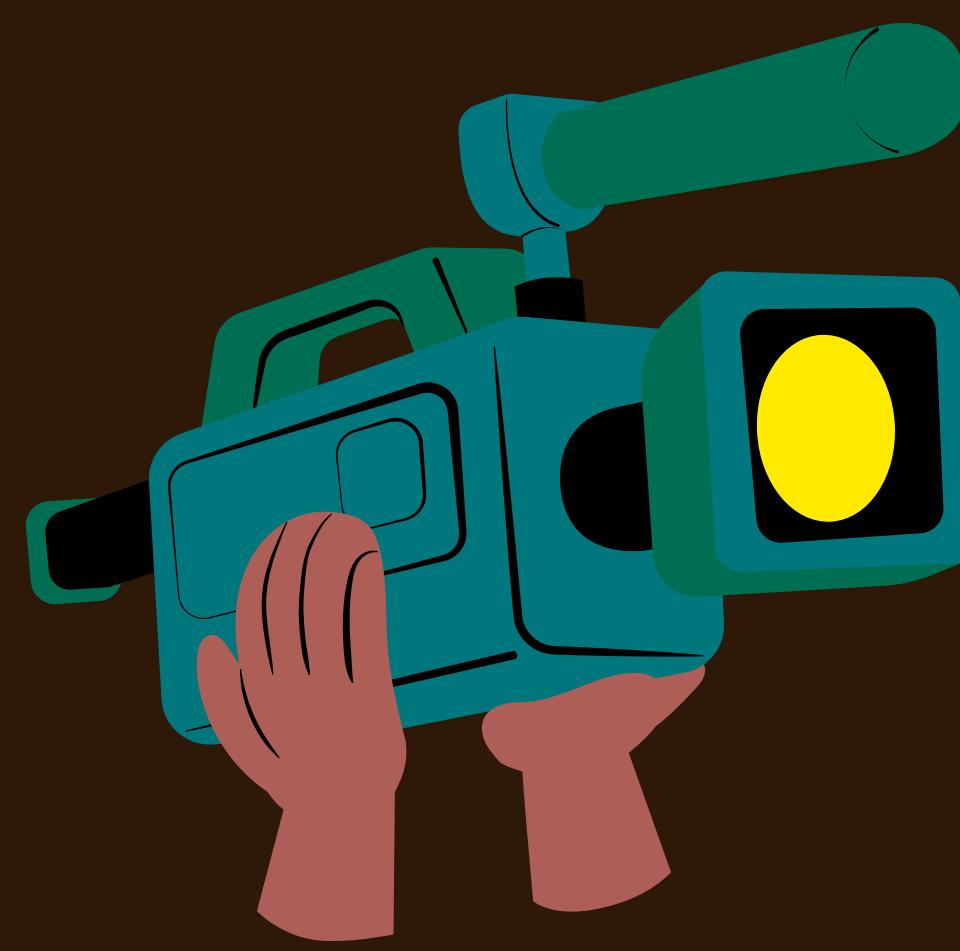
Please rate each statement based on your experience with the prototype.

Circle the number that best reflects your agreement:

1 = Strongly Disagree | 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	I think I would like to use this experience frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2	I found the experience unnecessarily complex. (R)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I thought the experience was easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
4	I think I would need technical support to use this experience. (R)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I found the various movements well-integrated with the virtual responses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6	I thought there was too much inconsistency in the experience. (R)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I would imagine most people would learn to use this experience quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
8	I found the experience very cumbersome to use. (R)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I felt confident using the experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
10	I needed to learn a lot before I could get going with this experience. (R)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

87.5 / 100



Q1. How did the physical movements (squats, jumps) feel in the context of the experience?

“I felt exhausted – but in a good way. It actually motivated me to keep going, like a real workout.”

Q2. Did the hallway setting enhance or limit your sense of immersion? Why or why not?

“It didn’t feel limiting – it was designed to work with the space. It felt intentional, not restrictive.”

