Liminal VR Pty Ltd (ABN: 95 604 859 289)
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Liminal Platform – Creative Concept Template

Thank you for being a Liminal Partner! The purpose of this document is to give the Liminal Team an overview of your team and the experience you are creating. This will help us give early feedback to help you hit the ground running and maximise your chances of your experience being published on the Liminal Platform.

Before completing this document, please ensure that you have read the following:

- The Liminal Developer Wiki (https://github.com/LiminalVR/DeveloperWiki/wiki)
- The Psych Docs (www.liminalvr.com/psychdocs)
- Liminal Partner Agreement (www.liminalvr.com/terms)

If you have access to VR (e.g. Oculus Quest, SteamVR, etc.), we'd also encourage you to try some of the experiences on the Liminal Platform.

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Summary

Date:

29/11/2023

Team/Studio Name:

RMIT Summer 2023-24 Internship

Team Members Names (email & phone):

David Zeleznikow-Johnston
dzeleznikow@gmail.com
0411 838 641

Lisa Zhang
njyuhua2005@outlook.com
0433 559 186

Category of experience (e.g. Calm or Energy):

Calm

Total estimated development time (in hours):

David: 200 hours
Lisa: 100 hours

Project start date:

4/12/2023

Final delivery date:

23/2/2024

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Creative Concept

Working Title of Experience:

Reverberate

Synopsis of Experience:
1 - 2 paragraph description of the experience.

"Reverberate" is a virtual reality experience designed to induce a sense of calm in users through a feeling of relative perspective and transcendent sublimation. The setting is a planetarium-like dome, filled with a gentle, shifting light that moves through blue, green, and purple hues which are paired with synchronised ambient, and orchestral audio reminiscent of the serendipitously labelled 'Liminal' sound baths of Sigur Ros'. The user is asked to lie flat on the floor or mattress in their physical space, and in the virtual world finds themselves amongst a crowd of other 'sound bath' attendees, staring up at a domed ceiling. Displayed on the domed ceiling. users are able to watch a non-linear motion graphic that is both repetitive and unpredictable, similar to the old DVD screensaver that would hypnotically bounce around the sides of a television screen, as a viewer anticipated the off moments when the logo would hit a perfect corner, which anecdotally produced an intensely satisfying experience.

The methodology behind this experience is rooted in the concept that a passive, low cognitive load environment can be calming. By not requiring users to make choices or perform actions, the experience focuses on intrinsic pleasure derived from simple, predictable yet engaging visual cues and the comfort of a group setting. This approach is supported by research indicating that mammals, including humans, experience reduced stress in groups and find safety in numbers. The design aims to leverage these primordial instincts, using the concept of infectious emotional states to induce calmness.

Long Description:

i.e. more detailed description of the experience – embedded images such as a storyboard are encouraged but not mandatory.

Sound and interactivity should be carefully considered as part of the creative concept outline.

1*Generated by Dalle-3 on the 29/11/2023*

1. Visual Stimuli

The implementation of 'calming' techniques can be divided between the ground plane, where the simulated body of the user is located, and the planetarium/ceiling space that users are encouraged to spend their time looking at.

Hypnotic Planetarium:

The 'planetarium' like sky sphere reflects the constellations of the night sky, but initially these constellations are unlinked collections of isolated dots much like they look naturally in the sky.
The dynamic element in the motion graphic is introduced by a singular moving dot (like

a slowly shifting shooting star) that bounces around the contours of the screen, hitting into constellations and upon impact, forms lines to disambiguate the constellation's shape itself. The affect of the moving of the 'shooting star' is rhythmic, much like the DVD screensaver of the mid 2000's ((https://youtu.be/5mGuCdlCcNM?si=V9XcO3pi6KRRYxm9) there is a level of rhythmic predictability offset by an element of anticipation that could provide a hypnotic and immersive state for the viewer. The experience could also be understood as less interactive version of Atari's 1976 game 'Breakout', in that the experience involves watching a ball shoot across the screen and bounce off the contours of barriers. However unlike 'Breakout' or as its more commonly known 'Brick' if the 'ball' successfully hits a constellation it creates a new barrier (in the form of a constellation) rather than reducing one. Intrinsic reward is intended to be achieved additionally as the constellations that form are not arbitrary shapes, but real formations that can be found in the night sky, this adds an element of optional educative pleasure and immersion (as the user recognises they are engaged with an aspect of 'reality'. The motivation towards a intrinsically rewarding and immersive experience is intended to enhance the general somatic affect of the work, and therefore increase a level of 'calm'.

