

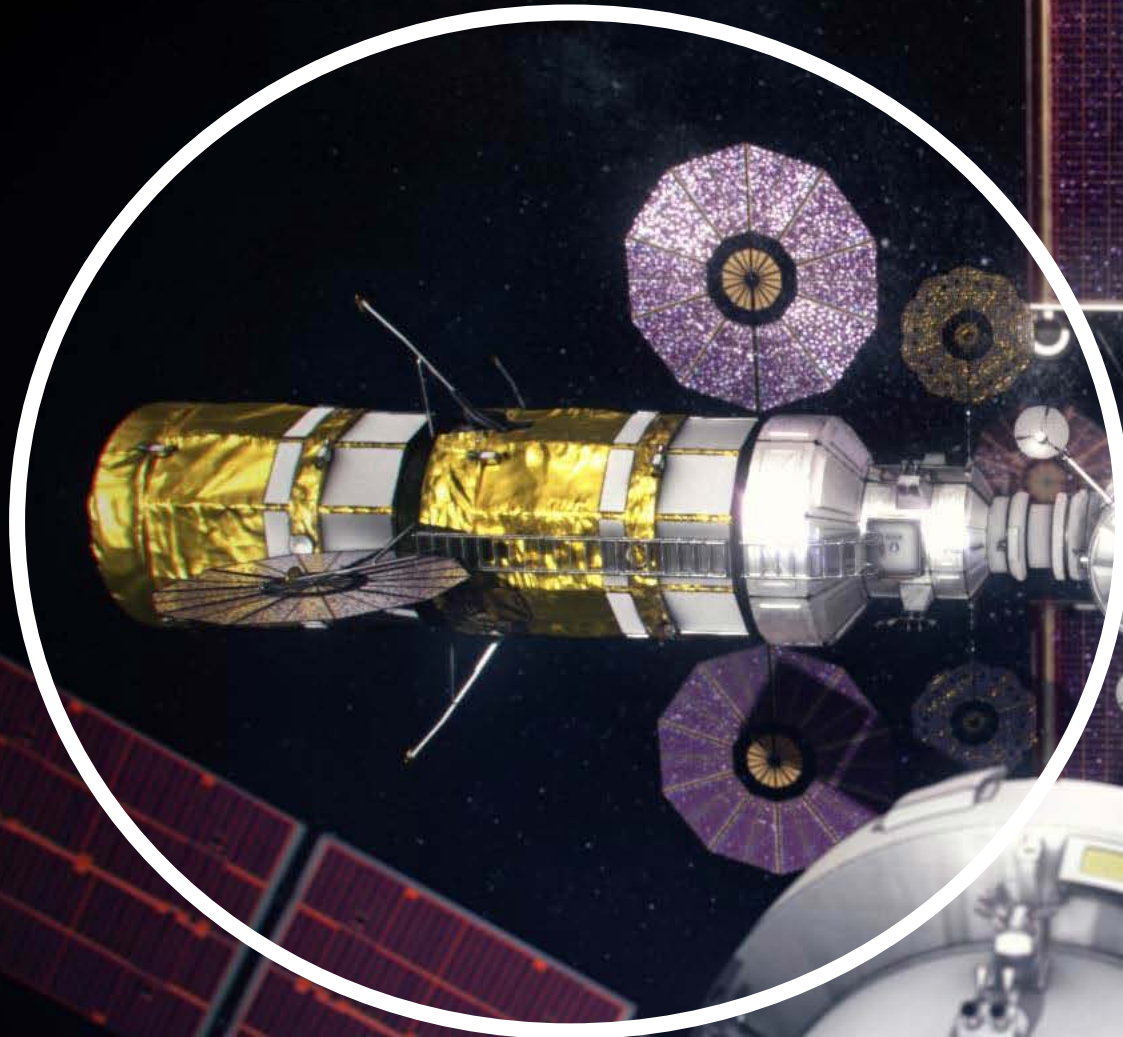
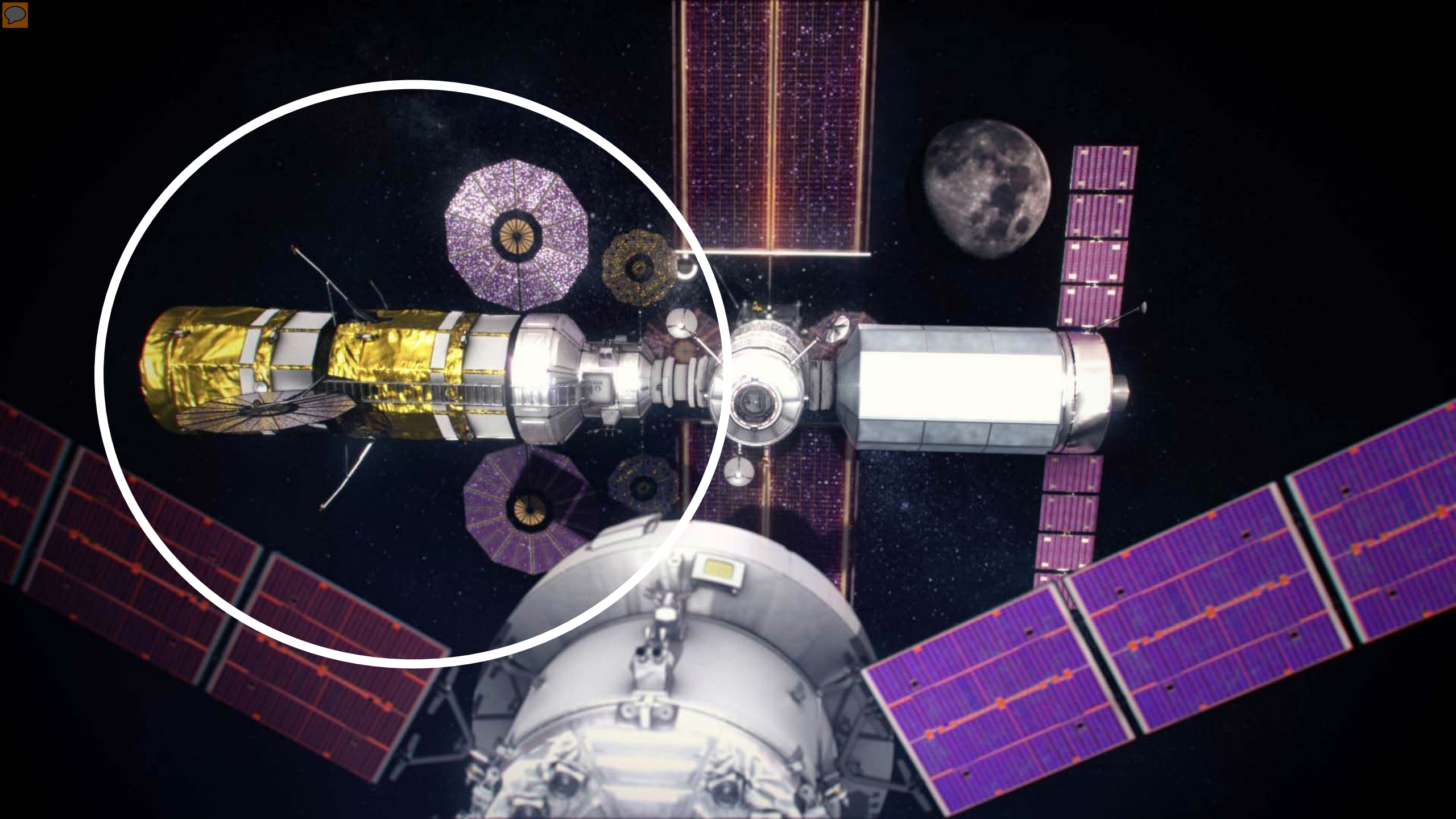
National Aeronautics and Space Administration



