# Project Specification LSEPI Analysis

## Impact – GDPR

### Issue

One of the major issues is GDPR legislation and patient's privacy. With the introduction of the new Data Protection Act GDPR on the 25th of May 2018 (EU GDPR, 2019). New procedures have been put in place to ensure the protection of users' personal data.

### Impact

This can cause legislation issues and impacts for the student and their final year project. The student has stated that they will be targeting patients who are in chronic pain or who are bedbound. One of the issues regarding this is, questioning how the student becomes aware of any patients with these diagnoses without gaining access to patients records, resulting in violation of GDPR and protection of the patient's medical data. Additionally, the student will need consent from each patient stating that the student can store any essential data needed for the final project and agreement for using the Virtual Reality Headset. If the student does not follow these procedures, they could face serious repercussions including the patient's medical practice.

### Public Example

A prime example is the leak of HIV patient's personal information (BBC NEWS, 2015). A clinic in London leaked statuses of HIV patients through a mass group email. This resulted in 780 recipient's and patient's names and personal data from the clinic being released. Meaning that each recipient and patient could see through the newsletter of all 780 patients and their HIV status. As this breach occurred before the enrolment of the GDPR law, the client was vulnerable to a maximum fine up to £500,000 under the Data Protection Act 1998 (Walker, 2019). However, with the new GDPR, the clinic could have received a maximum fine of €20 million or 4% turnover (EU GDPR, 2019), whichever is largest. This emphasises why it is so important that the student follows the essential procedures ensuring that each patient testing the Virtual Headset has their personal data protected and the student is not collating personal data unessential to the project.

## Impact – Health Risks

### Issue

There is an Ethical issue to consider when ensuring the health and safety of the patient. From the project specification; patients which will be trialled suffer from chronic pain or are bed bound. Therefore, is it vital that procedures are put in place to ensure the safety of these patients, as they can be more susceptible to pain and discomfort. Not only does this include physical trauma but mental trauma.

### Impact

One of the procedures we can use is evaluating and eliminating patients who could be at health risk. For example, if a patient is in chronic pain from an injury and the effected area is around the neck, the patient should not be enrolled in the trial. Using a Virtual Reality headset can be very strenuous on the patient's neck and cause additional pain, potentially further incapacitating the patient. This would not be beneficial to the patient or the student's experiment. Additionally, the student must be aware

of mental trauma. If a patient has a form of PTSD, then they can have negative effects to the VR Headset, which can cause stress, re-experiences of previous traumatic events leading to PTSD symptoms such as flashback and further additional physical pain (NHS, 2018). The student should ensure that each patient is fitted and suited for a Virtual Reality and there is a minimum health risk. The student can do this by collecting data in a survey from each patient with consent, about potential symptoms, health risks and trauma which could occur when using a virtual reality headset.

### Public Example

In a recent article James Wisniewski (28) talked about the mental and physical toll video games have on his life (BBC NEWS, 2019). He discusses that he struggles to have relationships as he is "*consumed*" by video games and is unable to date anyone seriously. "*I don't want a relationship. Unless it's with someone who wants to sit and play video games with me the whole time, I just don't do it.*" This can be a danger to patients as there is a risk of becoming dependent upon virtual reality to numb their chronic pain, if successful. This can have negative effects on the patient's mental health and relationships. It is important that the student is cautious of these affects and helps minimise the risks by limiting session times which the patient use the Virtual Reality headsets.

## Impact – Financial

### Issue

A third issue is the finances supplying the Virtual Headset to the patients and hospitals. The project specifies that the student will be testing and developing his application on an Oculus Rift. However, the project does not specify how the student will afford an Oculus Rift and how many they will be supplying for the project. The ethical issue here is understanding how the student will be funding the headset and are they charging the patient for the headset despite the possibility that the headset may not benefit the patient.

### Impact

This can have a large impact on the project and potentially a negative impact on the patients involved. If the student cannot afford the virtual reality headset, they will not be able to complete the project. However, if the student relies finances from the patients this can bring a question of the student's ethics which could result in the project failing. Additionally, if the subject does not feel the virtual reality has helped their medical condition or has induced additional pain, they may also question the ethics of the project, which could potentially result in negative or financial repercussions.