Sequence of events:

Onset:

The player is introduced to the experience through a visual exposition where they are informed that they are lying in a planetarium, and can settle into a deep state of calm where they learn about their place in the universe. They are informed that they are one of many people who came along to the experience and are (ironically, as VR is an isolatory experience) told to keep quiet so as not to disturb the experiences of the other participants lying down with them. The intention behind this comment, and the presence of other 'users' is to induce a sense of collective reverence and calm that can be simulated by the participation in a collective attentional attitude

Body:

The rest of the experience is fairly passive in terms of user interaction, which is intended to facilitate a state of calm through omitting any necessary action to continue the experience. The user may choose to adapt their experience by focusing on different aspects of the environment. This may involve looking at the movement of the other humanoid 'participants', closing their eyes and solely experiencing the calming soundscape. Or directing their gaze upwards towards the hypnotic motion graphic displayed on the planetarium screen above their head.

Ending:

The scene naturally ends when all the unsorted starts have been solidified into discernible constellations. The text then prompts the user to consider their relative insignificance in the context of the universe's history and how that can be a calming and de-escalating consideration that provides perspective to, and reduces stress about day-to-day worries.

For added detail, the body of the experience can be broken down and functionally analysed as per it's three main elements:

Music and chromatic atmospheric fog

Background music:
Music is a key element within the 'Vertebrate' experience and could make or break the effectiveness of the work. The music needs to be transcendent and inspiring enough to induce a state of relaxed awe, without becoming too triumphant and engagement. The soundscape intends to plays a key role in producing a relaxing state of mind through the use of ambient, transcendental and occasional orchestral sounds to provide a 'soundbath' experience similar to the aforementioned 'Liminal' sound baths of Sigur Ros, as well as sounds similar to the more ambient, cinematic or contemplative works of musicians such as Four Tet, Steve Reich, Brian Eno and Juliana Barwick amongst others. The soundscape would have to be bespokely produced for the experience which David could arrange through friends who are sound designers. The progression of sound would run on a linearly baked 'mix' and would run throughout the entirety of the experience.

Dynamic sound:
In addition to the hypnotic background music, additional sound effects could be created upon specific interactions as the 'shooting star' hits collisions or new constellations are traced. These could be in the form of discreet sound effects (say the sound of a bell chime) or rather the background track could be temporarily modulated which may present an interesting approach.

Chromatic atmospheric fog:
In addition to the music, the environment will also shift in colour to aid users to feel entranced in an engaging, transcendental and dynamically adapting environment where the auditory features are synchronised with changes in colour. This synchronisation of colour and music can help make the experiment more immersive, and also increase efficacy of inducing a calming effect on the user, so long as the colours are of a appropriate spectrum and the transitions are smooth rather than jarring.

Ground and Crowd

This VR experience is unique in that it attempts to offset the isolatory effects of much of VR which generally involves a player alone in an environment. Studies suggest (*Vitale, Smith, Neurobiology of Loneliness, Isolation, and Loss: Integrating Human and Animal Perspectives, 2022*) that levels of stress and cortisol can be reduced when not only humans, but mammals more generally, find themselves in groups, providing a sense of safety and alleviating the stressful effects of loneliness. Additionally, if the other 'users' in the space are seen to be actively engaged with following the movement of the planetarium ceiling's motion graphics, it may lead to a sense of collective attention which could further the immersive and compelling nature of the intended calming experience. The crowd also adds a 'story building' context to the experience which

additionally helps with immersivity.

The Sky / Attentional Object

The planetarium ceiling is intended to be a visual hypnotic stimuli, not dissimilar from the entrancing effects of looking into an open fire, watching the formation and dissolution of clouds, or, as was the inspiration, watching the DVD screensaver of a logo bouncing across a rectangular plane. While the calming effects of such an activity are understood currently by the authors as purely anecdotal, considered explanations for why such engagement can induce calm are as follows:

