

## Introduction

Despite Aotearoa, New Zealand having one of the largest marine areas in the world the majority of school children can't access underwater environments directly, and marine science tends not to feature in the school curriculum until tertiary education. Our approach takes students on a journey into the life of a marine scientist. Using cutting-edge technologies in 360-degree underwater videography, we provide an immersive Virtual Reality (VR) dive into a marine environment that is inaccessible to most people – the twilight zone. We provide a unique opportunity for students to drive our remotely operated vehicles (ROVs) in confined pool sessions enabling students to learn about how technology supports the exploration of underwater environments. School students can work directly with university students who share personal experiences around education and subject choices, enabling school students to see first-hand how they themselves might pursue this career. Our project promotes the importance of collaboration between STEM subjects to answer big questions about the functioning of marine environments. Students who experience our project will gain an increased appreciation of the relevance of marine science to our economy and human wellbeing. Through this journey of discovery, children will increase their interest in marine science and engineering, better understand pathways into higher education and strive for careers they may not have otherwise considered. We hope to inspire our audience to be good global citizens, and to share their knowledge with family and friends, and their own experiences with us.



## Underwater Marine Science VR



Underwater Marine Science VR is a VR app experience we have developed to support high school students to learn about marine science in the twilight zone. The app is available on the Meta Oculus App Lab store. The VR experience starts with the diver on a wharf with instructions on what to do during the experience along with tips on how to interact using the VR controllers. The app contains 360° videos of footage we have taken from protected marine reserves within New Zealand and integration with 3D assets to create a seamless VR experience.



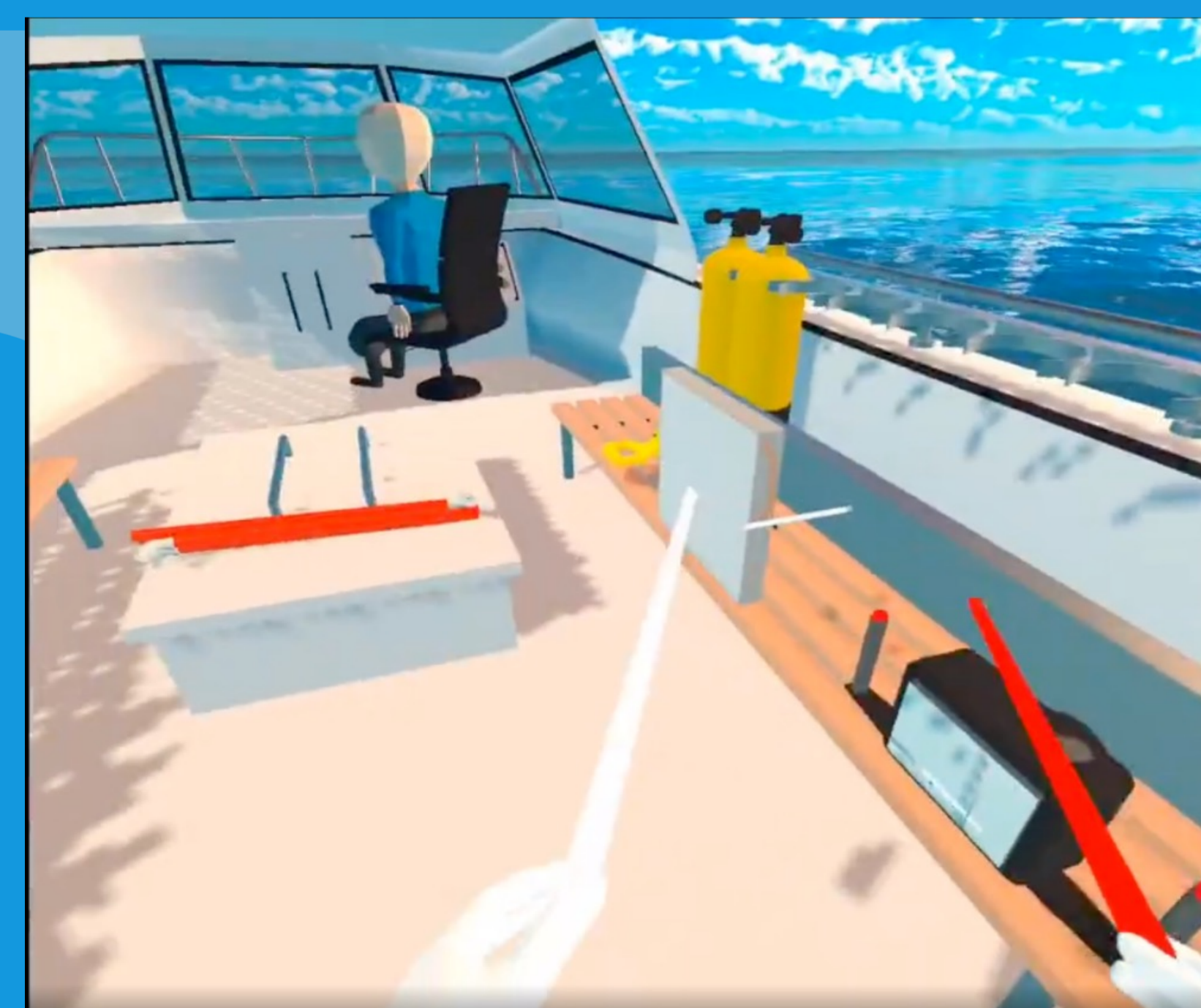
360 Degree Video: Viewing lobsters.



