**Challenge 1 – Convert the NASA Web World Wind (NWWW) to a virtual reality globe**

* Use the NWWW API and WebVR API to produce a VR version of the globe
* Use Google Earth VR to present orbiting satellites and the ISS using streamed position data

NWWW Website: <https://worldwind.arc.nasa.gov>

### Web WorldWind

Create a web app or simply embed a globe in your page. For more information see the project's [home page](https://worldwind.arc.nasa.gov/web). To get right into the code, check out the [Web WorldWind GitHub repository](https://github.com/NASAWorldWind/WebWorldWind).

### WorldWind Android

Develop a world-class WorldWind application for your Android phone or tablet. Instructions, tutorials, and examples are available on the project's [home page](https://worldwind.arc.nasa.gov/android). The [WorldWind Android GitHub repository](https://github.com/NASAWorldWind/WorldWindAndroid) contains the library and code.

### WorldWind Java

Build a cross-platform geospatial desktop application in Java. For lots of examples and documentation go to the project's [home page](https://worldwind.arc.nasa.gov/java). Or clone the [WorldWind Java GitHub repository](https://github.com/NASAWorldWind/WorldWindJava) and start coding.

WebVR Website: <https://webvr.info/developers>

Google Earth VR Website: <https://vr.google.com/earth/>

ISS Streaming Position Data: <http://open-notify.org/Open-Notify-API/ISS-Location-Now/>  
*from the site:* The ISS is tracked by several agencies. Both [NORAD](http://www.norad.mil/) and NASA periodically publish data about the station. I scrape this page for this API:

* <http://spaceflight.nasa.gov/realdata/sightings/SSapplications/Post/JavaSSOP/orbit/ISS/SVPOST.html>

Another popular site for tacking data is celstrak which published NORAD TLE’s:

* <http://www.celestrak.com/NORAD/elements/stations.txt>

In both cases a “[Two Line Element](http://en.wikipedia.org/wiki/Two-line_element_set)” is used, which contains enough information about an orbit to calculate an objects position at any time within a useful window of accuracy centered around the TLE’s publish date.

Tools:

https://www.blender.org/ Installed on BD Workstations

https://www.soft8soft.com/

https://armory3d.org/

https://unity3d.com/ Installed on BD Workstations

https://www.gimp.org/

Data and Artifacts:

3D Resources from NASA: <https://nasa3d.arc.nasa.gov/models>

<https://eyes.nasa.gov/>

<https://eyes.nasa.gov/eyes-on-the-solar-system.html>

<https://eyes.nasa.gov/eyes-on-the-earth.html>

<https://eyes.nasa.gov/eyes-on-exoplanets.html>

<https://eyes.nasa.gov/dsn/>

<https://eyes.nasa.gov/mobile-apps.html>