# NASA'S HUMAN LUNAR LANDING STRATEGY

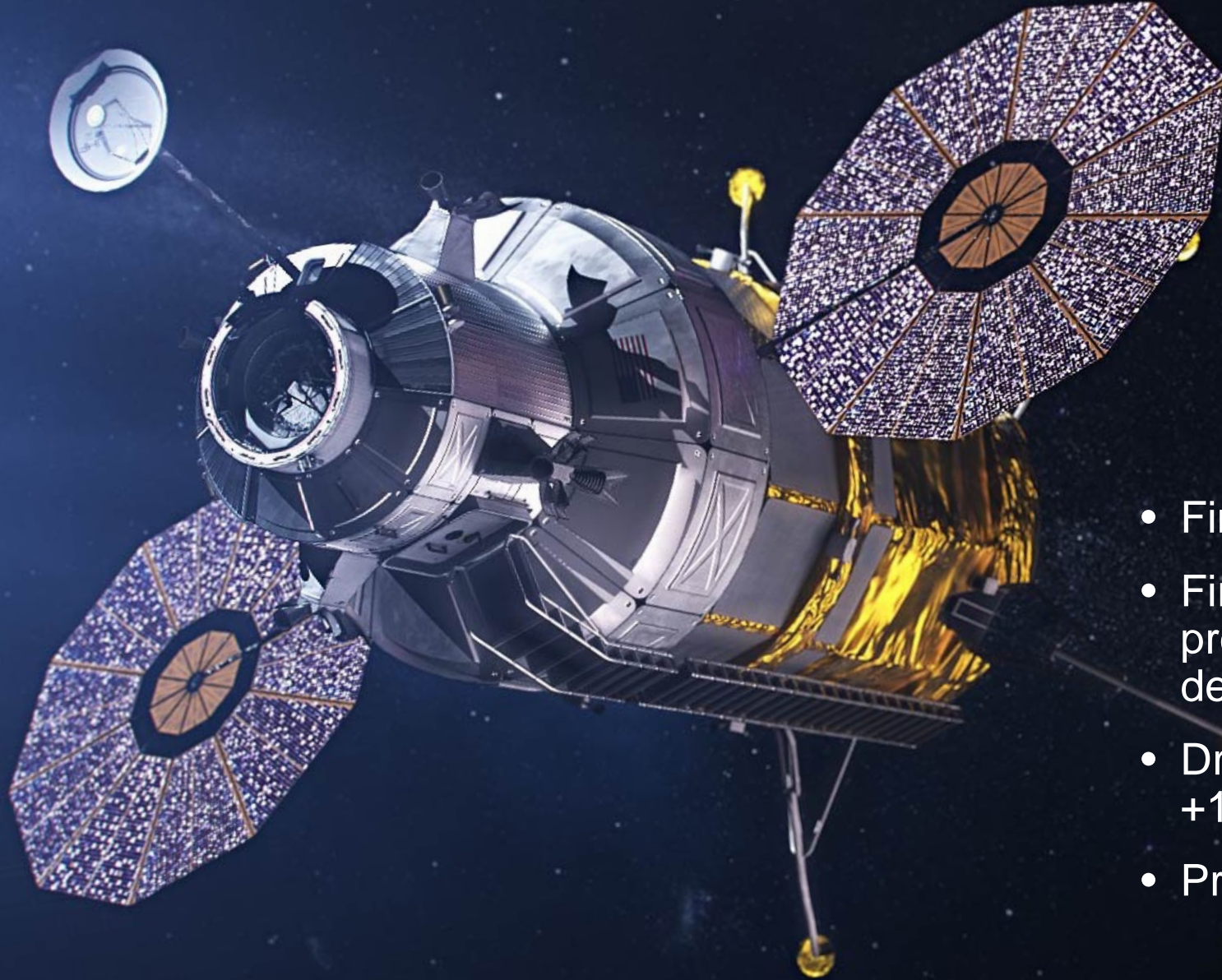








# Human Landing System – NextSTEP-2 Appendix H



- Final solicitation issued September 30
- Firm Fixed-Price, milestone-based proposals for design, delivery, and demonstration
- Drafts issued July 19 and August 30; +1,150 comments from industry
- Proposals due November 1, 2019

