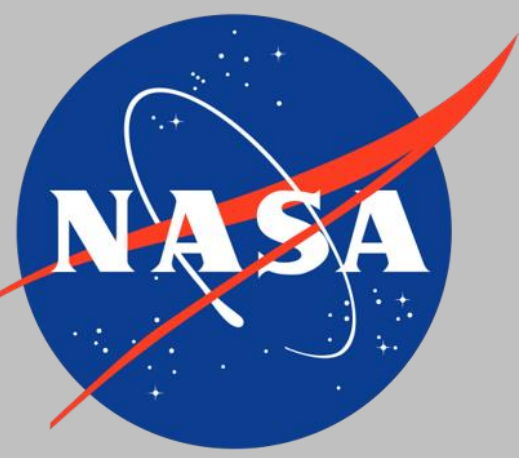


Lunar Landing Payload Crane

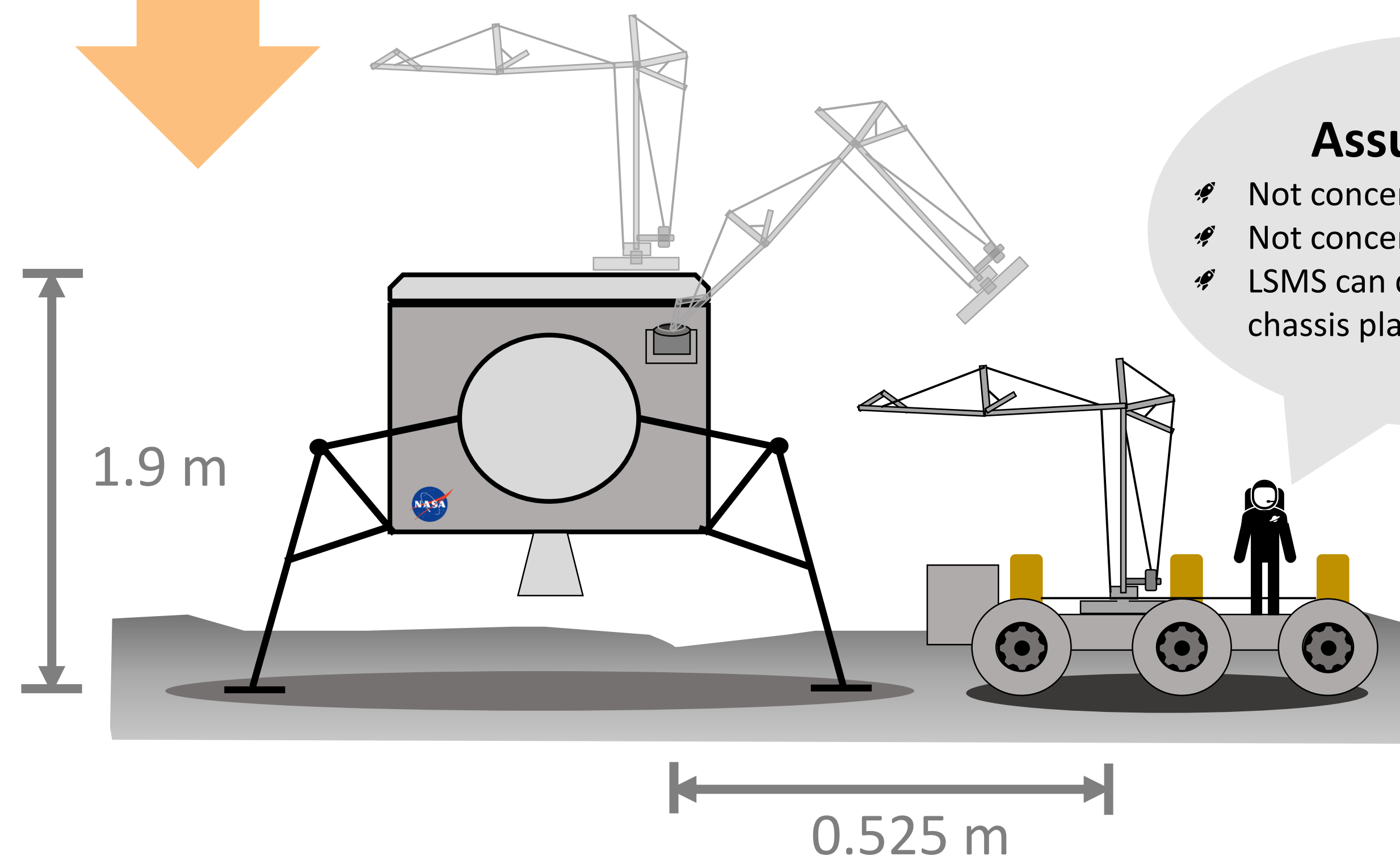
Team 517 | Alanna Black | Jayson Dickinson | Christina Morrow | Ryker Mullinix