Q3. Was it clear what you were supposed to do at each moment? If not, where did you feel confused?

“Yes, it was quite intuitive overall. Still, having captions along with audio would be helpful, especially in noisy environments.”

Q4. What part of the experience felt most engaging, and what would you improve?

“I liked the workout aspect – it motivated me. Improvement-wise, again, captions would really support the audio cues.”

Tester 2





SUS Questionnaire

Instructions:

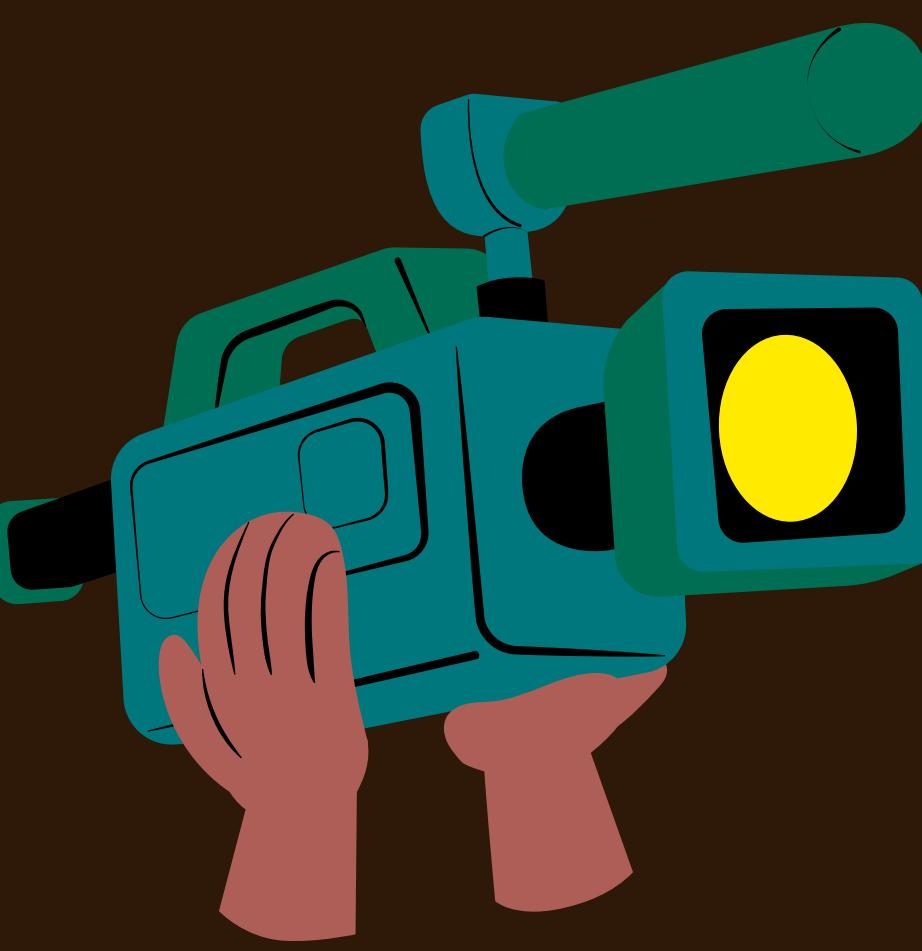
Please rate each statement based on your experience with the prototype.

Circle the number that best reflects your agreement:

1 = Strongly Disagree | 5 = Strongly Agree

No.	Statement	1	2	3	4	5
1	I think I would like to use this experience frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2	I found the experience unnecessarily complex. (R)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I thought the experience was easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
4	I think I would need technical support to use this experience. (R)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I found the various movements well-integrated with the virtual responses.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
6	I thought there was too much inconsistency in the experience. (R)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I would imagine most people would learn to use this experience quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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9	I felt confident using the experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
10	I needed to learn a lot before I could get going with this experience. (R)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

87.5 / 100



Q1. How did the physical movements (squats, jumps) feel in the context of the experience?

