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Problem Statement:

This project is intended to explore alternate methods of visualizations. 2D visualizations, and 3D visualizations without depth, don't give an accurate representation of the perspective of a sensor on a satellite. Our hope is that virtual reality can fill the gap.

Objective:

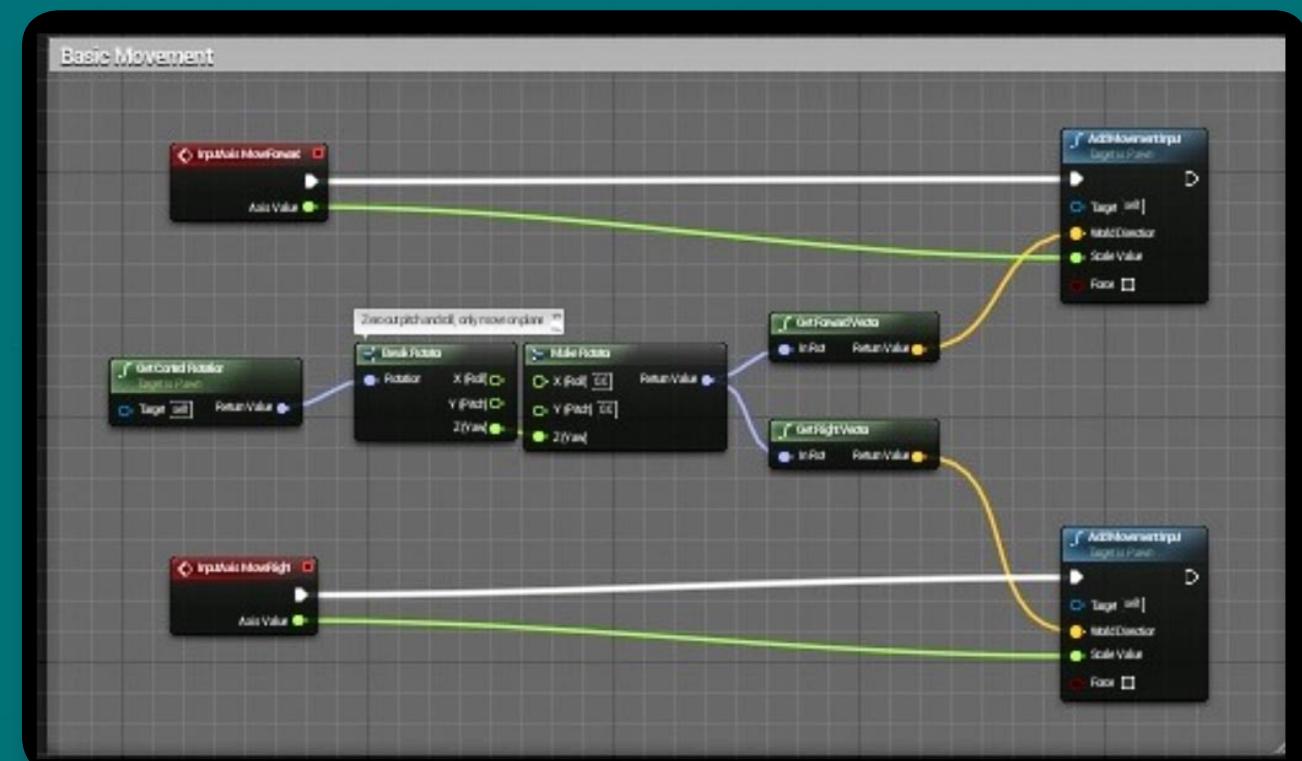
To create an application that provides simulations of various satellite locations and orbits at specified times using STARGATE. The project makes use of Oculus Rift to run the simulation in virtual reality. Our project will allow the user to simulate themselves as a sensor on these satellites.

Impact and Benefits:

We get to use virtual reality to gain a new perspective on how these satellites gather data. Adding depth to a visualization can drastically change how it is interpreted, potentially revealing new aspects previously dismissed or unrecognized. The value of these aspects will determine if the technology is worth pursuing in other areas of research as a visualization medium.

