NASA SPACE APPS CHALLENGE

DAY 1 – REPORT

TEAM QUARANTEAM

(https://github.com/adimehta03/reSTORE-NASA-SPACE-APPS-CHALLENGE)

The summary of the progress seen today are as follows:

1. Case study and research on a specific problem:

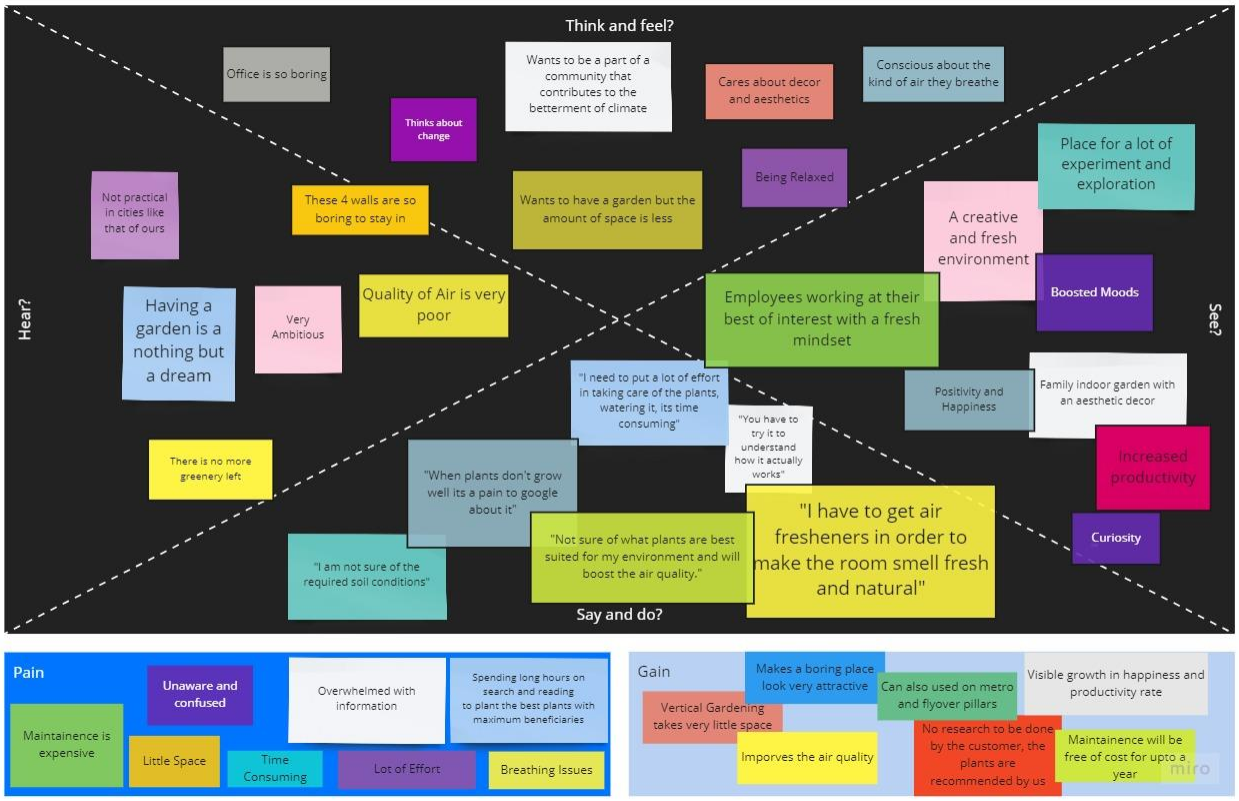
On the topic of "Sustainable Nature", we as a team had a specific problem to be solved in mind. But it was today, that we found the statistics and numbers supporting the need for the problem to be solved. This is what we found in the provided resources by the Nasa Space Apps team:

"By the year 2050, nearly 80% of the earth's population will reside in urban centres. Applying the most conservative estimates to current demographics trends, the human population will increase by about 3 billion people during the interim. An estimated 109 hectares of new land will be needed to grow enough food to feed them. (SOURCE: NASA)"

This limits the place available for flora and fauna around us, and the vegetation plays an important positive role in atmospheric purification and air pollutants reduction.