### Public Example

Private Healthcare is a prime example where the ethics of paying for healthcare is constantly brought into question. In an article released by the Independent a private fertility clinic has been accused of exploiting older women by charging them for (Petter, 2019) treatment which is unsuitable. In Vitro Fertilisation (IVF) women over 43 have experienced a low success rate when using suggested figures to promote success of the treatment. However, the clinic has now received public backlash and patient are becoming aware of the exploitation which is helping to protect these women. It is important for the student to understand this to ensure that they do not repeat the same mistake and put the patients in a financial situation.

# References

BBC NEWS. (2015, September 2). *London clinic leaks HIV status of patients*. Retrieved from BBC NEWS: https://www.bbc.co.uk/news/uk-england-london-34127740

BBC NEWS. (2019, October 9). *'My gaming addiction stops me from having relationships'*. Retrieved from BBC NEWS: https://www.bbc.co.uk/news/newsbeat-49978427

EU GDPR. (2019). *EUGDPR - Information Portal*. Retrieved from EU GDPR: https://eugdpr.org/

NHS. (2018, September 27). *Post-traumatic stress disorder (PTSD)*. Retrieved from NHS: https://www.nhs.uk/conditions/post-traumatic-stress-disorder-ptsd/symptoms/

Petter, O. (2019, April 22). *IVF CLINICS EXPLOITING OLDER WOMEN BY 'TRADING ON HOPE' SAYS FERTILITY WATCHDOG*. Retrieved from Independent: https://www.independent.co.uk/life-style/women/ivf-older-women-fertility-watchdogs-hope-children-babies-a8880906.html

Walker, D. (2019, August 12). *GDPR fines: How high are they, and how can you avoid them?* Retrieved from IT PRO: https://www.itpro.co.uk/general-data-protection-regulation-gdpr/31025/gdpr-fines-how-high-are-they-and-how-can-you-avoid

# PROJECT SPECIFICATION 1

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| **Title of Project:** | **Aiding visualisations for distraction and pain management through immersive virtual reality environments** |

## Elaboration

A proven form of pain relief is simple distraction. I would like to research and expand on this theory by implementing it into the ground breaking world of virtual reality. For my project I will research distraction techniques and implement these in a virtual environment to divert the patients' attention and thoughts. Whether the patient be in pain or frail/ bed bound and therefore lacking a means to explore, I feel a fascinating virtual environment could provide a curtain between the patient and reality, reducing both physical and mental pressure.

The purpose of this project is to design and create a fully immersive virtual environment tailored towards my research, intended to help those under physical or mental stress. The target group will be individuals aged 18+ who experience chronic pain or mental stress and require a change of scene due to their inability to actively explore (e.g. bed-bound individuals or the elderly incapable of leaving the house).

Whilst on my placement at the Max Planck Institute for Biological Cybernetics I gained experience creating virtual environments for the Oculus Rift, some of which were trialled by volunteers. This gave me valuable experience in regards to ethical concerns and subject confidentiality during experiments. Although I will not be carrying on any of the work completed at the Max Planck Institute I feel some of the data gathered would be transferable to my project and possibly help as a case study.

This project will allow me to demonstrate 3D modelling and animation techniques, and allow me to expand my skillset. To complete this project I will use 3D modelling software and a game engine for the Oculus Rift integration. The software I use to create my virtual environment will be decided by an evaluation of the possible programs.

## Project Aims

The aims of this project are to:

- Gain an understanding of pain management and distraction techniques designed to prevent mental and physical stress.
- Research and evaluate virtual reality experiences.
- Research current forms of pain management and distraction techniques and devise an appropriate way to bring these into a virtual environment.
- Perform research to decide the appropriate technologies to use to develop the virtual environment.
- Design, develop and test an immersive virtual environment in a specific location or situation. The environment must be particularly realistic to be as immersive as possible.
- Reduce a person's physical and mental stress levels, and allow them to better control their internal mental state.
- Evaluate the final application and produce a critical report recording any shortcomings and improvements that could be made.
- Further evaluate the final application by testing it on the general population. I will receive feedback from participants in the form of a simple questionnaire.
- Develop a set of recommendations for future development.

## Project deliverable(s)

My final deliverable will be a fully immersive VE for the Oculus Rift.