“I didn’t feel like exercise because I was so engrossed in the environment. I forgot I was moving that much.”

Q3. Was it clear what you were supposed to do at each moment? If not, where did you feel confused?

“It was mostly clear, but I think better cues – maybe more voice prompts or visual indicators – would help.”

Q2. Did the hallway setting enhance or limit your sense of immersion? Why or why not?

“It added to the overall excitement. The confined space made it feel suspenseful, like I had to escape quickly.”

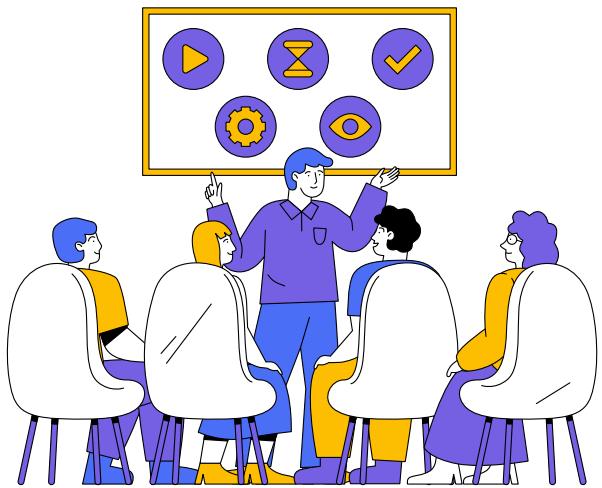
Q4. What part of the experience felt most engaging, and what would you improve?

“Most engaging part? It was very immersive. I didn’t feel like I was working out.

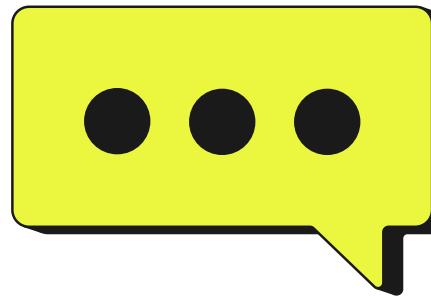
What could improve? Maybe adding a leaderboard or countdown clock to increase the pressure.

Design Recommendations

Improve Cue
Clarity



Add Subtitle
Support



Design Recommendations

Include
Leaderboard or
Progress Tracking



Finalize Punch
Interaction



A cartoon illustration of a screaming zombie with red eyes and a wide-open mouth, holding a white rectangular sign with the word "REFLECTION" printed on it. In the background, there are several other zombie heads with various expressions, some with red eyes and some with blacked-out eyes. The entire scene is set against a dark brown background.