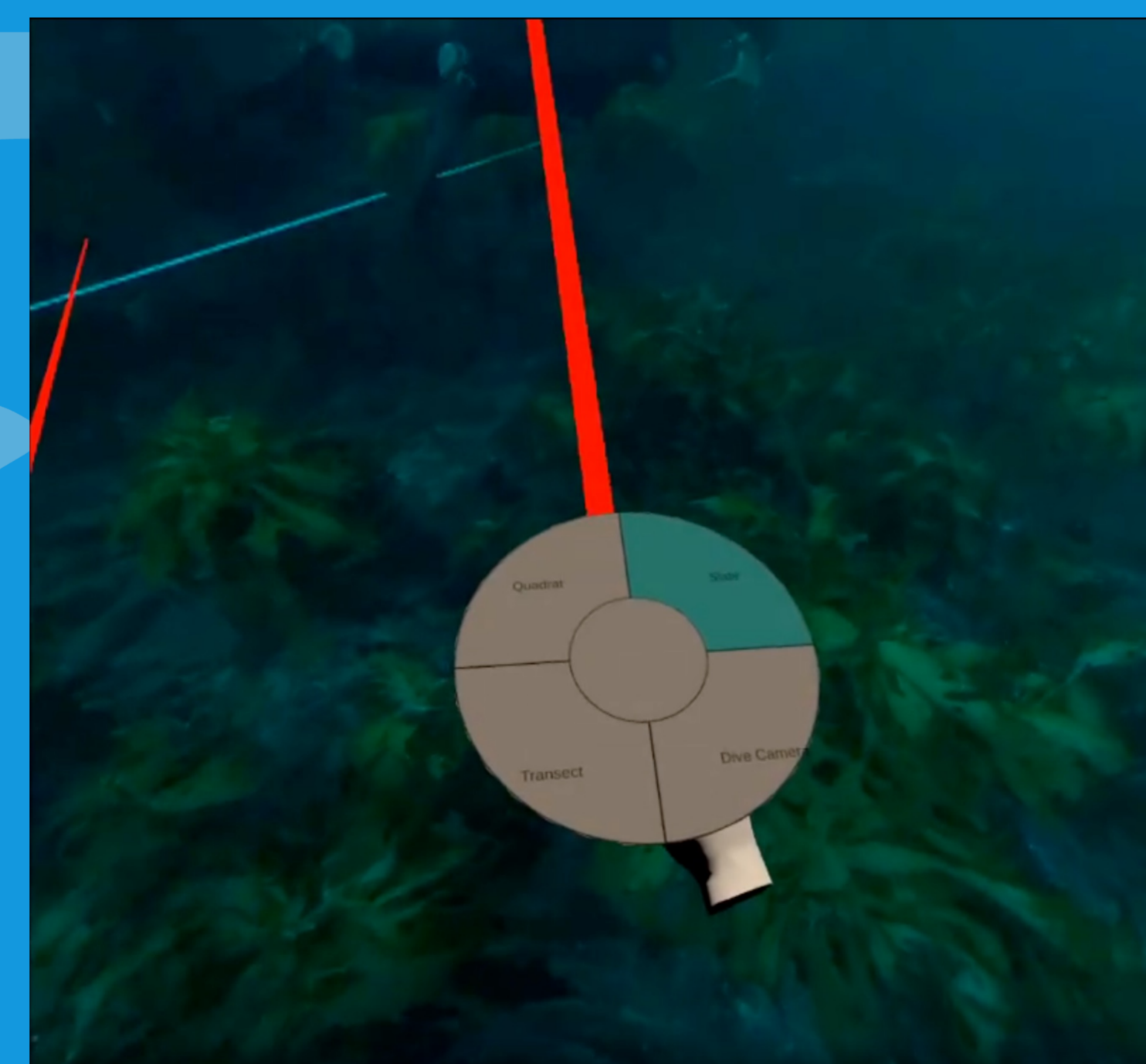
360 Degree Video: Viewing stingrays.



360 Degree Video: Viewing fish in a cave.



On the boat selecting equipment (quadrat, transect, scribe, and camera) for one of the seven dive experiences.



User interface controls for switching between the different equipment: quadrat, transect, scribe, and camera



Setting up the transect to sample distribution and abundance of species.



Using the quadrat to sample and estimate species.

Available on the Meta Oculus App Lab store:  
<https://tinyurl.com/UnderwaterMarineVR>

