

The logo for ASTROLAB VENTURI, featuring the word "ASTROLAB" in a large, white, sans-serif font, with "VENTURI" in a smaller, white, sans-serif font directly below it. The background of the entire image is a desert landscape at sunset, with a rover in the foreground and mountains in the distance.

ASTROLAB
VENTURI

ISRU Pilot Plant Deployment with the Flexible Logistics & Exploration (FLEX) Rover

June 2023



ASTROLAB VENTURI

- Astrolab is a Hawthorne, CA-based aerospace technology startup pioneering novel planetary systems
- Experienced and driven engineering and leadership team from SpaceX, NASA, JPL, and Kittyhawk



The Multi-Planet Future

NASA is looking to commercial industry for help in the exploration and settlement of the Moon & Mars

Investments in fully-reusable rockets and landers will soon open an era of unprecedented access

Humanity's transition from a one-planet species to a multi-planet species has begun and it is an extraordinary scientific and economic opportunity



FLEX ROVER

Flexible Logistics & Exploration

Versatility

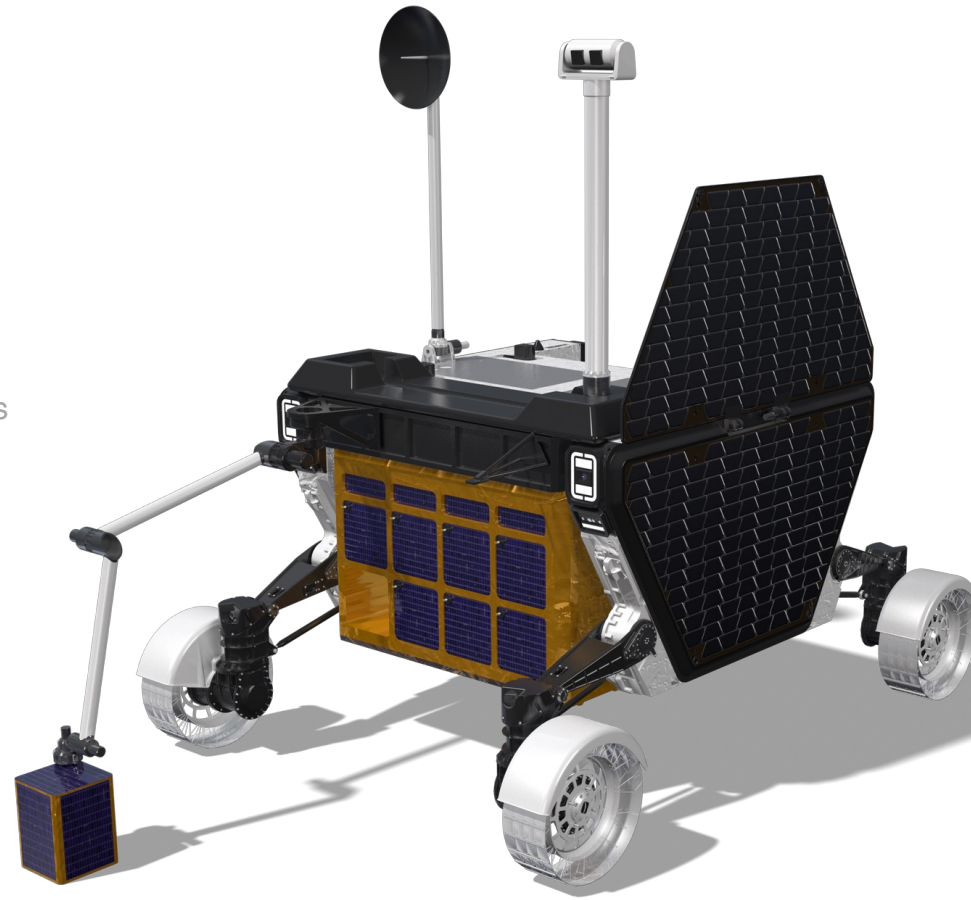
3 modular interfaces support a wide variety of payloads and attachments

Longevity

System redundancy, robust dust mitigation, & lunar night survival give FLEX a 10-year life

Capability

FLEX transports payloads up to 3m³ in volume and 1500kg mass over rough terrain and slopes more than 20°



1500kg of payload



15kph top speed



Semi-autonomous operability



Exploration
& Discovery



Crew
Support



Logistics



Robotic
Science



Construction



Resource
Utilization



Lunar Development

Transportation & Data → Energy & Communications → Resources → Settlement

1

Create a robotic logistics platform to enable large-scale infrastructure deployment & data collection

