# Product Backlog

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# Project Title

**S2-18 VR Energising Experience (Liminal VR)**

# About the Project

The client organisation (see <http://liminalvr.com> ) has developed procedures intended to improve quality of life by the use of particular kinds of virtual reality experiences. Examples of these experiences are being developed by student teams all around the world. Imagine there’s a big exam on the horizon but the students are feeling sleepy. This project seeks to create an experience to ‘wake’ them up and get them motivated to ace the test! Using the research in the Liminal Psych Docs to be provided by the client, design an experience which will enhance their energy levels and be fun and invigorating. The client is available for consultation and will provide feedback on the quality of the work, communicating via Slack (see <https://slack.com> ). As the client is making IP available free of charge, teachers and students are asked to sign confidentiality agreements.  
The experience is to be designed for Oculus Go. Students need to integrate the points of interactions with the use of controller’s trigger or touch surface as inputs.

This project relies heavily on UX so students are advised to conduct a UX testing at the end of each sprint using proper testing techniques. The learning from the UX testing, should be incorporated in next sprint of development.

# Definition

**Calm**

A calm state is identified as an emotional and cognitive dimension placed between low/medium arousal and high valence.

A calming experience may target a state of **deep relaxation**, which is characterised by very low activation levels. As an example, this might be useful for unwinding after a long day, or coping in moments of high stress. Alternatively, calm experiences designed to produce slightly higher activation levels could be implemented to achieve a state of **alert composure**. In functional terms this allows users to remain productive and deal with stress and tension in a composed, positive manner.

The quick start guide below provides a range of guidelines for design factors and principles which can be implemented to guide emotion and cognition across these dimensions. Incorporating a range of design factors into a calming VR experience can be difficult, and should prioritise a unified combination of design elements.

**Energy**

an energy state is identified as a dimension of emotion and cognition placed between **high arousal**and **high valence**.

Balance between these two factors is essential. Whilst arousal is core to a state of energy, without a high enjoyment factor this activation can quickly become distressing. Above all else an energy experience should be fun and engaging, leaving the user feeling psyched up, motivated and on a high, with greater feelings of personal power and confidence.

The quick start guide below outlines a range of experimentally validated design factors and principles which can be implemented to guide emotion and cognition across these dimensions. Individually these factors are effective, but when implemented in virtual reality they need to be enjoyable and unified with a compelling creative concept.

**AWE**

Awe is a complex emotional state characterised by a combination of intense feelings such as astonishment and wonder with a sense of shock, surprise and confusion. An awe experience should leave people in a state of awe after encountering something extraordinary which violates their expectations and challenges their perceptions of normality.

**Variants of awe:**

* Beauty – awe in response to aesthetic pleasure, generated by stunning visual and audio components
* Agency – awe in response to new found abilities and control granted by a VR experience
* Supernatural – uncanny events which transcend what is possible and normal in the real world
* Threat – in response to perceived dangers and natural phenomena.

# Users

Actors in this project are all the stakeholders,our client, our team etc.

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**Requirement**

**Gameplay and interactivity:** The interactive nature of VR will continue to be a standout feature which enhances the sense of presence, engagement and enjoyment an experience can provide. Even so, passive VR experiences with no obvious form of gameplay or participation can still effectively induce cognitive and emotional states. They encourage users to take better notice of surrounding audio/visual stimulation; features which are easily overlooked when engaged in demanding tasks in VR. As such, interactivity and gameplay are not essential to all experiences within the Liminal VR platform.

The following sections looking at considerations for gameplay and gaze control, as well as restrictions for interactivity, outline factors significant to all categories of the platform. The final sections include research evidence and examples relevant to specific categories.

**Interactivity**: The physical input which enables participation and the extent to which a user has influence over a virtual environment.

**Gameplay**: The incorporation of goals or objectives which define how users should interact.

For VR (virtual reality) to contain gameplay features, users must be able to interact and control elements of virtual environments which enable them to win or lose. In contrast, interactive experiences don’t require any gameplay components to function. User interactions can simply exist as joyful novel actions, as opposed to functions which help to complete goals or missions.

**Motion:** Our ability to detect motion serves a critical role in our understanding of the worlds with which we interact in virtual reality.

Careful manipulations of motion properties can have a huge influence on the emotional context we attribute to our surroundings. It can also directly change the emotional impact of an experience. This is relevant to both simplistic single object movements and large scale motionscape patterns made up of hundreds, if not thousands, of elements.

