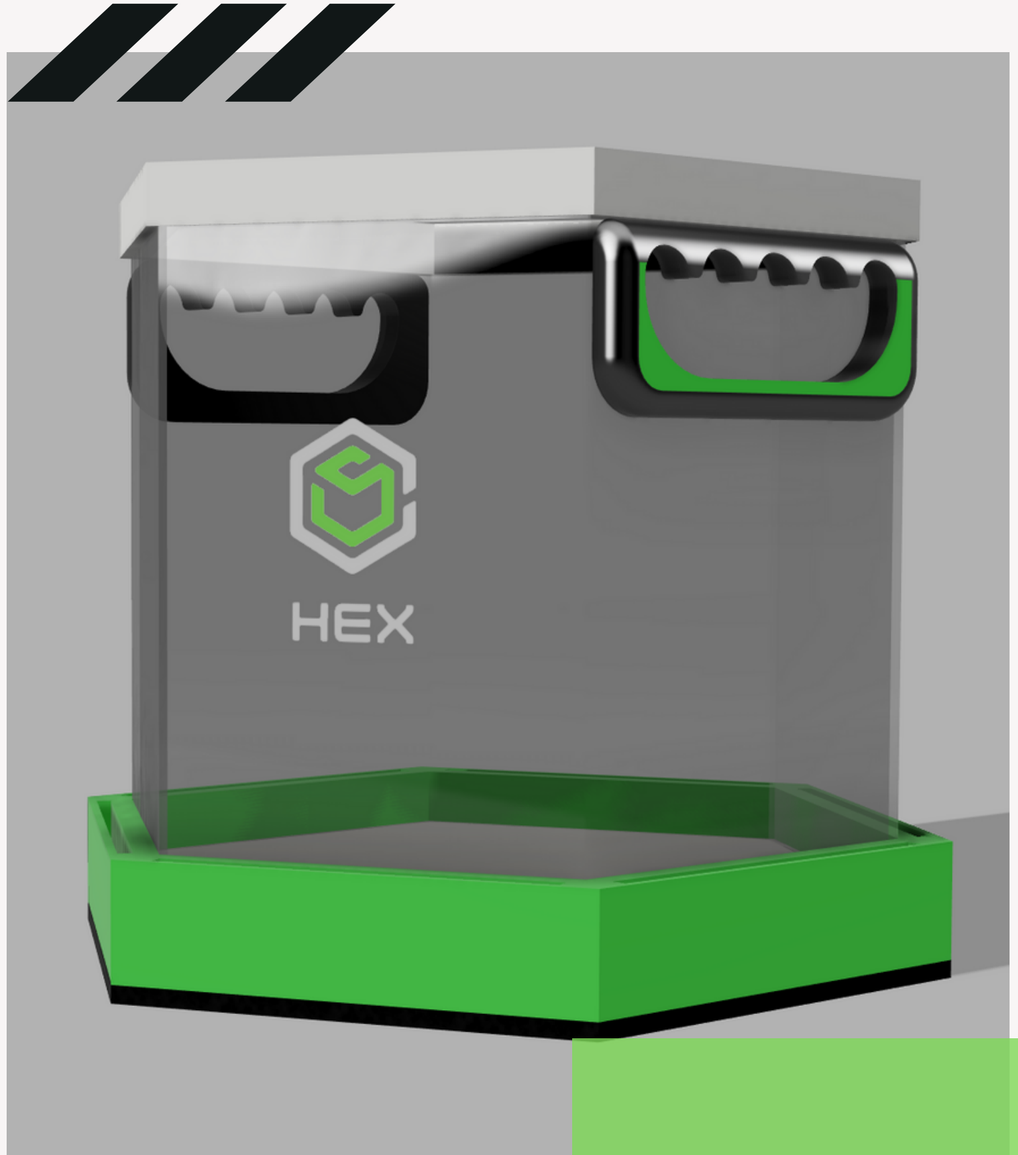
HEX System

NASA Space Apps 2021

Challenge: Have Seeds Will Travel!

Team: HEX



Summary

At present, the Space Food Systems team is required to meet the nutritional needs of each crew member while adhering to the requirements of food safety, limited storage space, limited preparation options, and the difficulties of eating in microgravity. They achieve this task through prepackaged food.

