Overview:

This project successfully simulates the **RF signal coverage** of a **Harris Falcon II Military Radio** using **CesiumJS**. The application integrates **3D visualization**, **real-time signal strength fluctuations**, and **interference modeling**, providing an interactive simulation of radio wave propagation.

### **Key Features Implemented:**

* **3D Model Integration:** The **Harris Falcon II Military Radio** is accurately positioned on real-world terrain using **Cesium Ion**.
* **Signal Coverage Visualization:** A **cylindrical coverage zone** dynamically changes in size, representing fluctuating signal strength.
* **Interference Zones:** Simulated **RF interference** is visualized as a red ellipsoid near the radio unit.
* **Real-time Data Updates:** The signal strength fluctuates dynamically, controlled by **JavaScript logic**.
* **Python Flask API Integration:** A backend **Flask server** reads **HF signal data** from GNU Radio and makes it accessible to CesiumJS.

### **Completion Summary:**

* **CesiumJS Visualization:** Fully implemented with **real-time signal fluctuation and interference effects**.
* **GNU Radio Flowgraph:** Successfully designed and executed to **simulate HF signal transmission**.
* **Flask API:** Developed to **serve real-time signal strength data to CesiumJS**.
* **Deployment:** The project is fully structured with separate folders for **code, data, and explanations**.

Cesium workplace:

https://sandcastle.cesium.com/#c=