Assignment 01: Establish Problem Domain

Step 1: Find your Data Domain

The European Space Agency Database and Information System Characterizing Objects in Space<https://discosweb.esoc.esa.int/>

Step 2: Why is this Domain Important

The European Space Agency’s DISCOS database that serves as a single-source reference for over 40000 objects in orbit of earth. Their primary purpose is bringing together multiple sources for tracking objects in orbit and then using that data to assist satellite operators in collision avoidance. They even have an API that can be linked into a satellite operators automated collision avoidance system called DISCOSweb Operations AP. The international space station is one major user of this data. When there is even a small chance of an object coming with an area around the station if it is a satellite the owners are contacted and told to make corrections. If it is an uncontrolled object, they calculate the risk of the object hitting the station and even at a very low risk they will most likely make an obit correction to avoid the object.

Being aware of the objects in space is extremely important from many levels. Like helping companies and governments avoid colliding their satellites or spacecraft with other objects. Besides losing a satellite or space craft, a collision could lead to the loss of all other satellites in orbit. One collision could create so much debris that it causes a domino effect and a total loss of the ability to send things into orbit. It crucial to have accurate and as up to date as possible data on every possible object in orbit.

It is also important to be able to present this data both for reference and awareness. Governments and companies need to be able to look up all the info on an object, but they also need to be aware of how big of an issue leaving any debris in orbit can be.

Step 3: Planning for a BI/DSS Project based on this Data

The European Space Agency’s DISCOS database can be accessed via their free API. I’ve already created an account and verified I could create the API keys. They also have a large amount of documentation available on their website that is accessible after you register and set up an account. It guides you through using the request package within python to access the API and pull-down data. Once data is pulled down a dashboard could be made with the data. Some of the charts that could be included in the dashboard are a bar graph of the different types of objects, how many objects are controlled vs, uncontrolled, and a live bar graph of what objects are within a curtain distance of the international space station. It could also include a animation of the top few hundred objects by size on a live map.

It could also include a view with the running list of all tracked objects and filter through the list and select specific objects. When viewing specific objects, it should show the other objects within a curtain distance of that object and rank them from closest to furthest. It could also show a live map of the specific object flying over a map. Or if live data is not available show its path on a map and list the objects it will come close to.