Virtual Reality Space Escape Room Game

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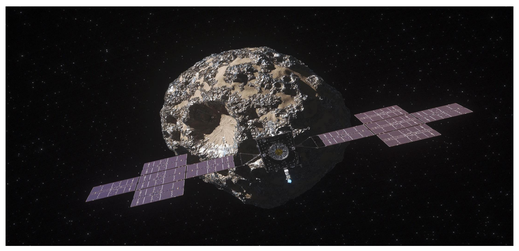
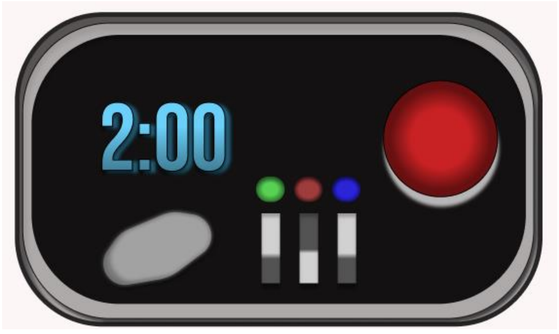
Problem Statement

- NASA's Psyche mission aims to explore a metal-rich asteroid believed to be the exposed core of a protoplanet.
- Located between Mars and Jupiter, this asteroid offers a rare glimpse into the building blocks of terrestrial planets, which typically have metal cores hidden beneath rocky mantles.
- Expected to arrive at Psyche in 2029, the mission will use advanced instruments to analyze the asteroid's structure, topography, magnetic fields, and elemental composition.
- Our capstone project aims to promote the mission with a VR escape room game designed for students and the general public.
- Targeted at children and young adults, the game will simulate space exploration by immersing players in a futuristic craft headed to Psyche, with realistic environments and interactive tasks.
- This VR project not only addresses the growing public interest in space exploration but also enhances educational outreach through an engaging, immersive format that elevates traditional 2D educational games.



Design Requirements

- Implementation will predominately use Unity engine to run the game.
- C# scripts will give the game full functionality for the user to interact with.
- The setting will provide a realistic space theme to give users an immersive experience interacting with the psyche environment.
- 2 minute event mode implementation for the user to solve mini puzzles and complete the psyche mission.
- 30 minute story mode implementation for the user to navigate multiple rooms by solving puzzles to complete the psyche mission.
- Our game will be accessible to users with visual and auditory needs.
- Implement intuitive controls to reduce complexity concerns that users encounter.
- Console preliminary design:

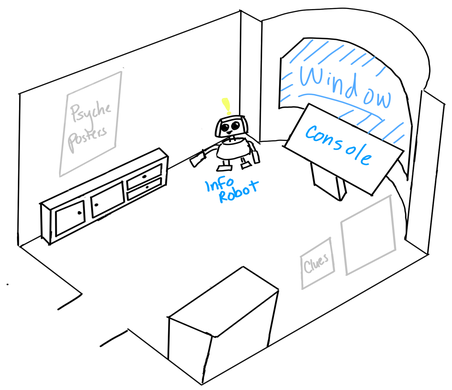


Game Design

Gameplay overall follows a single player escape room concept. The player will load into the space ship, be given exposition and a controls tutorial, and then have a time limit to find all pieces of a code to initiate a landing sequence.

Theme:
- Player is on another mission to Psyche in the future after a successful first mission that discovered valuable elements to sample and collect.

Event Mode:
- To be played in a much shorter timeframe
- Simple puzzles like: matching poster symbols to console symbols, opening panel and connecting wires, and matching Psyche asteroid surface to image. Event room draft plan:



Story Mode:
- 10-15 interconnected puzzles throughout 3-4 rooms involving: finding keys, collecting objects to interact with environment (screwdriver, magnet, etc.), reading posters for instructions, and solving physical puzzles (placing objects in the right spot, moving things around)

Future Implementation

Future implementations will focus on enhancing interactivity, immersion, and accessibility.

Dynamic Environment:
- Implement responsive feedback for player actions, such as lights and sounds, along with environmental changes based on puzzle progress.

Storytelling Enhancements:
- Add holographic messages, and interactive story elements to deepen immersion.

Accessibility:
- Build features like subtitles, and colorblind modes, for visually impaired users, ensuring inclusivity.

User Feedback:
- Conduct ongoing beta testing to refine controls and VR comfort, adjusting difficulty and intuitiveness as needed.

Advanced Puzzles:
- Integrate VR-specific interactions like creating layered puzzles that increase immersion and complexity.

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