Presence and immersion: the sense of presence and the level of immersion attainable in VR is unrivalled by any other technology medium. It forms a critical component of what makes VR so unique, lending weight to the cognitive and emotional impact of virtual worlds. This explore section is designed to encourage a considered approach to design factors occasionally overlooked and less relevant in traditional game design. When considerations are made to enhance the level of presence and immersion, you can expect to create a more powerful and enjoyable VR experience.

**Visual design**: Virtual reality allows emotionally rich interaction between people and the visual elements comprised within virtual environments.

This entry draws on research evidence regarding the visual elements of scenes, objects and the impact they have on our cognition and emotions. A number of core design factors have been identified which shape the emotional impact of a virtual environment.

**Nature:** nteracting with nature, whether from living close by (Thompson et al., 2012), taking walks (Berman et al., 2012), or viewing nature simulations (Lynn, 2014), is closely associated with enhanced relaxation and relief from stress and cognitive fatigue.

Ensuring the scene and the elements of a natural environment are appropriate, incorporation into virtual reality experiences can prove very powerful. For example, relaxation exercises have been found significantly more effective when conducted in outdoor, natural settings compared to indoors (Sahlin et al. (2012).

Nature provides context which we often associate with pleasant memories and feelings. However, context is not universal and so the pleasantness of an environment may not be shared by all users (see implementation considerations).

**Breathing:** For centuries, Eastern cultures have emphasised the healing properties of breathing techniques. The physiological and psychological benefits of breathing exercises are now well established in therapy and healthcare. The most consistently used and simple method involves slowing down one’s breathing rate, with short breaths-in and long breaths-out. The relaxation effects of this method may be the primary outcome of VR experiences, in which case the user’s attention is directed to breathing instructions. Alternately, users could be exposed to visual or audio cues which are more subtle.

**Mindfulness:** mindfulness is a state of being present and observing the current moment without judgement (Sauer et al., 2013). There are various activities, such as meditation or yoga, that can facilitate mindfulness states.

Underlying the concept, Grossman, Niemann, Schmidt and Walach (2004) suggest that humans are usually operating in “automatic pilot mode” where we are unaware of our moment-to-moment experiences. Mindfulness develops the ability to sustain attention on mental content which enables a more accurate perception of how we respond to our thoughts and the world around us. This leads to enhanced emotional processing and coping regarding stress and illness, thus providing greater positive outlook and self-control.

**Colour**: Colour can affect our emotions and take on psychological meaning (Elliot & Maier, 2014). Exposure to certain colours can even produce a physiological response.

Within virtual reality design, much like in video games, we have the ability to manipulate colours, ranging from objects or focal points, to the broad colour ranges of our surroundings. As such, we can use colour to guide attention to areas of importance, establish realism (if that is the goal), create atmosphere and, most importantly, we can use colour to guide users towards desired cognitive and emotional states.

We can combine colour with a storyline or objective to enrich the user experience. Also we can create experiences without a story to follow or specific tasks to complete. In which case colour can be used with greater freedom, as an artistic medium in itself to engage the viewer and create an emotional impact.

The key is to understand the emotional associations we have to certain colours, and what components of colour are most important to our emotional response.

**Music:** Virtual reality experiences are dominated by the visual and auditory senses. These two senses are also the senses available to filmmakers in the medium of film. Although virtual reality is a relatively new medium, we can look to how film has used these two senses for emotional effect.

Music is a big component of most film in the form of a soundtrack. Music is so effective at shaping our emotional response to images that it can bias the interpretation of images. Music can affect the emotion, mood and perception of the visual elements of film.

Music in virtual reality provides the same advantage. A virtual reality experience with music is much more likely to affect emotions than one without music.

**Sound:**  person experiencing a simulation is represented by an avatar within the virtual environment. They will experience visual information from the point of view of the camera and will experience sound information from an audio listener attached to the camera. The camera position and orientation are the location and direction from which the person’s virtual ears will perceive the environment. With head-tracking, the simulation will know which direction within the virtual environment a person is facing. Tracking allows the distance and orientation to objects and sound sources within the virtual environment to be known. From this information, a sound simulation of what each ear should be hearing is generated. The user will detect spatial cues in the sound simulation, similar to how they are perceived in the real world.