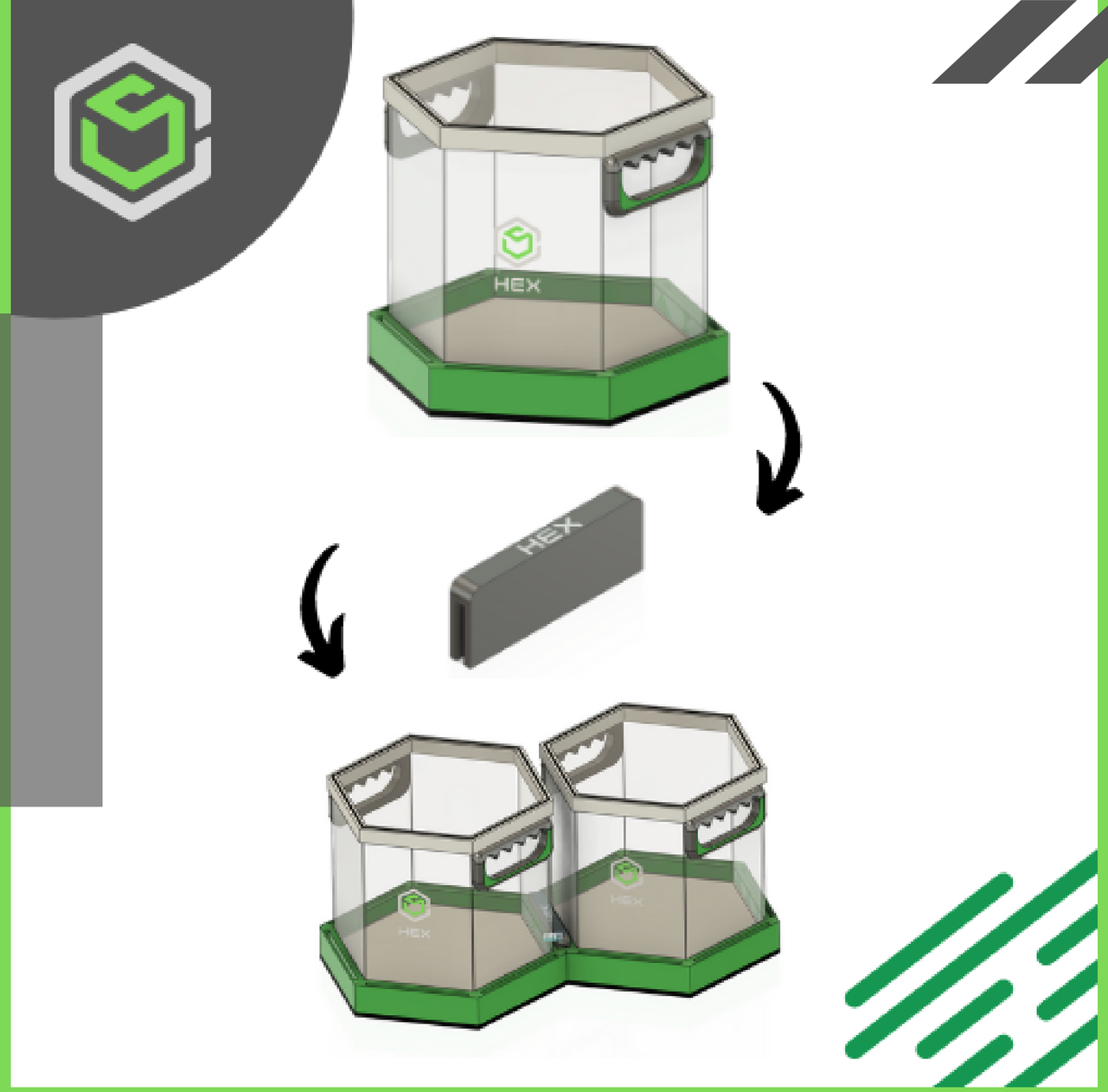
However, prepackaged food won't be a solution for long-duration and exploration-class missions, since nutrients break down over time.

HEX

SPATIAL AGRICULTURE

Solution

A modular system of enclosed environments pots that we called **HEX System**.



How We Addressed This Challenge

We designed HEX. This is a modular system capable of deploying individual pots where a crop will be planted, grown, and harvested.

These pots will act as an enclosed environment for the crop to get the right temperature, light, humidity level, airflow, water, and fertilizers.

HEX MAIN UNIT

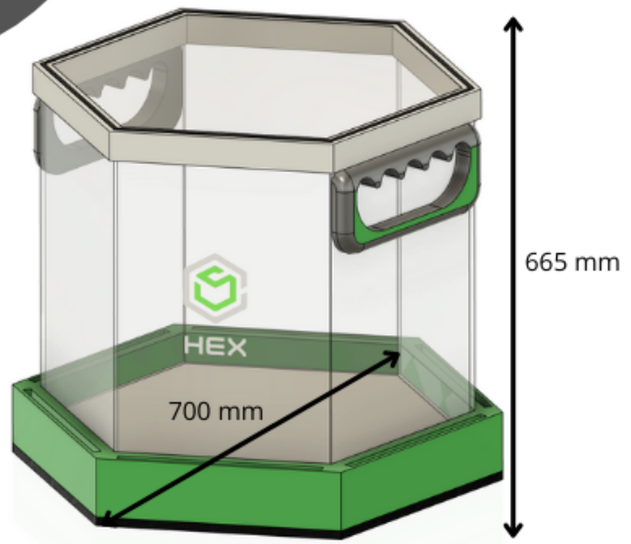
- Smart Terrarium
- Modular
- Low weight
- Compatible with long duration missions
- Stackable

Technical specifications

HEX is a simple modular system to deploy, but individually complex since it creates and controls its own environment inside.

- **Transparent panel**: polycarbonate with antistatic agents, and antioxidants additives
- **Gripper, support frame**: High Density Polyethylene (HDPE)
- **Base**: Rubber

HEX MAIN UNIT



HEX

Modulus Operandi

While the space from the prepackaged food depletes by the astronauts eating, HEX pots are deployed starting the food production.

HEX UNION

- Union for HEX Unit frame
- Conductive union
- Capable of communicate and count HEX Units in system

HEX SOURCE UNIT

- Smart Source Unit
- Modular
- Manual and automatic system
- Solar and manual powered
- Supply container

About Us

We are a team of mechatronics engineers that always had dreamed with "The far far away", honing our skills every day hoping to help space exploration one day and working to empower space and interplanetary exploration.

We believe that robotics can help a lot in exploration providing value by boosting data collection and exploration in general, in this case, mars exploration. Putting cobots on the mars surface to cover faster the necessity of acquiring knowledge of our friendly neighbor.

THANKS FOR READ!