2

Develop communications and energy collection, storage, & distribution network

3

Enable resource extraction and processing and other energy-intensive activities

4

Establish permanent human presence





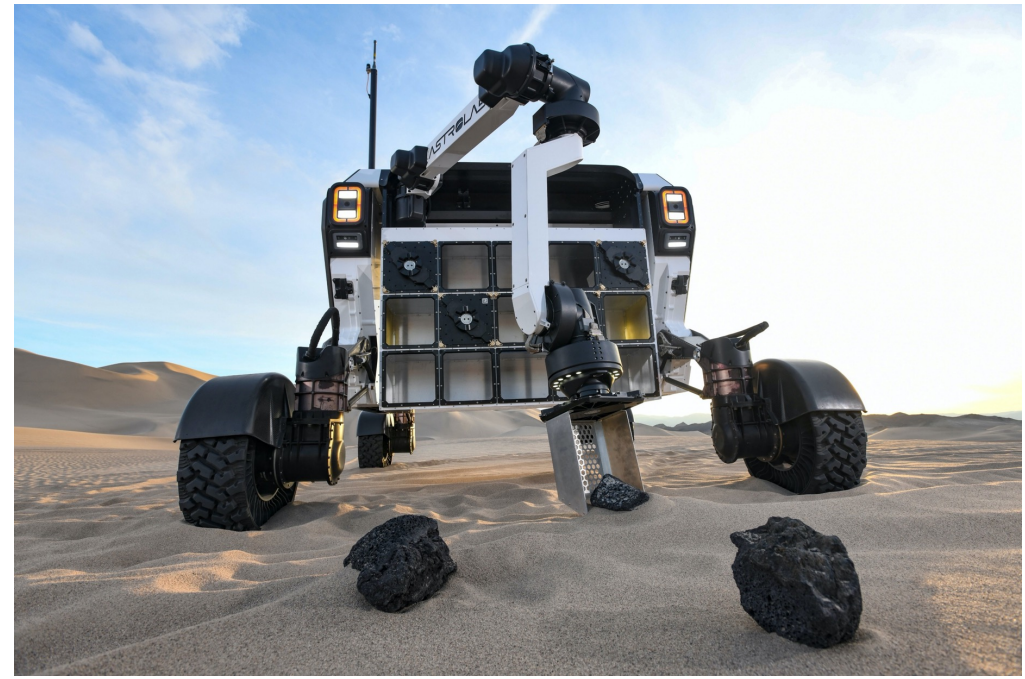
Field Testing

- Astrolab has a strong culture of fast design, build, and test iteration.
- Field testing in analog environments is an essential part of our development process.
- We invite payload developers to participate in our regular field test campaigns
- Recent collaborative effort with a student team from University of Puerto Rico - Mayagüez (UPRM)



Robotic Operation

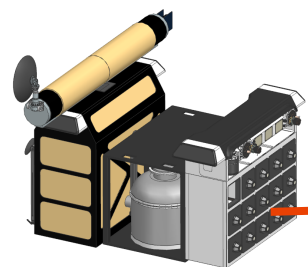
- Astrolab has developed a 6-degree-of-freedom robotic arm with 1g operational capability
- Can carry 25+ kg payloads at 2.4m extension
- Standard payload form factor of 12U cubesat
- Substantially extends vehicle capability to offer general-purpose utility at multiple scales
- Initial field testing completed Dec 2022



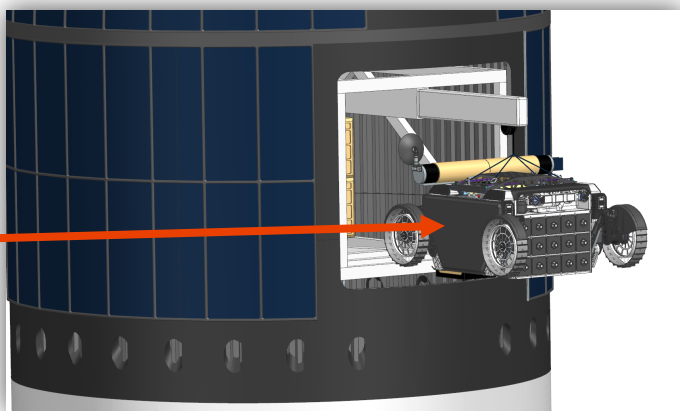


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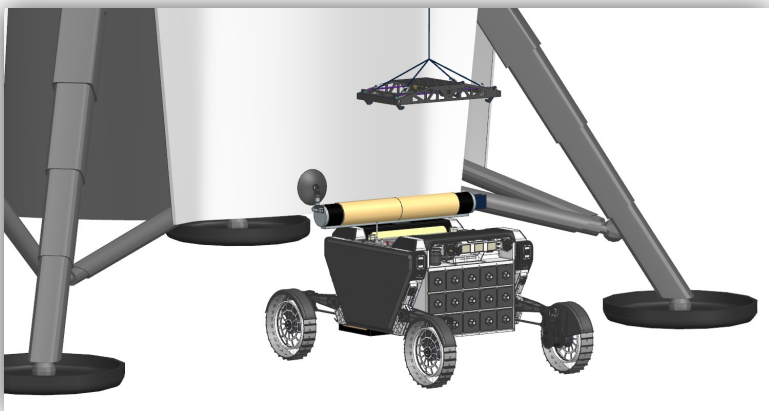
Astrolab FLEX ISRU Pilot Plant Mission Concept