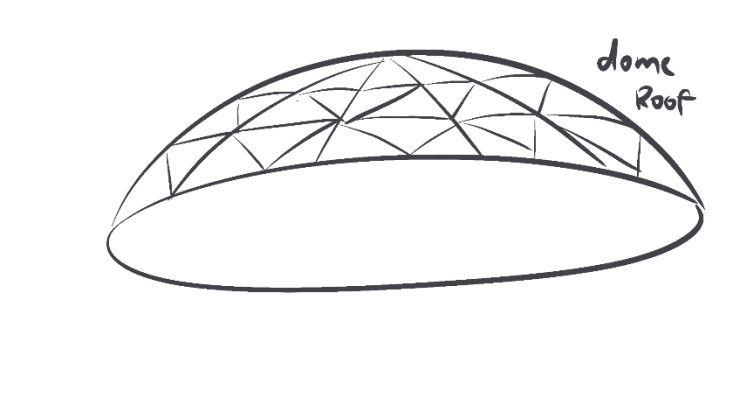
1. Immersive Anticipation and Reward: The bouncing 'shooting star' provides both a predictable visual experience (as in, a viewer can guess where the star will more towards based on the trajectory of the bounce), but there is still an element of anticipation about whether the star will hit the desired corner or constellation. This provides an 'entrancing' experience which would induce a state of calm and 'flow'.
2. Hypnotic Effect: Watching a repetitive stimulus with a small degree of variation can be especially calming or hypnotic for humans. Consider the effects of watching a crackling fire or an ebbing tide.
3. Reduction of Cognitive Load: the bouncing 'shooting star' is a fairly minimal sensory experience that allows the user to pare back from habitually stimuli rich environments and focus on a simple visual field. This reduction in cognitive load can be especially calming.
4. Curiosity and Nature: Curiosity is engaged not only through the novelty of waiting to see where the star will travel and which constellations will be revealed, but also in the educative nature of exploring aspects of our real galactic environment which become revelated over the course of the experience. 'Nature' as an aesthetic tool has been shown to provide positive psychologic effects, reducing stress and providing a de-escalation of everyday concerns as they are compared with the physical and temporal scale of natural phenomena.

Visual References

Players lie down in the lobby, and the comfort and relaxation of lying down has a quick

calming effect.

- Stress Reduction: Lying down promotes physical relaxation, helping players release tension and stress. The horizontal position encourages deep breathing, which can further contribute to relaxation.
- Improved Mood: A comfortable environment can positively impact players' moods, creating a more enjoyable atmosphere. Relaxation often leads to a more positive outlook, enhancing the overall experience.
- Customization of the Environment: Dim lighting or calming music can enhance the ambiance and contribute to a tranquil atmosphere.



The scene design is a domed starry sky museum.

- Ambient Lighting: Use soft, ambient lighting to mimic the gentle glow of starlight. Avoid harsh or bright lights to maintain the celestial ambiance.
- Audio Experience: Integrate a subtle soundscape that includes soothing music, gentle whispers of the cosmos, or narrations about the wonders of the universe. Incorporate interactive audio elements that respond to visitors' movements or touch.

The scene design is a domed starry sky museum. As the music plays, players can fully immerse themselves in the space.

- Ceiling Projection: Project a night sky onto the dome with predominantly blue

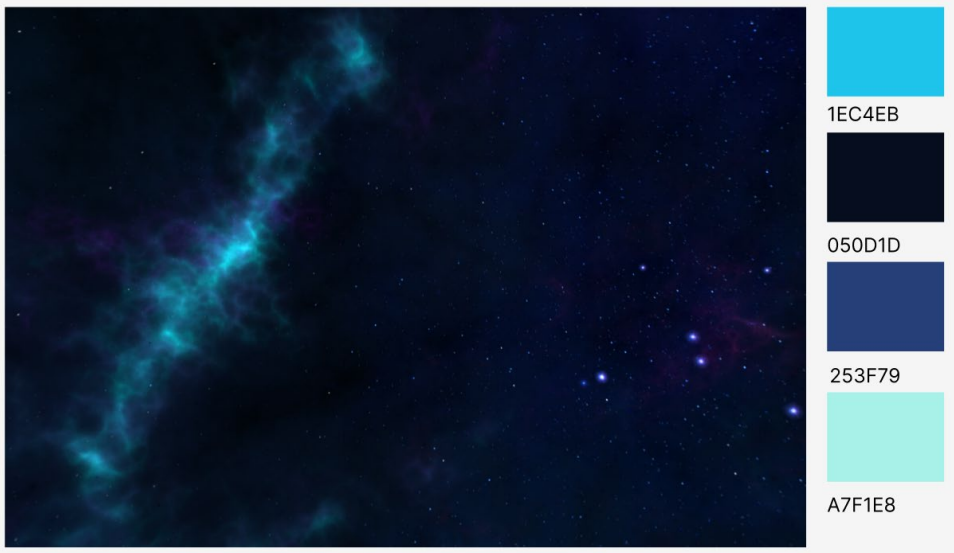
and green hues. This can simulate the calming effect of a clear night with a touch of aurora borealis.

Colour References & Consideration:

Soft blues and greens are considered the most calming colors. Example: night sky and starry sky.

