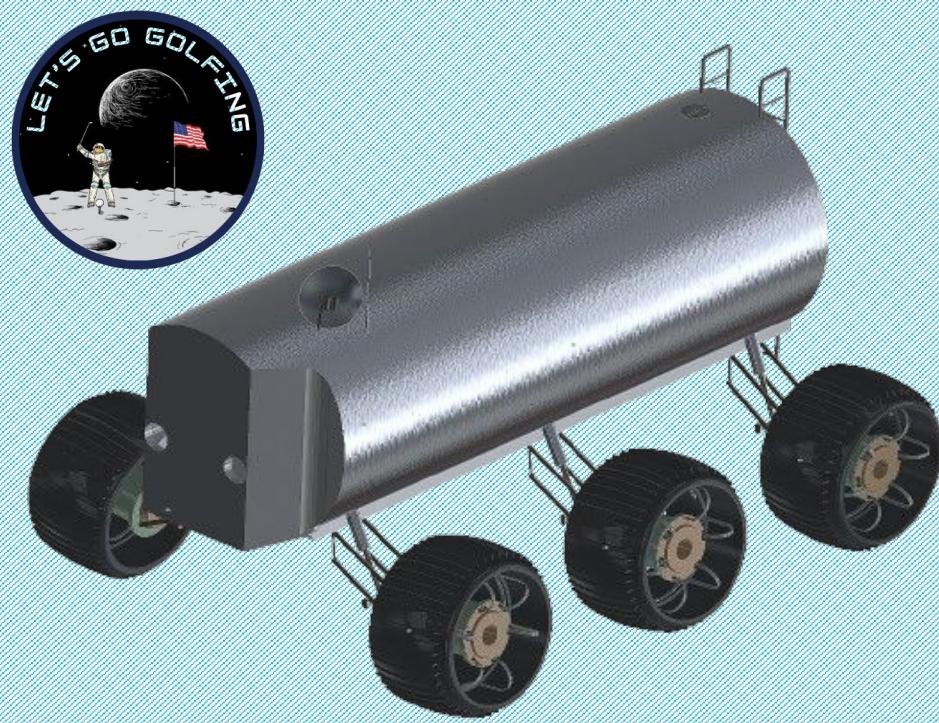




MOONSHOT

Lets go Golfing!
Week 1 Section 2



Team Introduction & Mission Patch



Team:

- Wyatt Hicks- Systems Engineer
- Syed Ali- Integration Manager
- Hayden Kramer- Design Manager
- Samiksha Emmaneni- Design Engineer
- Olivia Varghese- Subtopic 1 Manager
- Nailiani Lopez- Subtopic 1 Technician 1
- Alexander Hernandez-Plata- Subtopic 2 Manager
- Yaseen- Subtopic 2 Technician 1
- Christian- Subtopic 3 Manager
- Rithanya- Subtopic 3 Technician 1

Nasa Consultant -
Dr. Kristen John



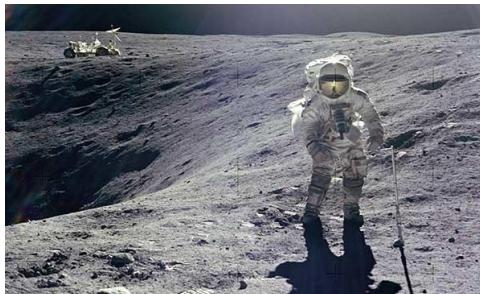
NASA Habitable Mobility Platform:

Overview of Three Subtopics

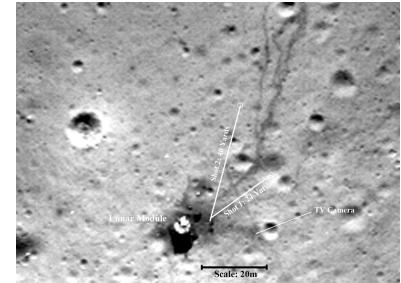
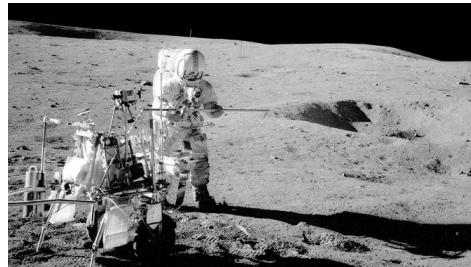
Slide:

- Long duration trips
- Laboratories and tools
- Demonstrate in-situ reutilization
- Science goals & analog exploration of the Moon

