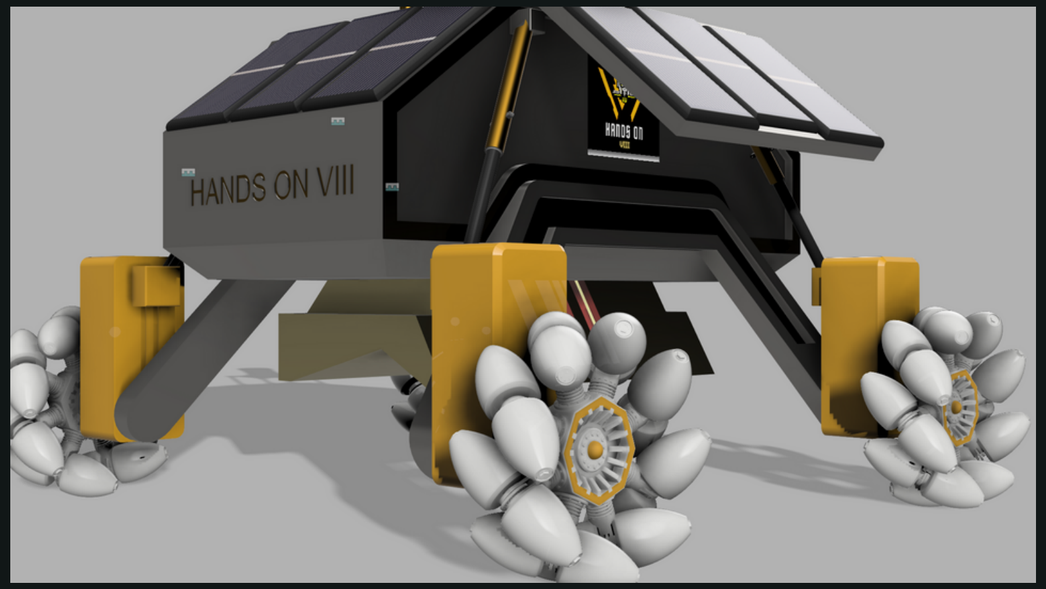
AquaSeeker

NASA Space Apps 2020
Challenge: Virtual Exploration Tools



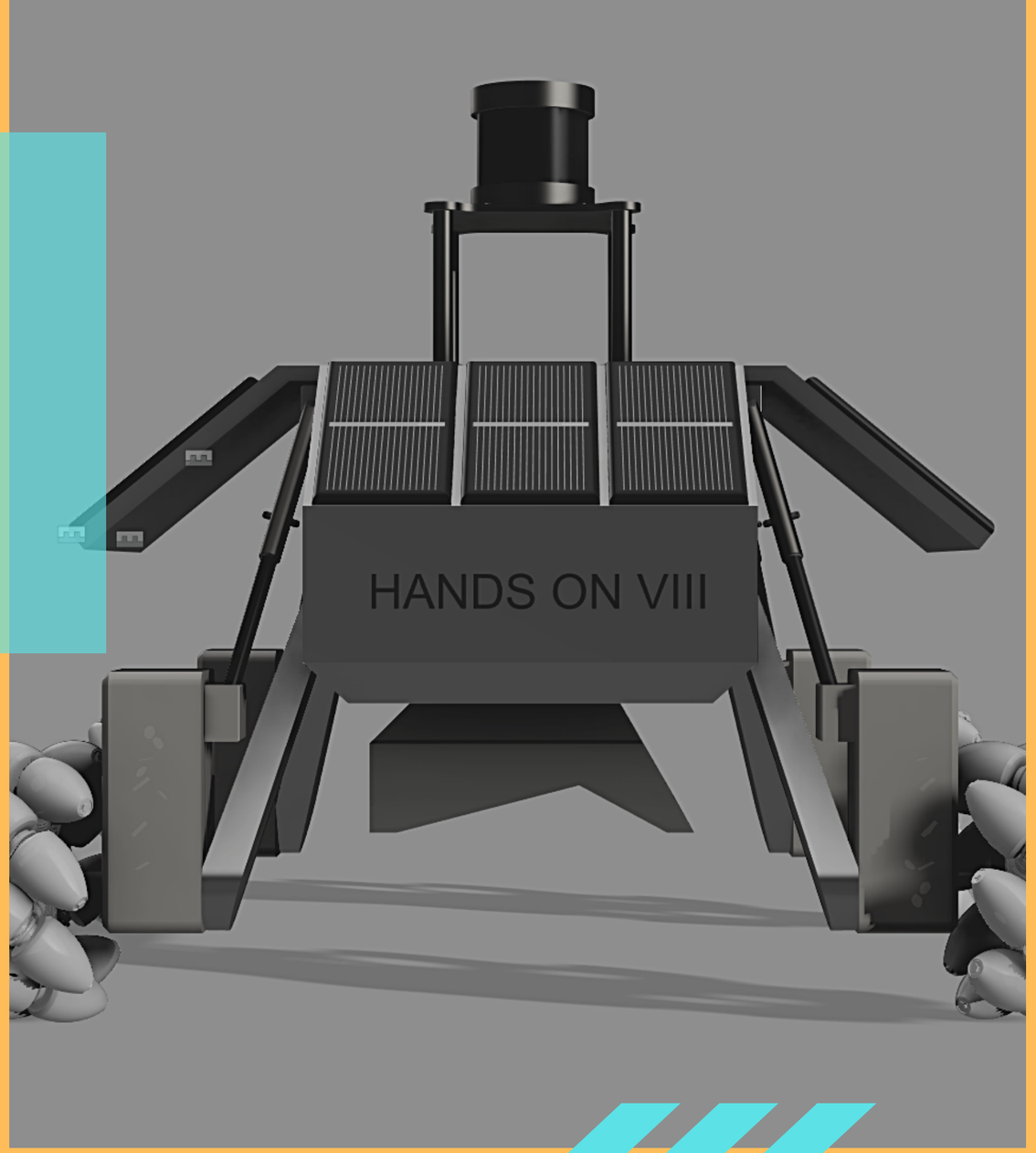
Team: HANDS ON VIII

Summary

Aquaseeker's mission is to accelerate mars exploration by seeking water with the help of the RIFMAX (used in Perseverance), a device which allows us to find