2. Empathy Map:

Visualizing user attitudes and behaviours in an empathy map helps UX teams align on a deep understanding of end users. The mapping process also reveals any holes in existing user data.



3. Finalizing the solution:

Our solution involves an air quality sensor and recommends air emission plants (air pollutant absorbing plants) which absorb the air pollutants as shown by the air quality sensor and an ML model which recommends you the best form of green life taking into consideration some valid environmental factors around the living space of an individual. Also we intend to provide light sensors for plant growth indoor, watering facilities with drip irrigators, RO purifiers for reusability and pest repellent plants for maintenance.

4. Dataset for the ML part of the project:

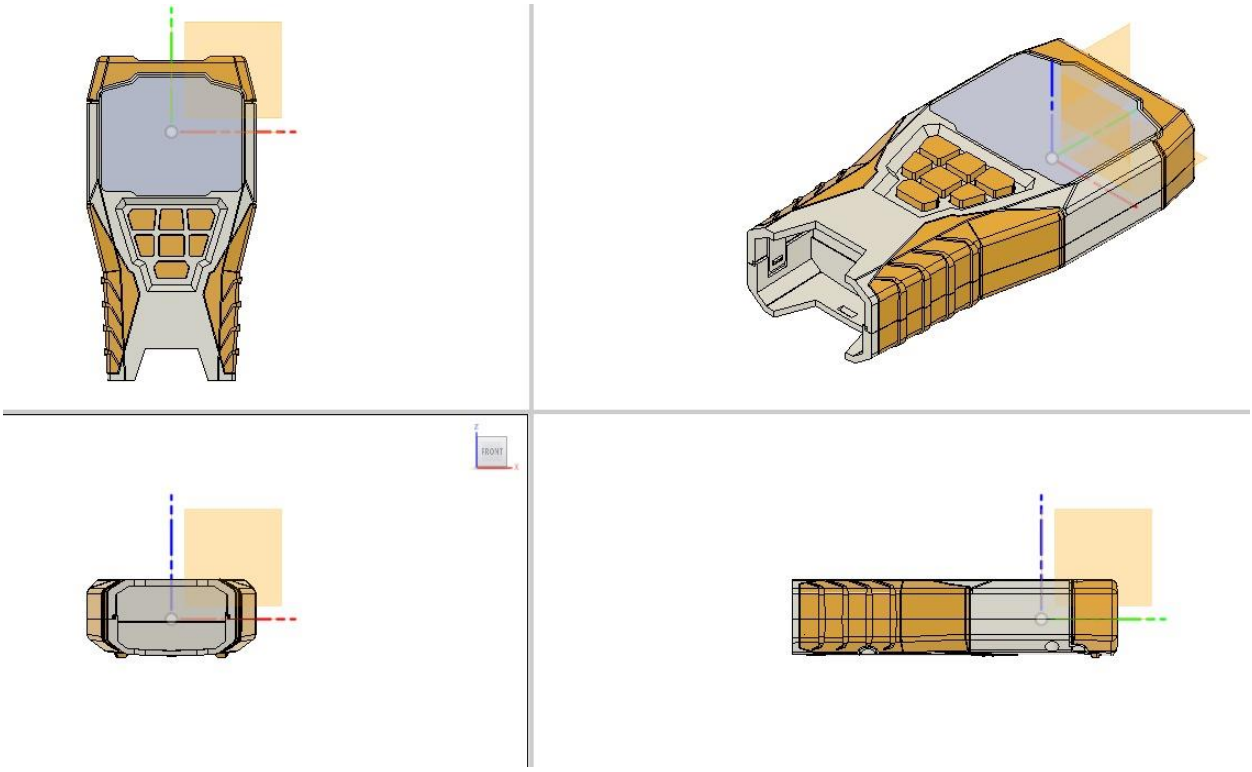
For the recommendation of the suitable plants around an individual, a dataset to be trained upon was a requirement. After a lot of search online and on the resources provided by the hack organizers, we concluded that we had to create one manually. We manually scrapped the information of some plants, their growing conditions, estimated cost and their effect on the betterment of the air quality from various websites and research articles with the help of google search. We could come up with dataset about 50 rows and 5 columns. We feel this is enough to train an unsupervised ML model(clustering). As our business increases, we plan to take comments/feedbacks from our buyers/users to collect the labels for the dataset and create a better supervised ML model.