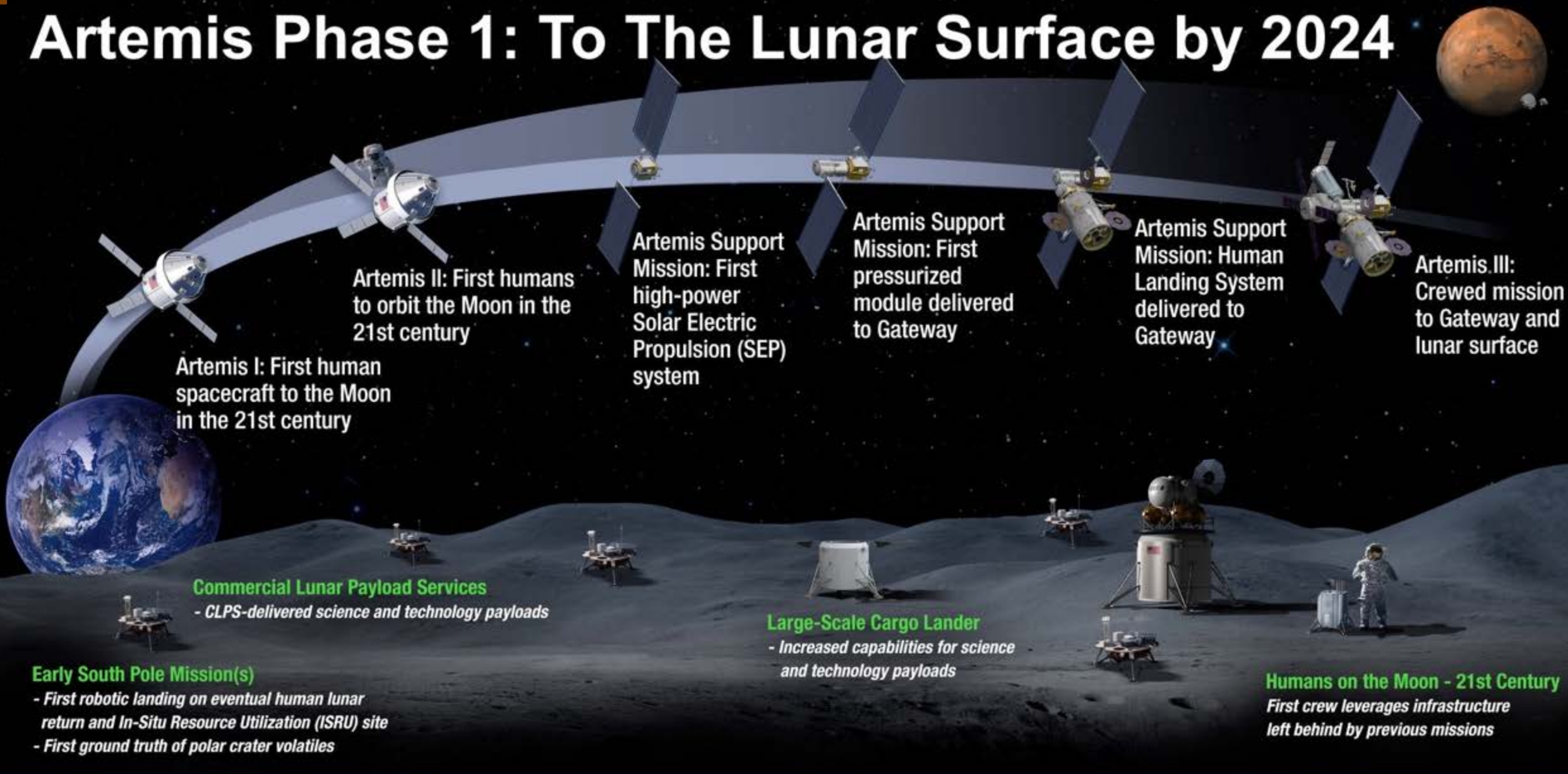


# Human Landing System – NextSTEP-2 Appendix H

- Minimally prescriptive to provide maximum room for innovation
  - Reduced functional performance requirements from ~300 down to 26
  - Reduced required contract deliverables from 116 to 37
- BAA Evaluation Criteria in descending order of importance:
  - Technical Approach
  - Price
  - Management Approach
- Select at least three companies in January 2020
  - Based on ability to meet the technical requirements of 2024 mission at the best value for the government
  - Goal of at least two passing a continuation review to take designs to flight
  - One to fly in 2024, other in 2025