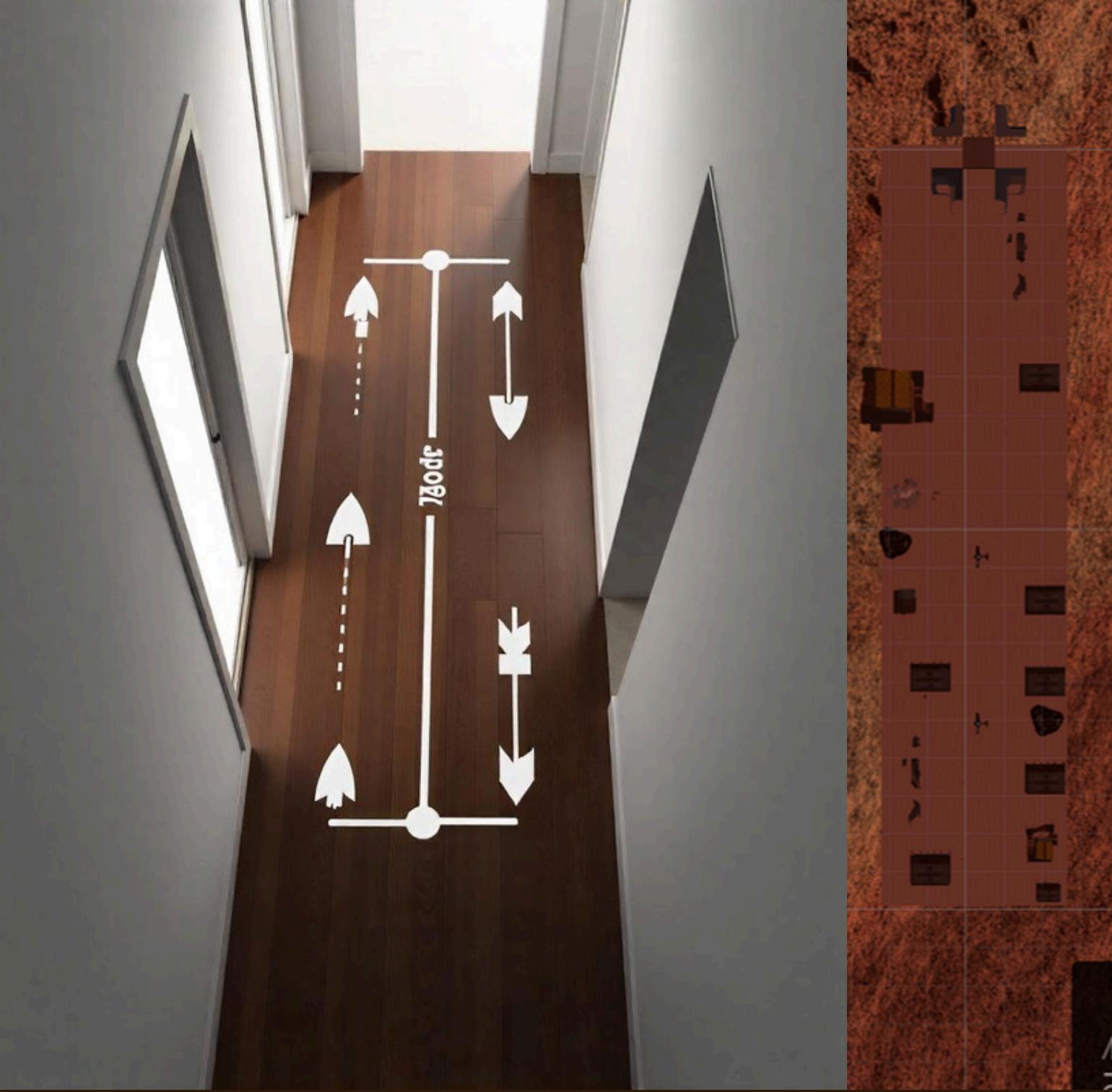
REFLECTION

Embodiment & Presence



“I didn’t feel like exercise because I was so engrossed in the environment. I forgot I was moving that much.”