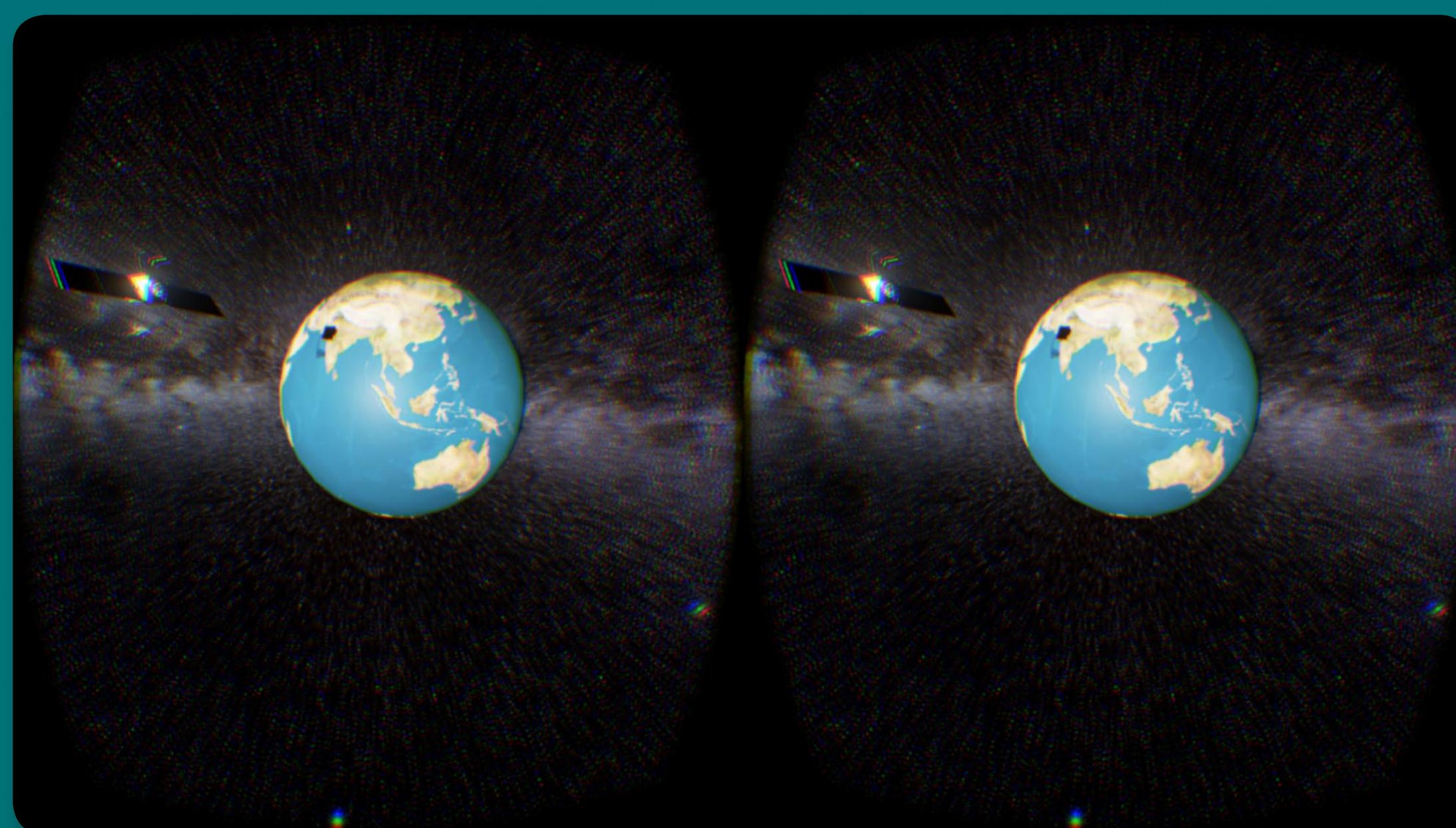
Approach:

We developed the front-end of our application using Unreal Engine. Unreal Engine allowed us to integrate our code with the Oculus Rift. For our backend, we used the TLEs, Two-Line Elements, to generate the location of the satellites and their orbits around the Earth using STARGATE.



Results:

We used STARGATE to construct a satellite simulation for the Oculus Rift. Others can use our project as a platform to integrating virtual reality into their own projects.



Simulation in action, showing a GPS satellite in orbit around Earth