1:

Hi everyone, my name is Jiahao Chen. And they are my teammates, Xinran Zhang, Heming Huang and Siyue Wang. Our team name is Fun with NASA.

After the first presentation, I read all of the comments and feedback you gave us. And I do think that we should have a better project with better use cases. That’s why we decided to change the direction. Now in our new project, we will analyze open data using our own algorithm to decide if a place is suitable for building solar power plants and output this result to users.

2:

This project aims at the solar power companies that want to build solar power plants and the government that want to plan the distribution of solar power plants.

The reason we do this is because we want to save time and money for solar power companies when they need brief research to decide where to build the solar power plants. Our evaluation algorithm involves several essential elements that will affect the efficiency, cost and safety of a solar power plant. I will give you some examples. The first element is radiation. Radiation basically decides how much power the solar power plant could generate. The second element is terrain. Terrain matters because if you are building your solar power plant in a relatively flat ground, you could basically build you solar power plant right away. If you are not, then you are going to spend time and money to level the ground first. The third element is wind speed. Wind speed is essential to the safety of solar power plant. There were accidents that the wind blew away the solar panels from the frame. This could create serious problem. The broken solar panels could hurt people. Also the wires that was originally connected to solar panels are unconnected after the panels have been blown away, and they are exposed in the air. They could create the electric arc which may cause fire.

Besides the big solar power companies, the government could also use our application. When it comes to building a solar power plants, the government plays an important role. Usually they have their plan for the distribution of these power plants that make use of renewable energy sources. They should know where to build solar power plants and where to build wind power plants. Since our application provide the information of radiation and wind speed, it’s very helpful for them.

3:

Here is our Sprint 2 Diagram on Trello. The awkward part is that we spent most of our time in Sprint 2 searching for this new direction instead of working on something more concrete. However, we found our goal and we managed to build up a simple web application. And we are working as hard as we could to make sure that we will be able to catch up.

4:

Our system diagram is shown here. The NREL is one of our main data sources. NREL stands for National Renewable Energy Laboratory. NASA is also an important resource of our project. We will download the data we needed or use the API to save the data in our Database. The way we manage the database is through mongoDB. We will then apply our algorithm on these data and evaluate them. Eventually we will show our result in our web application. The web application is built by HTML and JavaScript.

5:

Our Accomplishment is that we found some great open data sources such as NREL and NASA. Also we are able to analyze the large amount of data we have downloaded and present it in our web application. The third thing is that we managed to build up a basic web user interface. And we managed to connect our data to Google Map via API. We will show you our web application right now.

6, DEMO:

Ok this is our web application. This is the name of our project. And here’s a brief introduction of our application. The ‘about’ section mainly tells the customer why they should use our application. The ‘map’ section is the main section of our application. Currently we have only processed these data. Let me show you how to use it. If you are considering to build your solar power plants in California or Nevada, you can click Nevada first to see the information sorted and analyzed by us. You can see that the GHI, which is the Global Horizontal Irradiance, is 215. The GHI represents how much radiation that place could get. This directly affect the efficiency of solar power plants. So as I said before, it is the most important element. Now if you click this tag California, you can see the GHI is 222. It’s better than Nevada. Then you would know that California is probably a better choice. And as a matter of fact it is, there are a lot of solar power plants in California. If you take a look at the data, you will notice that we have also provided the wind speed. Let’s see what is the wind speed of Nevada. We can see that the wind speed is 2.34 meters per second. Now if you take a look at California, you will see the wind speed is 2.37 meters per second. This indicates that if you build your solar power plants in Nevada, then it is slightly less possible to be destroyed by strong wind. We also provide elevation. We are supposed to be able to evaluate the terrain using the variance of the elevation of nearby places, however, we haven’t been able to collect that much data yet. But we are definitely going to do that. As the data we collected increases, we will be an information hub that contains everything solar power companies or government would want. Eventually we will tell the user how much we recommend them to build solar power plants on some specific places. Maybe we will just tell them we recommend it or we do not recommend it. We think it will be easier for our user to get what they need in this way.

7:

But we still have a lot of challenges. The first thing is that we have plenty of data collected from different sources. And they are not in the same formats. We need to unify them and send them to our database using mongoDB. The second thing is that there are too many elements that will affect the solar power plants and we have to limit the data so that we will be able to put them on Google maps. When you want to use API to upload your data on Google map, your data cannot be more than 40mb. So we have to get rid some of the data. The third thing is that we need to figure out the analysis algorithm that can evaluate the proportion of these elements based on their influence. We went through a lot of essays but it seems like people are making these kind of decisions based on their own judgement rather than some kind of universal algorithm. But in order to build this product, we need to find the algorithm or maybe create our own algorithm.

8:

Here is our next Sprint Plan. Me and Xinran Zhang will be responsible for the database and algorithm. Heming Huang will build up the web application and keep improving it. Siyue Wang will keep looking for the data of radiation, terrain, wind speed, etc.

That’s all, thank you!