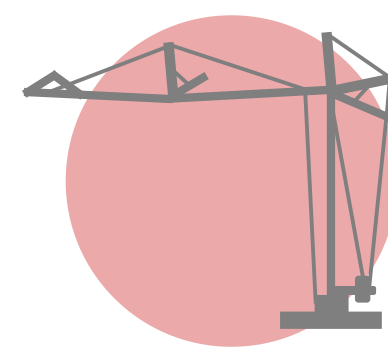
ARROW

AUTOMATED AND RANGED RELOCATION OF THE LSMS FOR WIDER APPLICATION

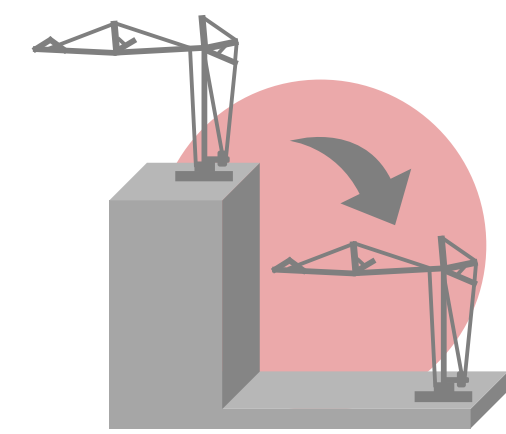
The objective of this project is to offload the LSMS (Lightweight Surface Manipulation System) from the lunar lander onto a platform on the lunar surface.



In 2019, NASA announced the Artemis mission with goals of developing a lunar base.



The LSMS is the payload crane sent ahead of the astronauts to set up the lunar base preceding human arrival.



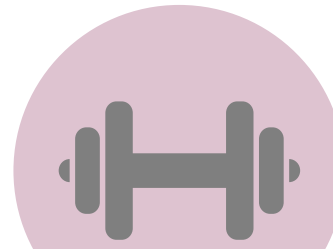
To allow the LSMS to do more than just offload payloads from the lander, the LSMS itself needs to be offloaded.

Background

Assumptions

- Not concerned with Regolith
- Not concerned with reusability
- LSMS can dock to mobility chassis platform

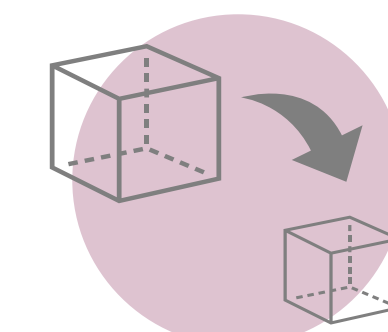
Specifications



Weight: 20 lbs.