water 10 meters above the sensor, with that in mind we use robot operative system and Cobots theory to solve exploration and seeking water in deeper levels in various points of mars.

Solution

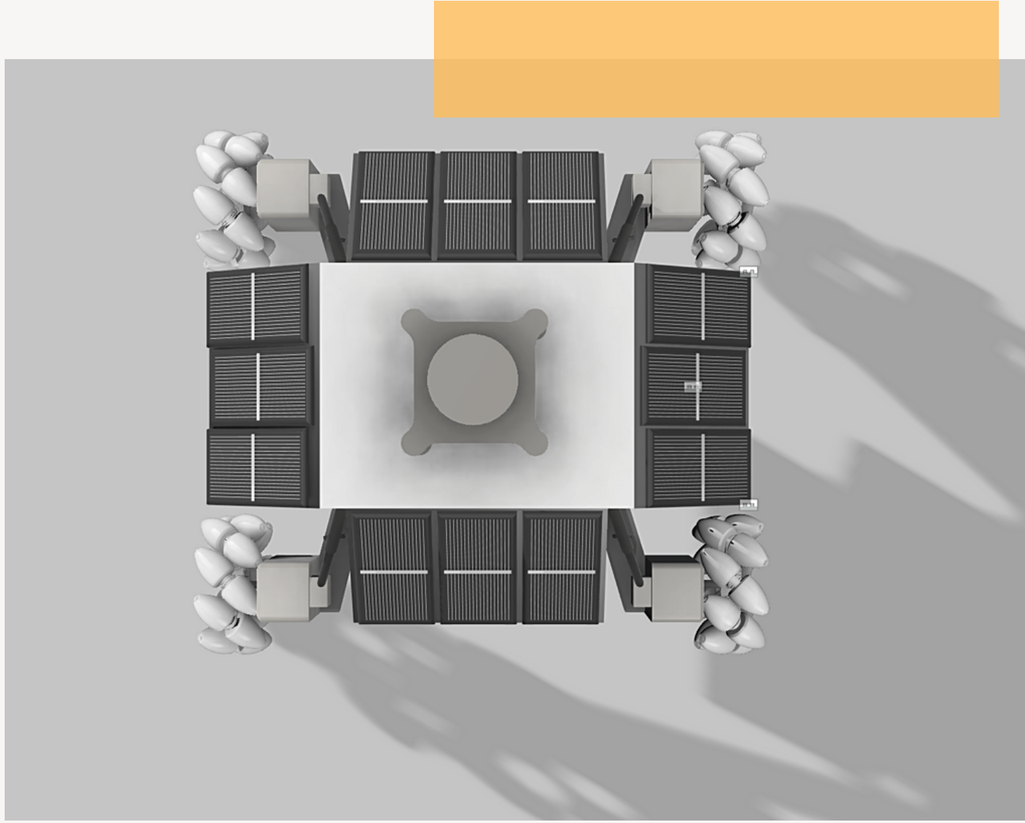
A swarm of autonomous and colaborative robots capable of detecting groundwater sources called *AquaSeekers*.



