



**AN IMMERSIVE MOBILE APPLICATION
FOR IMPROVED LEARNING AND VIRTUAL
TOUR EXPERIENCE: A NATURE RESERVE
PERSPECTIVE**

Ruchen Jade Wyngaard

*Department of Information Systems
University of the Western Cape*

Lebogang Nkabinde

*Department of Information Systems
University of the Western Cape*

Carmenita Oersen

*Department of Information Systems
University of the Western Cape*

Overview



Introduction



Review of the literature



Rationale and objectives



Design and methodology



Limitations and conclusion

Introduction

- Current technological advancements has disrupted the way certain sectors function, this includes the education and tourism sector.
- Virtual Reality (VR) mobile applications enables users to engage in knowledge transfer that is equivalent, or if possible better, than in-field trips leading to ecological training and environmental education.
- VR field tours encourage ecological protection while investing in biodiversity and reduces costs associated with tours where individuals are physical present.

Review of the literature

- WELCH, A. (2019)
With the current climate changes taking place, global biodiversity will lead to mass extinction.
- Hopkins, C. (2019)
Most students aren't offered the same opportunity to undertake field trips, therefore not profiting from the learning opportunities and skills development.
- Fabris, C. et al. (2019)
Lecturers should think of VR as an active learning tool to enhance the educational experience.
- Dolphin, G. et al. (2019)
When resources become scarce, field trips are often targeted for cuts in higher education.
- Mileva, G. (2018)
Current higher education has shifted its views of VR as an entertainment tool to an educational device.
- Schwalbe, K. (2015)
Managing Information technology (IT) projects requires concepts, tools, and techniques that align with current standards.



Rationale and objectives

- The University of Western Cape (UWC) was seeking innovative ways to assist the under resourced nature reserve to digitise the tour.
- Improve accessibility to the nature reserve using immersive technologies.
- To educate users about the biome of the nature reserve.
- To promote ecological protection by providing a remote experience.

Design and methodology

Requirements analysis.

Gathered system requirements from key stakeholder – the nature reserve tour guide. This was used to inform the development of the application.

Production of the IT artefact.

The application was designed and deployed for Android mobile devices.

The following technologies were used in production:

- EON engine
- 3dsMax and Blender
- Adobe Suite
- Photogrammetry
- Sketchfab

Scrum methodology.

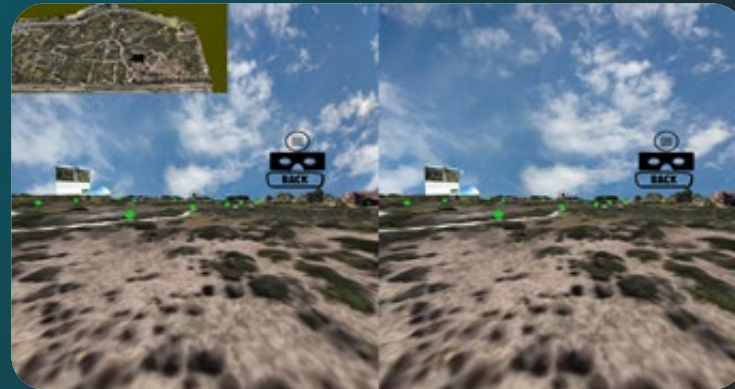
The research project subscribed to an agile methodology known as Scrum to complete the development of the application.

Design and methodology – the IT artefact

3D models of specimens



VR mode of the environment



Point of interest



Limitations

- Require data validity: the study requires data to validate the applicability of the nature reserve application. Due to the time constraint, this wasn't able to be conducted.
- Time constraints: The study was completed in six months. This limited the researchers to conduct fieldwork and collect data.
- EON engine: Company has discontinued it's engine and the engine also offered few offerings compared to other applications in the market.

Conclusion

- Requirements were fulfilled and client expectations were met based on predefined deliverables.
- The application provides users with an interactive immersive tour of the university's nature reserve.
- The project is further being developed by a master's student as part of their study. Moving forward, a more advanced and widely adopted engine is being used for the development process.