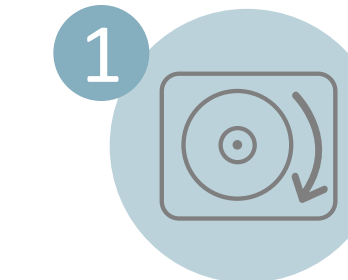
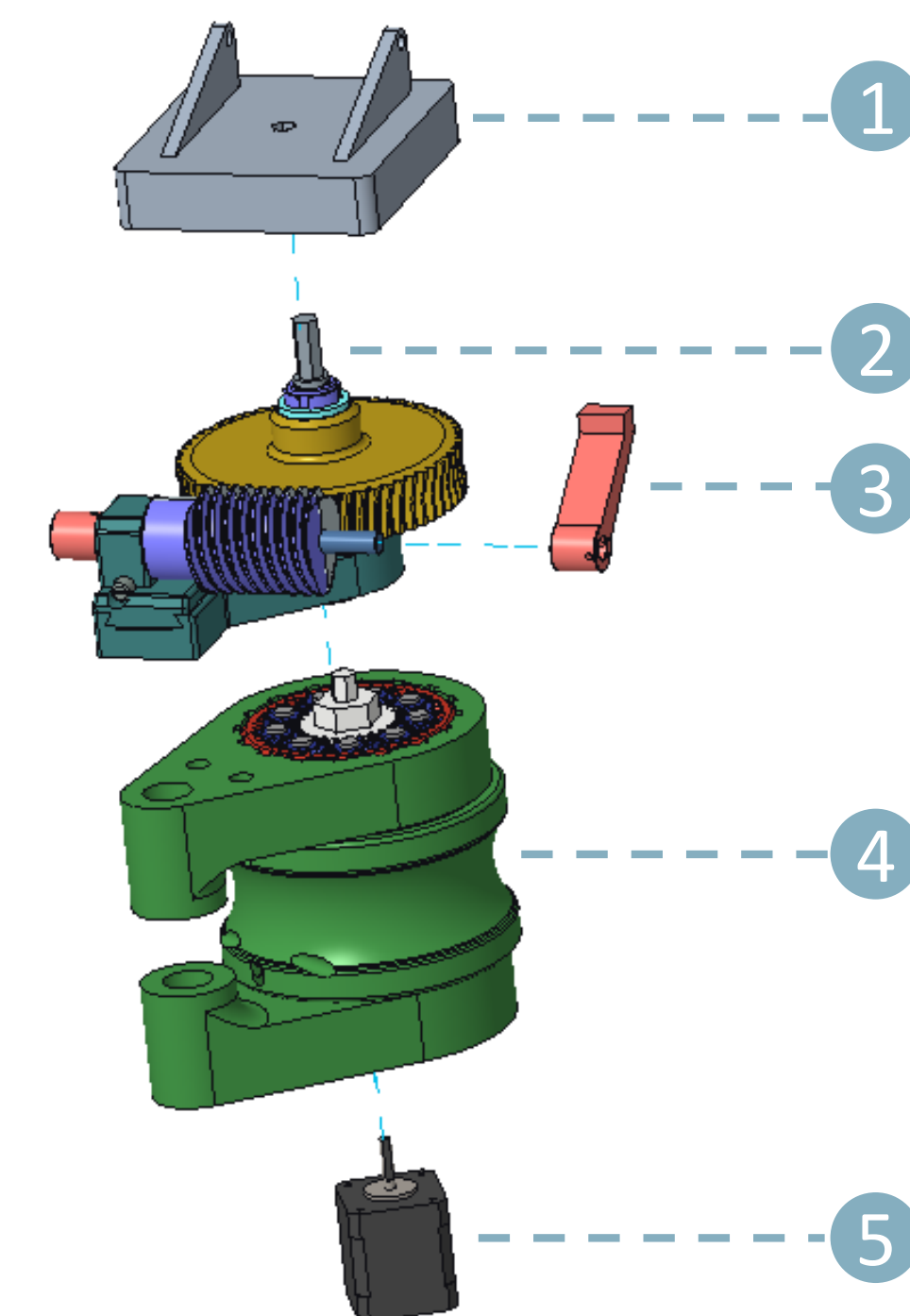


Autonomous

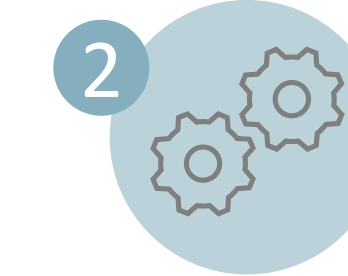


Scalable

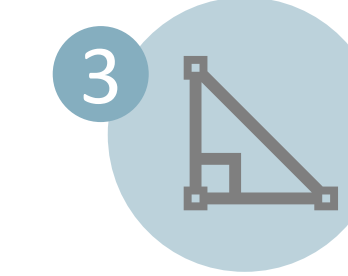
Initial Design



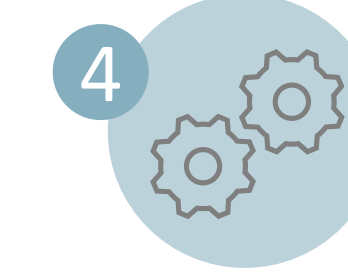
Turntable / Connection Plate
mates with standard LSMS connector



Worm Gear Train – converts vertical rotation into horizontal rotation



Coupler Arm – initiates rotation about horizontal axis



Planetary Gear Train – provides a 160:1 torque ratio



Stepper Motor – powered through the lander

Future Work



Purchase Materials



3D Print Parts



Begin Assembly