Context-Aware Design & Spatial Mapping



*Physical space inspired virtual
constraints + expansions*

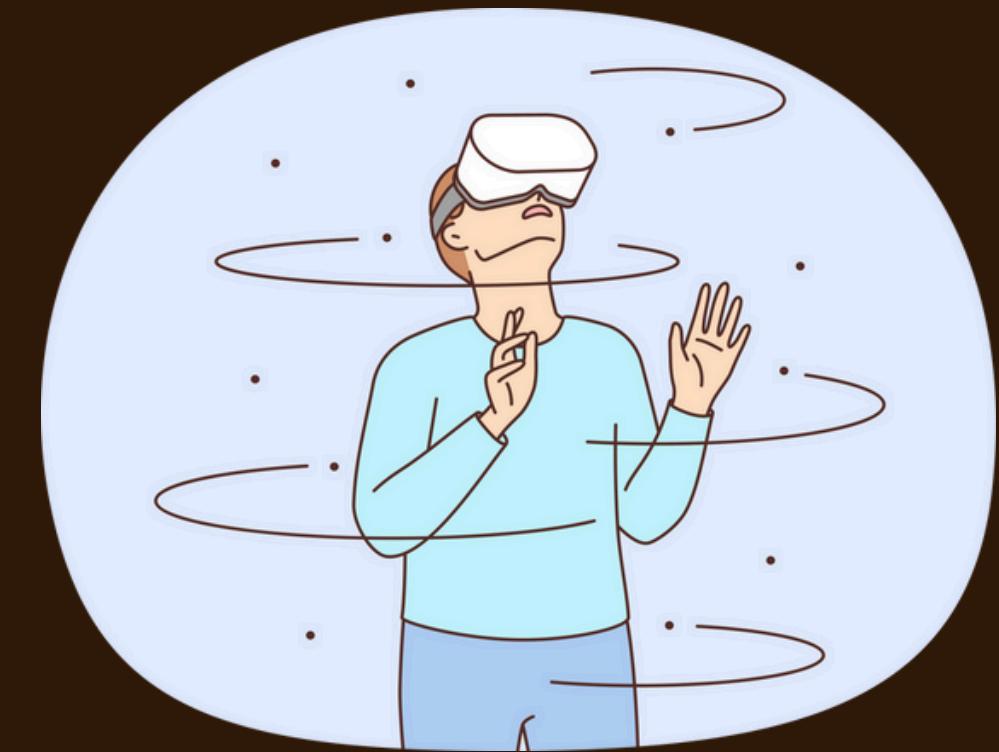
Mixed Reality Architecture & Narrative Flow



Real environment becomes stage for performance

What I Learnt from the Project

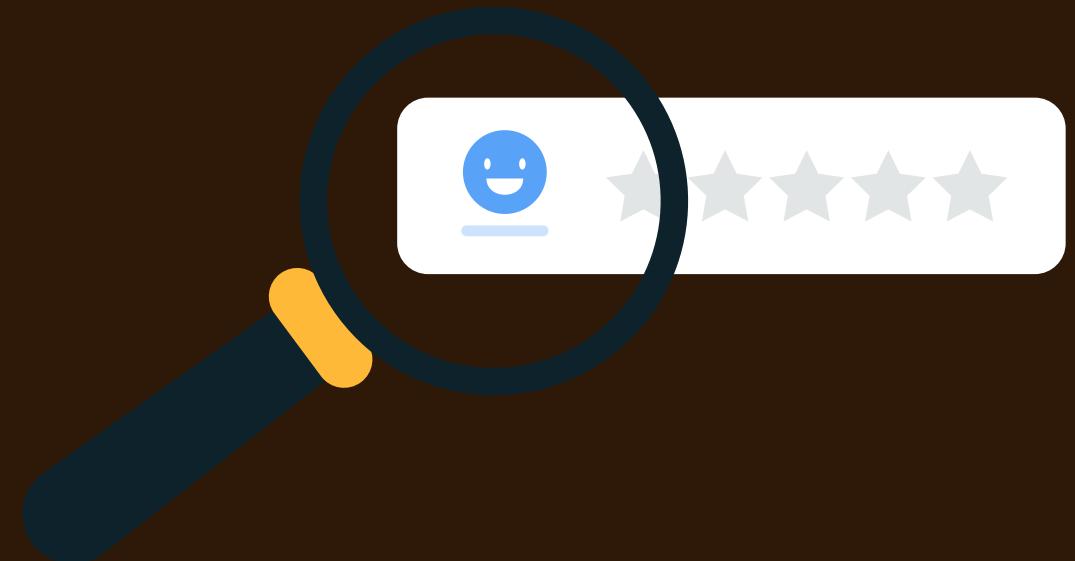
Design is often born out of limitations, not just possibilities.



What I Learnt from User Testing

“Captions would help along with audio.” – P1

“Didn’t feel like a boring gym workout” – P2



Built for a hallway. Designed for survival.
Coming to a cramped space near you.