Absolutely, soft blues and greens are often associated with calming and serene environments. Incorporating these colours, inspired by the night sky and starry skies, can contribute to a tranquil and peaceful atmosphere. Here are some ways to integrate these calming colours into the design of your domed starry sky museum:

Colour Palette:



Programming

The programming aspects for 'Reverberate' are relatively simple, and can be broken down into the following categories:

1. Crowd animation

The crowd animation can simply be run using Vertex Animation Textures that animate individual humanoid figures in cycles of simple movements, with time offsets so that the naturalistic movement is unsynchronised between different players. This is a standard way of animating crowds where only a single animated figure has to be produced, and then can be re-instantiated throughout the game engine to produce the illusion of a complex animated crowd.

2. Soundscape and dynamic atmospheric fog

For simplicity's sake, the soundscape and dynamically shifting atmospheric fog should run linearly, where the music and colour changes are baked into the scene. As the intended affect is 'calming', it seems unnecessary to use dynamic or prompted cues to shift the transitions of sound or colour.

3. Motion graphic on planetarium screen.
This aspect could be broken down into two options of differing complexity:

1. Hard baked animation through video texture:
Hard baked motion graphic video on a hemispherical projected texture map. In this instance, the movement of the shooting star and constellation formation will be produced in Adobe Aftereffects and will play identically each time the experience is initiated. This would be fairly simple as it requires only that the 'video' file is loaded into the Unity Mediaplayer, applied to a material shader, and then projected onto the UVed mesh of the hemispherical planetarium sky sphere. The downside to this approach is that if a user returns to the experience, the sequence of events will unfold identically each time, which may reduce the anticipatory quality of the experience over each use.

2. Programmatic animation:
In this instance, the animation is dynamically instantiated as a custom shader or Monobehaviour script, and the movement of the star is unpredictable. This is feasible programmatically, however would require a more thorough research investigation into custom dynamic shaders. The upside of this approach is that the experience will be unique with each initialisation, so each user experience is unique.

Reference to psych docs and/or other research:
i.e. Slow linear motion used for falling snowflakes [psych docs: Motion Section].

Muted blues and greens used for environment [psych docs: Colour].

Passive approach (*Calm)*
Concern: users feel disengaged or bored.
Solution: Written cues at the start and end of the experience will provide context and inform the user of 'what to do'
Clear focal point provided for attentional focus
Audio and visual stimuli synchronised

Intrinsic rewards *(Gameplay Interactivity)*
Hypnotic motion graphic planetarium experience intended to provide intrinsic interest through anticipatory engagement as well as through a harmonious educative and nature based wonderment.

Immersion (*Presence & Immersion)*
The full 360 degree field of vision provides a immersive atmosphere to help facilitate the affective quality of the calming experience. Additionally the

existence of other 'players' contributes to a sense of collective engagement which may also facilitate immersion and depersonalisation.

Reference images and videos:

i.e. images depicting the look and feel (aesthetics) of the experience

Image from: https://www.usatoday.com/story/travel/cruises/2018/06/14/viking-cruises-ship-orion-planetarium-explorers-dome/701583002/

https://museumsvictoria.com.au/venues-and-events/spaces-for-

hire/scienceworks/melbourne-planetarium#&gid=1&pid=3

Unity space

*Bouncing DVD Screensaver (*accessed from https://pranx.com/bouncing-dvd-screensaver/ at *Bouncing DVD Screensaver (*accessed from https://pranx.com/bouncing-dvd-screensaver/ on 30/11/2023)

Sigur Ros, *Liminal Sound Bath* (2017) (accessed from: https://www.ashleymanta.com/sigur_ros_soundbath on the 30/11/2023)

Preview of the experience can be accessed here: https://www.youtube.com/watch?v=2JqDkdXlezw&ab_channel=RYOT

Checklist:

Please go through each of the check boxes below to make sure you are ready to submit your creative concept:

☐ Full sequence of events has been identified (including the opening scene and the progression of events that unfold through to the closing scene)

☐ Outlined the full range of assets/animation/programming needed and how this will be acquired/created

☐ Completed a risk assessment predicting any issues which might impact the project development (all major risks should be accounted for by revising the creative concept, any minor risks should be outlined below)

☐ Project is within scope and tailored to the strengths of the team (the team has the necessary skills and resources to deliver the proposed concept on time)

Questions:

If you have any specific questions about your creative concept at this stage, feel free to ask them here or contact either:

- Adam Barton at adam@liminalvr.com or 0431192589
- Damian Moratti at damian@liminalvr.com or 0416 077 344

If you have a more general question, please feel free to use the Liminal VR Partners Slack channel.