Photos from Apollo 14: Golf on the moon



Photos from Apollo 14: Golf on the moon



Photos from Apollo 14: Golf on the moon

Long duration trips

Life Support Systems:

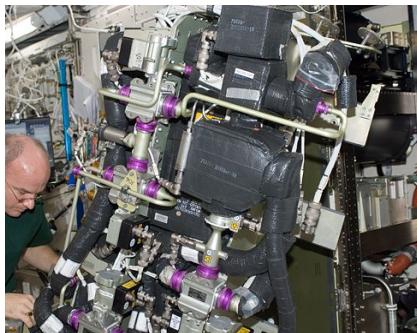
- Environmental Control and Life Support Systems (ECLSS) with OGA, CDRA, and WRS



Water Recovery System

Monitoring Systems:

- Electronic Monitoring Sensor (EMS) to monitor air quality, temperature, and radiation
- Dust & Miscellaneous Sensors
- Geiger Counter

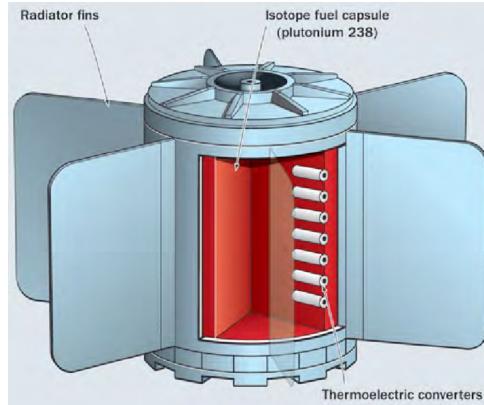


Carbon Dioxide Removal Assembly

Demonstration of In-Situ Reutilization

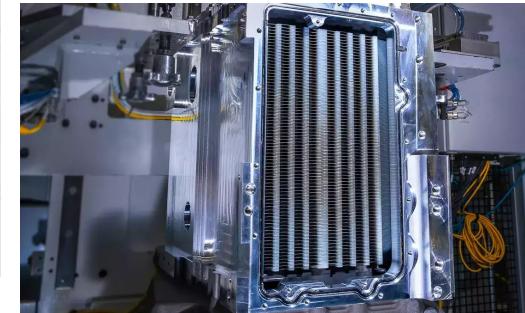
SLS Regolith 3D Printer

- High-power laser sinters small particles of regolith into solid structure based on 3D model
- 3D Prints tools once HMP becomes operational



Radioisotope Power System

Hydrogen Fuel Cell



Reusing Ice for Water Supply

- Required for Radioisotope-Hydro Power System
- Water gathered from ice under Lunar surface
- Working with team Alpha to gather ice

Science Goals/Analog Exploration of the Moon



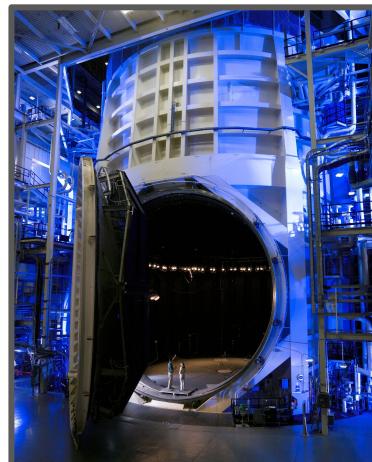
Science Goals:

- Collect Data on Atmospheric Conditions
 - Evaluate safety of locations for manned missions
- Study Moon's Geology
 - Create a mapping system for navigation

Analog Exploration:

- Simulate Lunar Surface Conditions
 - Simulant
 - Low pressure and temperatures

Thermal-Vacuum Chamber (T-VAC)



Research and Brainstorming

Problem:

The team must design a habitable mobility platform capable of the following:

- Support four crew
- Travel 10s of kilometers
- Travel for upto 45 days
- Support research efforts
- Rove across most types of terrain
- Communicate with main base
- Utilize resources on the Moon

Background Research & Possible Solutions:

- Past research: NASA Mars rover program, Apollo rover
- Present Research: Toyota rover
- Team chose radioisotopic-hydro power