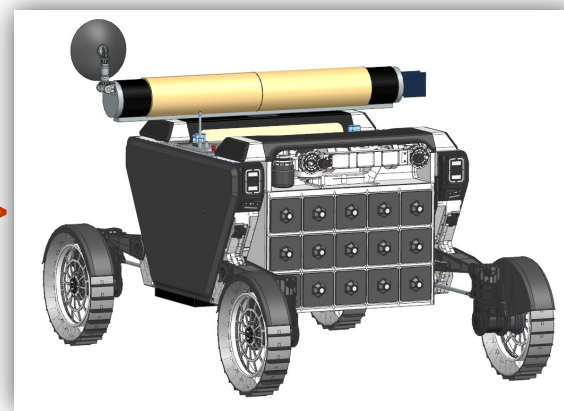
FLEX lands with 1500kg or more of commercial & govt payload



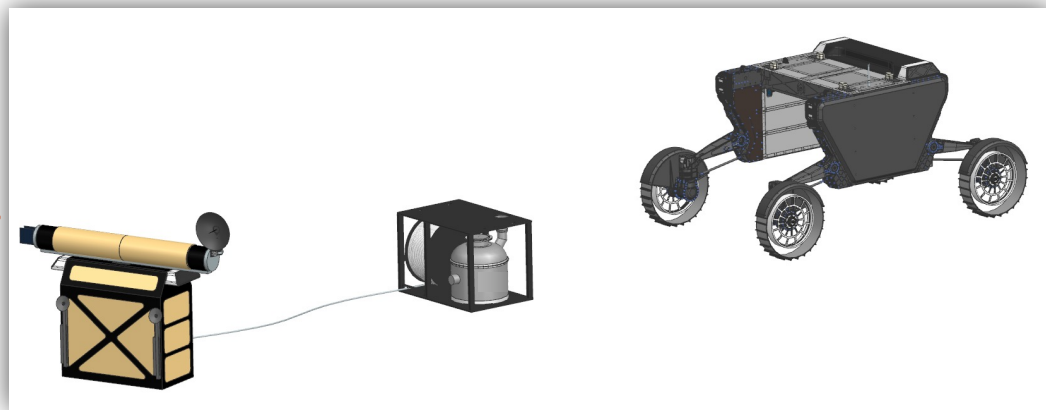
Astrolab deployment system deploys FLEX and attached payloads from HLS lander in a single operation



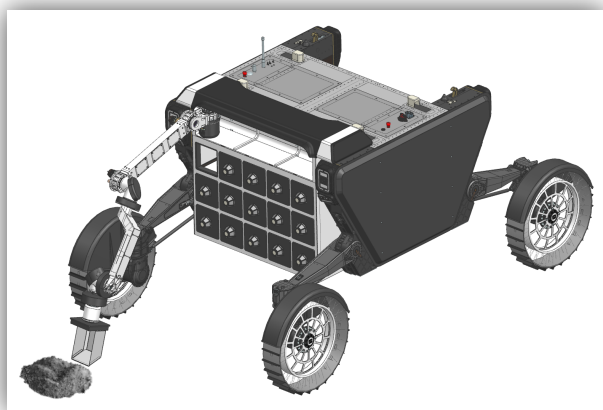
FLEX and payloads lowered and released to surface directly on wheels



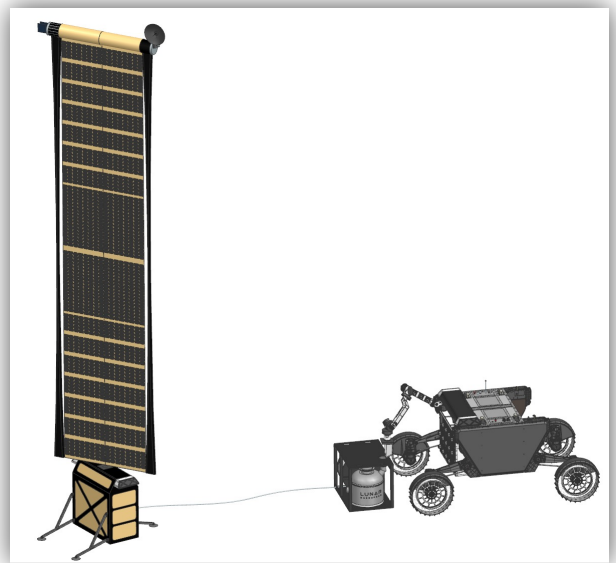
FLEX moves payloads to local high ground



FLEX deploys 5-10kW Vertical Solar Array & ISRU pilot plant payloads



FLEX collects regolith for ISRU pilot plant using 6-DoF robotic arm (up to 20kg batches)



FLEX delivers regolith to ISRU plant for processing



Astrolab Mission 1

- Astrolab has contracted SpaceX's Starship launch and landing system for a mission to the lunar South pole NET mid-2026
- We have signed several customer agreements to carry payloads on this mission
- Actively seeking additional customer payloads in multiple form factors



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