

## Title

# “Sea Hero Quest”

## Keywords

Game play- spatial navigation – scientific data dementia  
[3 to 5]

## Abstract

Sea Hero Quest was designed in collaboration by scientists from University College London, University of East Anglia, Alzheimer’s Research UK and game designers from Glitchers and was launched by Deutsche Telekom in 2016. The game is specifically designed to improve our understanding of spatial navigation as a tool to help manage dementia and provides the world’s largest sourced data set. Every second of gameplay can be translated into scientific data by experts exploring this area of peoples’ brains. It has been designed for people of all ages to play, providing scientists with data on the average human brain’s ability to navigate.

The game was downloaded nearly 3 million times (the largest previous study comprised of nearly 600 volunteers), generating the equivalent of over 12,000 years of lab-based research, establishing the first global benchmark for human spatial navigation and forming the largest dementia study of its kind.

Dr Hugo Spiers (University College London) and Professor Michael Hornberger (University of East Anglia) who have helped develop the game, said: “This project provides an unprecedented chance to study how many thousands of people from different countries and cultures navigate space.”

## Index

Target client group  
The game  
Aim  
Feedback  
Further Information

## Analysis

### TARGET CLIENT GROUP

There are 850,000 people living with dementia in the UK today and that number is expected to rise to 2 million by 2050. It is estimated that for every child born this year, one in three will develop dementia during their lifetime and yet there is very little in the way of effective treatments available. Sea Hero Quest has been designed for people of all ages to play whether they game or not. It is based on just three questions of the person playing their game - their age, whether they identify themselves as male or female, and where they live thus simplifying the process and making it more accessible.

### THE GAME

The game, called Sea Hero Quest can provide five hours worth of essential dementia research according to experts- bringing the possibility of diagnostic tests for dementia a step closer.

The aim of the game is to steer your boat through a maze from A to B and there are different levels to do so. As you steer your boat your navigational skills in a 3D space are being analysed. At one level you are asked to shoot a flare to where you started off so scientists understand how well people can trace back their starting point. The country people live in is important because previous research shows people from different geographical backgrounds can sometimes navigate differently. As players navigate their way through mazes of islands and icebergs, every second of gameplay can be

translated into scientific data by experts providing invaluable information about how people's brains work. To ensure data integrity and data privacy, all of the gameplay data collected was anonymised and stored securely within T-Systems data centre in Munich. The game works with the Samsung Gear VR headset and can be downloaded from various app stores.

## AIMS OF THE RESEARCH

Dementia symptoms can include stress, agitation and extreme mood swings. When a dementia patient is agitated or distressed, they can exhibit compulsive or repetitive behaviors. This can take the form of moaning, or asking caregivers the same question multiple times. They may pace, or continually pick or pull on the clothes they are wearing. The healthcare sector already uses virtual reality to treat pain and anxiety, therefore VR seems like a natural fit to address anxiety-induced dementia symptoms. Several companies are exploring how VR calms patients, rekindles long-forgotten memories and even leads previously uncommunicative patients to speak again. Companies Tribemix and Quantum Care have teamed up to create ImmersiCare, which provides virtual reality experiences for dementia patients that present calming scenes. These scenes interrupt the repetitive behaviors, allowing caregivers non-drug alternatives to altering patient mood and stress levels up to 70 percent.

One of the very first cognitive functions impaired by dementia is spatial navigation to determine where you are, where you want to go and the appropriate path for getting there. The aim of the Sea Hero Quest VR game was to provide useful data concerning how different people control their spatial awareness... The research community believes that establishing the baseline for navigation skills will ultimately lead to better diagnostic tests, so a dementia diagnosis can be made earlier and progression of the disease can be tracked.

The research team reports that just two minutes playing the game collects the equivalent of five hours of lab-based research. The VR version of the game builds on the success of their original mobile-based version, which also gathered data on the player's sense of direction and navigation. It presents scientists with the opportunity for cross validation of the data collected by the mobile game and scientists hope to build on the rich data set already collected by using the latest in virtual reality technologies to gain greater insight into human spatial navigation behaviours.

## FEEDBACK

"In a clinical environment, VR allows an even more immersive and intuitive diagnostic assessment of navigation ability in people who may potentially develop dementia. Sea Hero Quest VR allows us to measure more intuitively when people are not sure of their bearings, for example by stopping and looking around. VR therefore has the potential to capture additional complementary data to Sea Hero Quest mobile," says Michael Hornberger, Associate Dean University of East Anglia.

Hans-Christian Schwingen, Chief Brand Officer at Deutsche Telekom commented:

"Building on the success of the mobile game Sea Hero Quest which collected the data of almost 3 million players, we are very proud to continue to push the boundaries of traditional medical research, working alongside our trusted partners and leveraging our expertise in this area."

Dr. Hugo Spiers of University College London, who has been leading the analysis of the anonymous player data collected by Sea Hero Quest mobile, explained:

"Whilst Sea Hero Quest mobile game gave us an unprecedented data set in terms of its scale, allowing us to gauge spatial navigation abilities at a population level, the VR game allows us to build on this by measuring subtle human behavioural reactions with much greater precision.

"With Sea Hero Quest VR we have also been able to replicate highly credible lab-based experiments such as the 'Morris Water Maze' (winner of the 2016 'Brain Prize') that would not translate well to video or mobile game format. The intuitive nature of VR means that the study can be opened up to those who might not be able to grasp the function of the mobile game – some people with advanced dementia for example."

The legacy of Deutsche Telekom's 'Sea Hero Quest' is a key example of the company's commitment to technological innovation and its digital responsibility ethos.

Maxwell Scott-Slade, Creative Director at Glitchers explained

"Of course, many researchers are already using VR based experiments within a lab-based setting"

"This is the first time, however, that experiments have been gamified and designed for the mass market consumer, allowing users to share scientifically valid data via the medium of engaging gameplay and extending their potential reach exponentially."

Tim Parry, Director at Alzheimer's Research UK said:

"Dementia is already one of the greatest health challenges we face and is predicted to affect over 130 million people worldwide by 2050. Research holds real power for creating more accurate diagnostics and effective treatments that those living with dementia and their families really need. The reaction to Sea Hero Quest illustrates the public appetite to get involved in research and be part of ongoing efforts to tackle the condition. Deutsche Telekom's 'Sea Hero Quest' project is just the kind of innovative cross sector partnership that we need to accelerate progress in this important area."

The game has been developed to work with the Samsung Gear VR headset and was available to download for free from the Oculus Store from 29<sup>th</sup> August, 2017. Sea Hero Quest mobile is still available to download for free via the App Store and Google Play.

#### FURTHER INFORMATION

<http://www.seaheroquest.com/site/en/game-story>

#### Author

Ronda Swaney B2B writer and ghostwriter for Insights, 13th March 2018

Olivia Lerche, Journalist Daily Express newspaper , 31st August 2017

#### Links

<https://www.express.co.uk/life-style/health/666661/mobile-game-could-help-diagnose-early-dementia>

<https://insights.samsung.com/2018/03/13/virtual-reality-delivers-real-world-benefits-to-dementia-patients/>

<http://www.awalkthroughdementia.org/>

<https://www.alzheimersresearchuk.org/sea-hero-quest-vr/> Science News 29th August 2017

<https://www.alzheimersresearchuk.org/our-research/what-we-do/sea-hero-quest/>