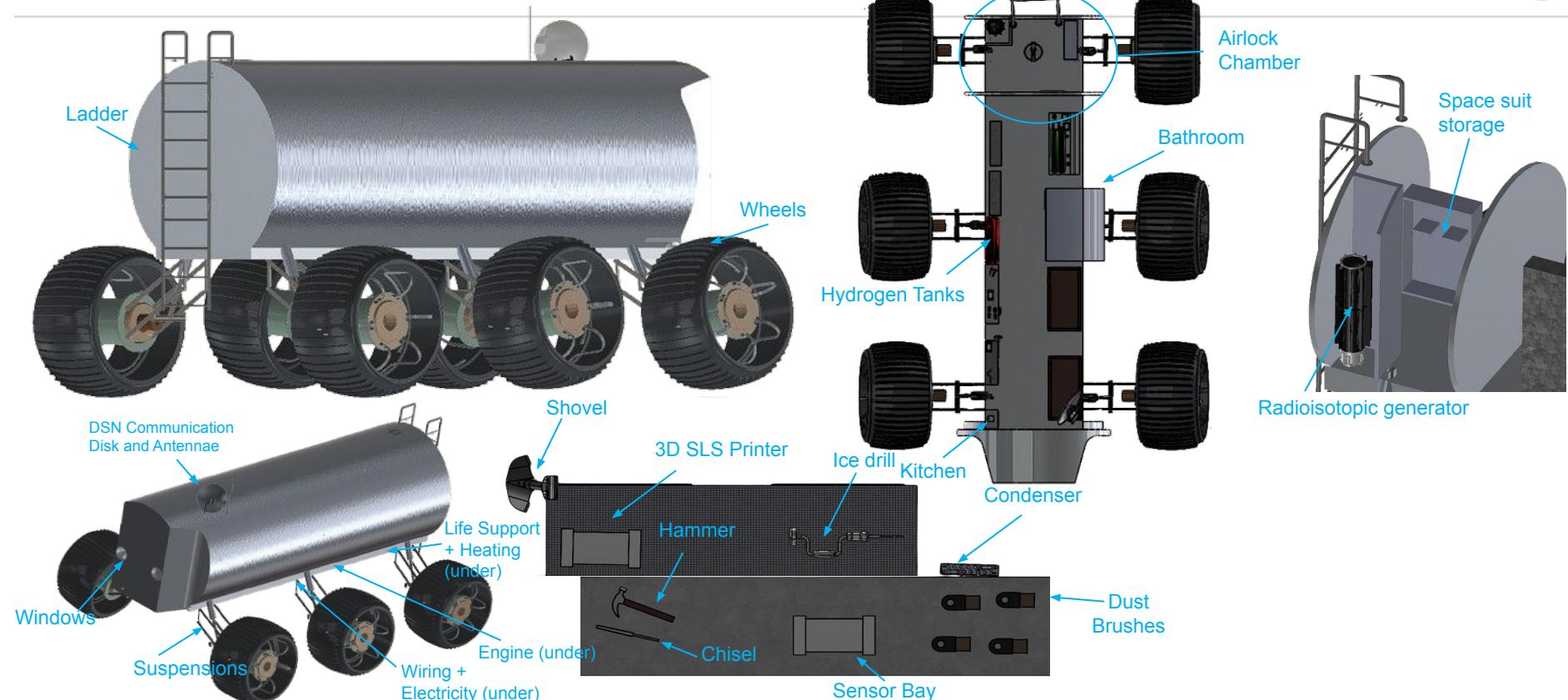


Toyota's Solar Powered Rover



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CAD Model of Design

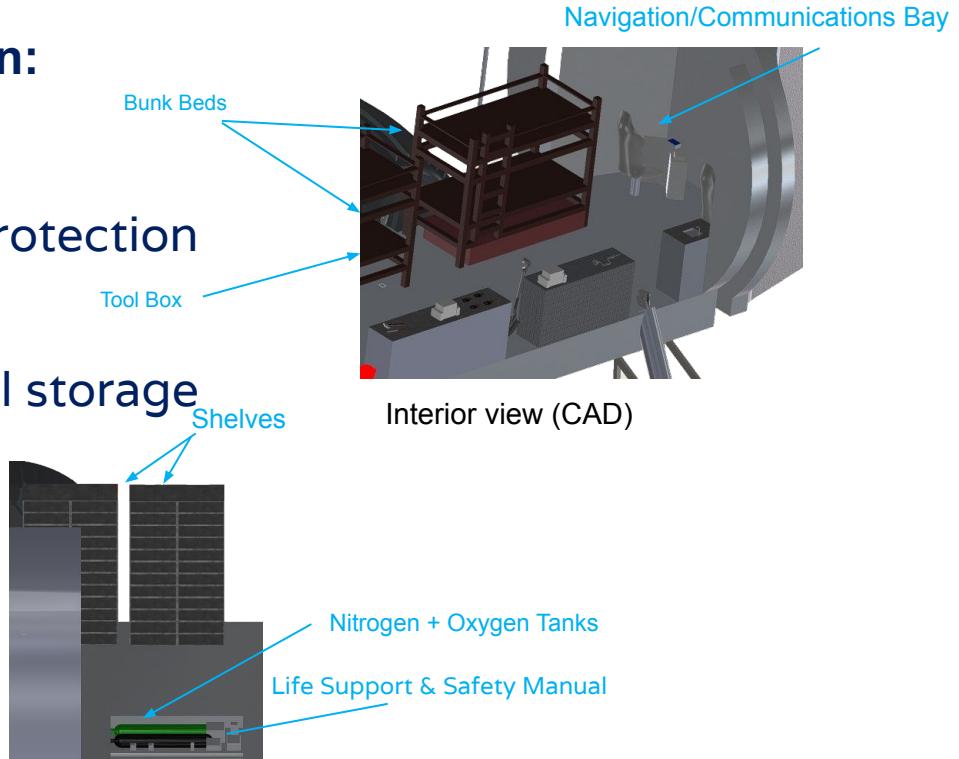
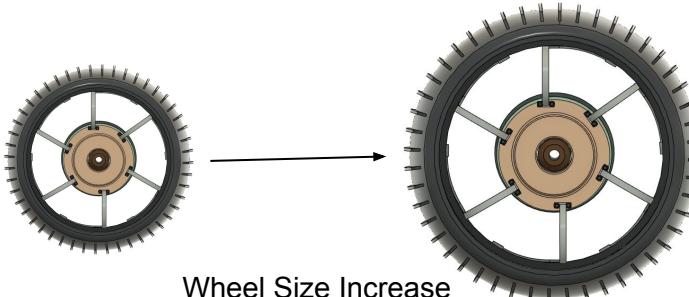


Revisions and Engineering Design Process

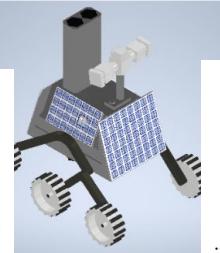
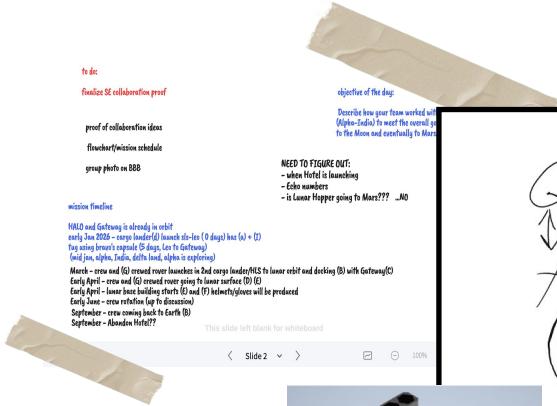


Revisions and Evolution of Design:

- Solar to Radioisotope-Hydro
- 4 wheel to 6 wheel drivetrain
- Less emphasis on radiation protection
- Increased wheel diameter
- Removed separate trailer
- Added hydrogen tanks as fuel storage



Conclusion



HAS Mission Timeline

March 2026

Team Delta will then launch to lunar orbit and then dock with Gateway from team Bravo and Charlie.

January 2026

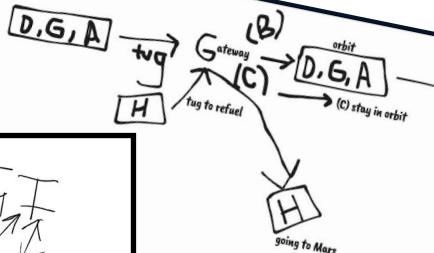
Team Alpha and Delta will be sent to Gateway with a tug system by team Bravo and team Charlie to land on the moon. Where Delta would make multiple trips to transport team Golf and India.

April 2026

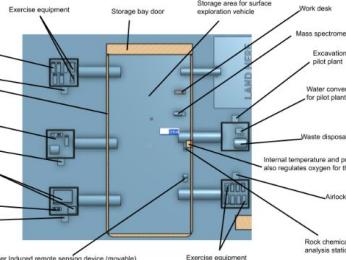
The Delta crew would then launch to the lunar surface to meet up with team Echo for the lunar space base, using the gear made by team Foxtrot.

6 Months on Moon

After six months on the moon, the crew would head back to earth utilizing all the previous teams. During this time, team India and Hotel should be working on expanding to Mars.



Important System Engineer documentation



Important System Engineer documentation



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