How We Addressed This Challenge

We designed a robot to seek water in mars, it's important because that study will bring information that we already are looking for, but way faster.

The cobots work collaboratively to collect data from a RIFMAX. We hope to accelerate mars exploration and related studies.



Technical specifications

Since these robots will find themselves in the dangerous Martian environment, they must have the following elements to guarantee success in their mission in search of water sources.

Robot body

Strong materials and heaters

Central Processing Unit

The robot will count with two CPUs (one for emergencies)

IMU, battery level & temperature sensors

To keep control of the integrity of the robot

Navigation system

3D LiDAR

Power generation & storage

Solar panels with battery pack

Traction system

Mecanum wheels to modify the orientation of the robot and eliminate the need of a direction system

Communication system

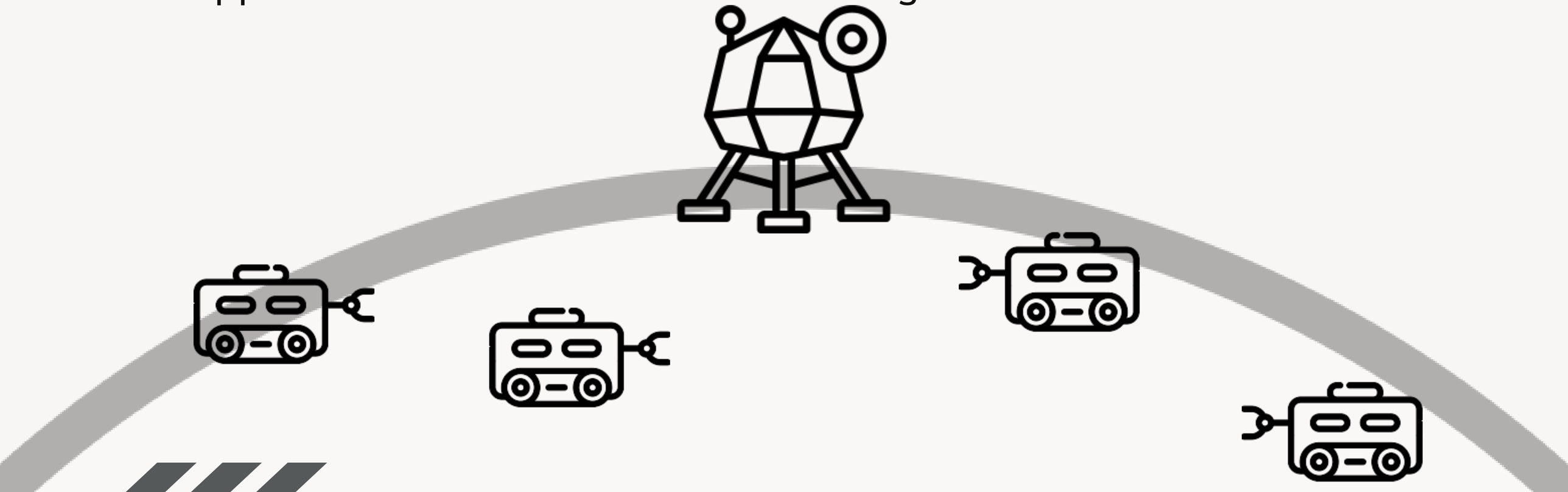
Antennas to communicate their location to the satellites in case to find a water source.

Water source detector

RIMFAX (same used in the Perseverance Rover)

Modulus Operandi

A module full of *AquaSeekers* will be sent to the Martian surface. Upon arrival, the module's hatch will open, and all robots will deploy in opposite directions in search of underground water sources.



How are we?

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!