5. IoT:

We started working on the air quality meter which will be used to measure the air pollutants present in a surrounding based on which the plants would be recommended. We made a basic code template and design the circuit diagram and decided the sensors for the same.

6. CAD Model:

Completed 80% of the CAD model for the air quality meter as well.



7. Web Interface part of the project:

For the end-users to reach out to our project we created a basic website, although we wanted to create an app as we didn't have suitable technical knowledge for the same. The website layout gives a clear picture of all the things we do and offer as a service and not to forget why we do it. Also, we enable our users to reach out to us if necessary.

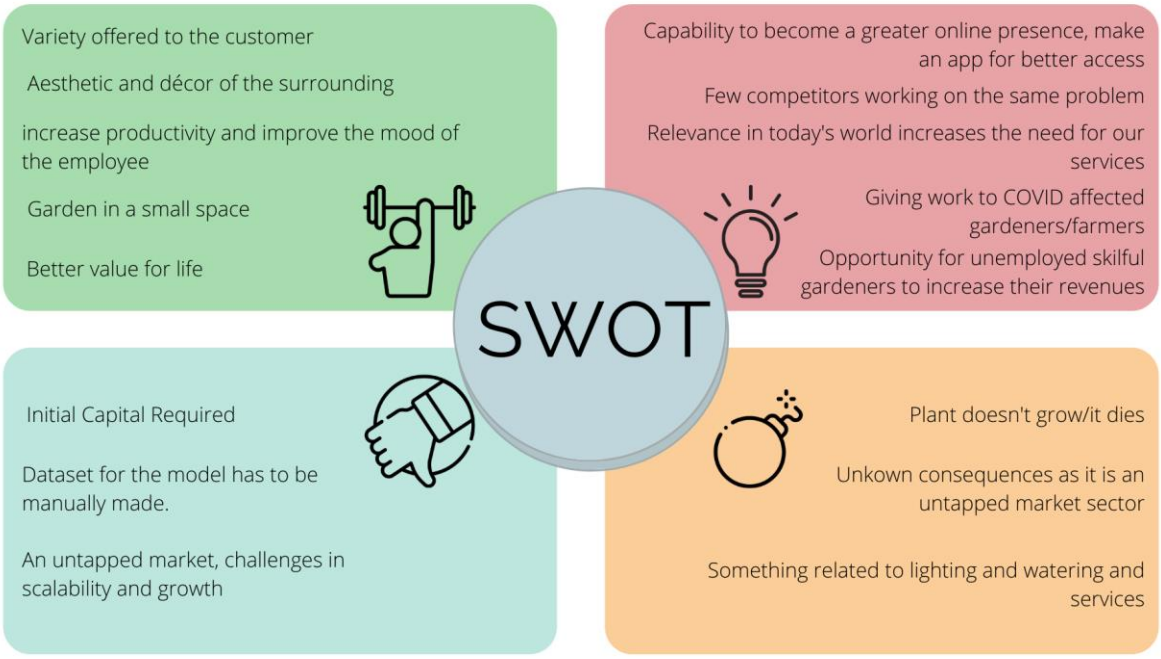
8. Basic business thoughts going forward:

These plants can then be vertically planted mainly in corporate offices. In addition to that, they can also be planted in apartments and houses too. We can incorporate this as a Service-Based Business (SBB). We can contact unemployed gardeners whose source of income has been affected due to COVID for maintaining and shaping these plants, and

contact farmers for wholesale plants, thereby increasing their income and increasing our profit margin.

9. SWOT Analysis:

SWOT analysis is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.



<u>These are the remaining part to be implemented:</u>

1. Work on the SD.ino and IoT.ino
2. Tech Integration
3. UI/UX improvements
4. Define the flow of data into various segments of our project
5. BMC