# Aims

The primary aim of this report is to explore the viability of Virtual Reality (VR) to assist people with learning disabilities with independent travelling. This will include detailed primary research from subject experts within the field.

A subsequent aim of this report is to further build upon the existing understanding of navigation methods within the virtual world with the intention of implementing a navigation method that results in a reduction in motion sickness and an overall improved experience of the travel training virtual environment.

# Objectives

* Learn and gain an in-depth understanding of the experiences of those with learning disabilities, especially regarding independent travel through interviews conducted with subject experts within the field.
* Examine and analyse the current Independent Travel Training process by highlighting both the positive impact it has had as well as its current limitations. Summarise these findings within the report with the inclusion of data collected from interviews with Independent Travel Trainers.
* Investigate the use of VR as an exposure therapy tool for people with learning disabilities using the library and online resources.
* Investigate the current effectiveness of VR as a Travel Training tool through comprehensive research into Travel Training studies and the predecessors to this application.
* Research the various alternative methods of navigation within the virtual world using the library and online resources.
* Design and implement a VR Travel Training application that is in line with existing research alongside the inclusion of new ideas to create a useful tool that can be used by people with learning disabilities to build up their independent travel confidence.
* Upon completion of the design and implementation phase of the project, conduct a series of ethical tests of the newly developed VR Application with the help of the target users, people with learning disabilities. The feedback received during testing is to be used to implement additional improvements to the overall application.
* Review and compare the results of this project against the research of its predecessors and draw conclusions based on the findings. Subsequently, address any remaining questions that could be explored in future work.

# New ideas

Methods of navigation that are relevant to this report's focus on travel training have been broken down into two primary categories of analysis: easily accessible and financially unviable.

**Accessible options:**

* Steering wheel to walk (original tech available)
* Teleportation (defeats the purpose – we need walking simulation)
* Walking around in an open space (we don’t have that much-unrestricted space to work with)
* Walking via the swinging of one's arms (existing project's solution)
* Low-latency VR games: Latency refers to the amount of time it takes for an in-app motion to register in the brain. The lower the latency, the less delay there is between what’s happening and your brain’s perception of it.
  + Low latency mixed with walking in place to combat the existing sickness – use this combination and compare it against the current solution and the original use of walking in place to see which one is far more effective at reducing motion sickness.

**Inaccessible options (due to financial constraints):**

* Omnidirectional Treadmills: Perhaps the most financially unviable option as they are quite expensive but would allow for a full range of motion within a set area – a player would be able to walk about ‘freely’ within the virtual world like they would in real life.
* VR Mats: A mat that relies on your sense of touch to keep you within a contained area while immersed in the virtual world.
* Cyber-shoes: These work similarly to VR treadmills, except you wear them while sitting.