

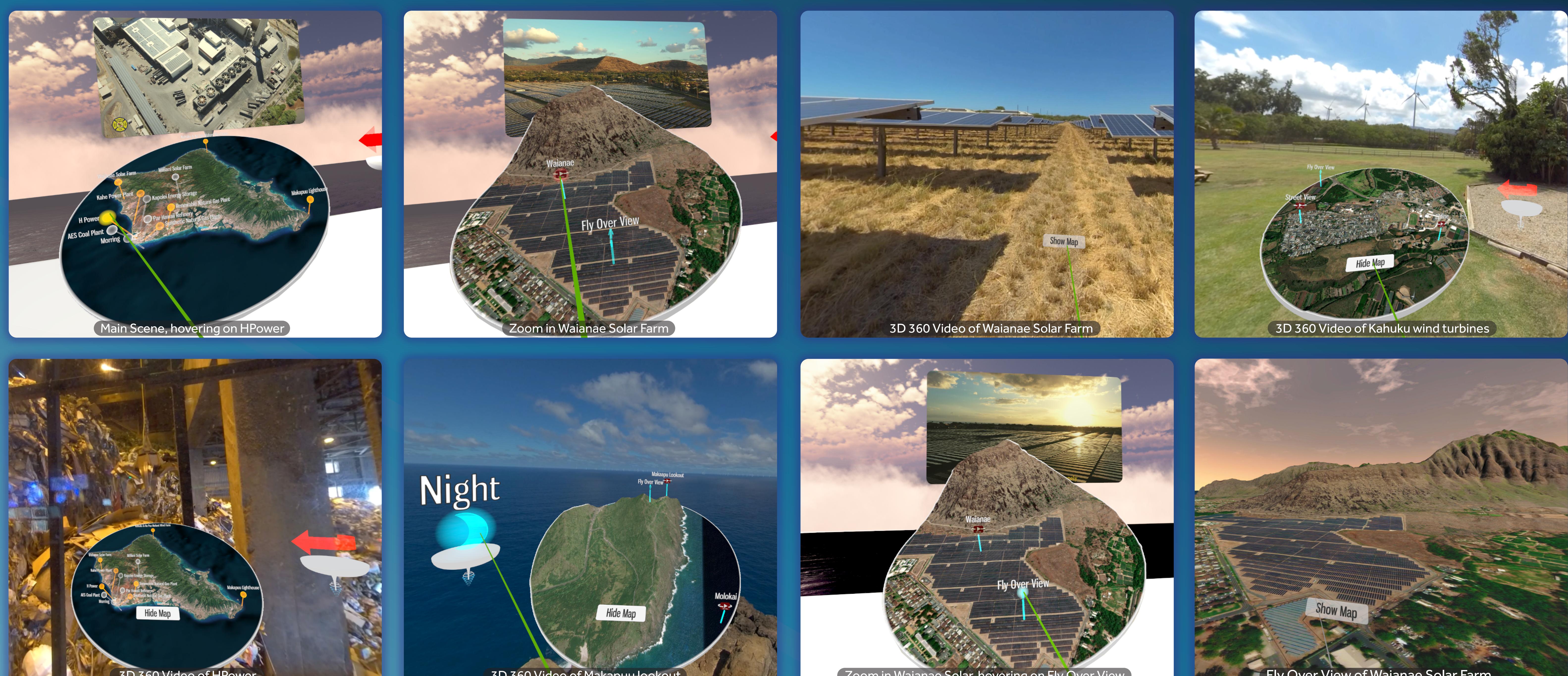
VRenewable: A Virtual Reality Approach to Visualizing Energy Projects

Introduction

Background Context: This project addresses the urgent shift towards renewable energy, focusing on Hawaii's potential for harnessing wind and solar power. Hawaii's goal of achieving 100% renewable energy by 2045, in light of its unique geographical positioning, presents both opportunities and challenges.

Motivation: Specifically, the Hawaii State Energy Office (HSEO) recognized the need for accurate and immersive visualization tools for these projects. They requested an innovative approach to effectively convey the size, scale, and visual impact of planned and existing energy projects.

Objective/Aim: The objective of developing this Virtual Reality (VR) application is to visualize existing and future energy projects in Hawaii, enhancing the understanding of Hawaii's complex energy landscape and aiding in informed decision-making.



Methods

Methodology: Design and development of a VR application using 3D modeling, Unity Game Engine, Google VR SDK, and Bing Maps SDK.

Techniques:

Drone Footage: Captured using drones to offer aerial perspectives of planned and existing energy projects.

360-Degree Videos: Filmed with a specialized camera (Insta 360) for immersive experiences.

Integration: Combines drone footage, 3D 360-degree videos, and 3D models with real-world geographic data.

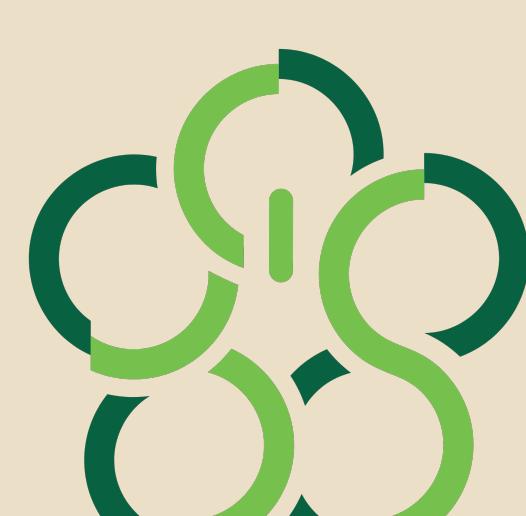
Tools: Unity Game Engine for simulation, Google VR SDK for VR capabilities, Bing Maps for geographic accuracy, Rhinoceros for 3D modeling, and Oculus Quest headsets for VR immersion.



Conclusion

Key Takeaways: This VR application provides an immersive experience of the potential visual impact of future energy deployments, in juxtaposition with existing energy projects. It fosters understanding, crucial for informed decision-making and public approval.

Future Work: Future enhancements will focus on adding data visualization features to compare various technologies, enhancing the understanding of their impact. To increase accessibility, a website hosting the 360° videos will be launched, providing an alternative for users who might find VR overwhelming or lack headset access. Finally, efforts will be made to improve the application's modularity, making it adaptable for a diverse range of projects and geographical locations.



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