# Artemis Phase 1: To The Lunar Surface by 2024

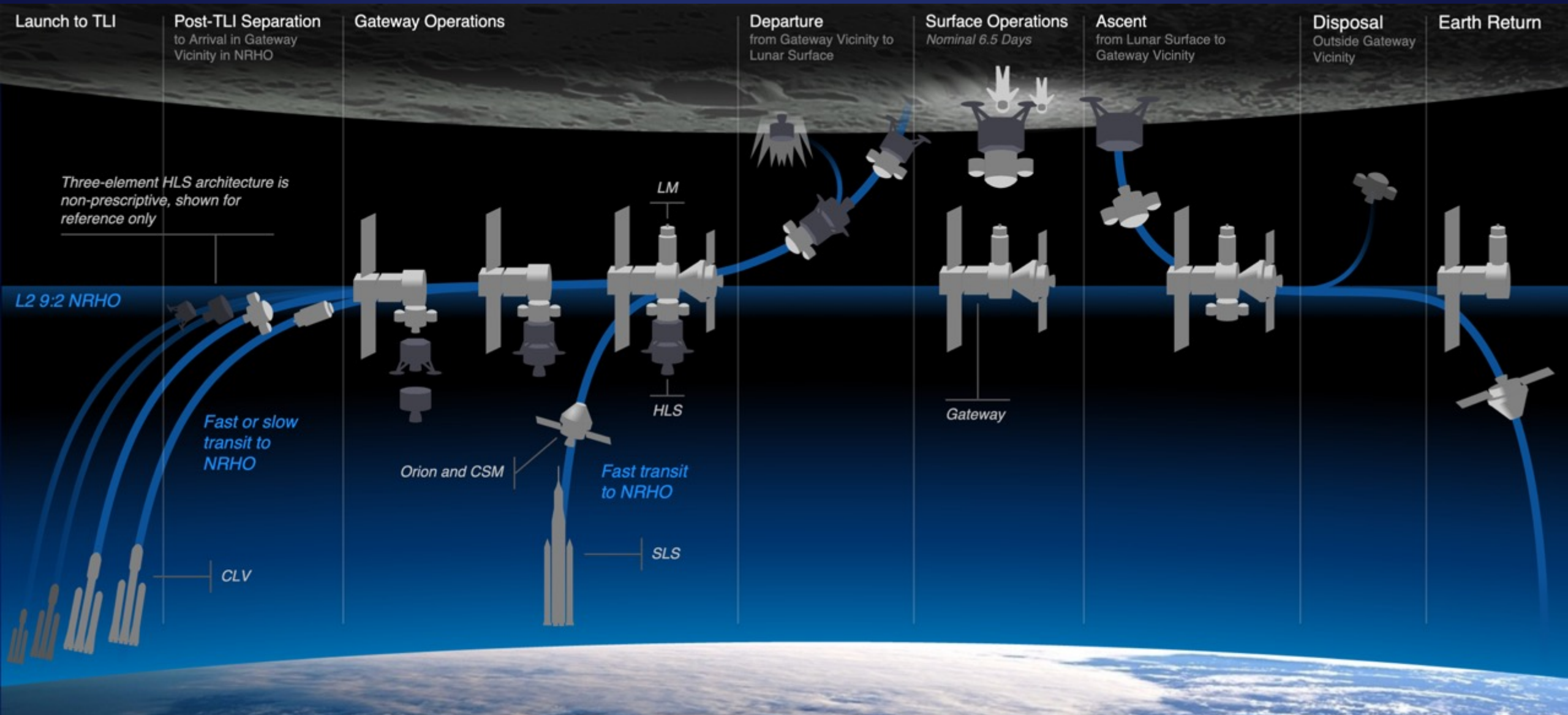


## LUNAR SOUTH POLE TARGET SITE

2020

2024

# Government Concept of Operations





# Support Across Mission Directorates

## STMD

- Tipping Point Selections
- Other

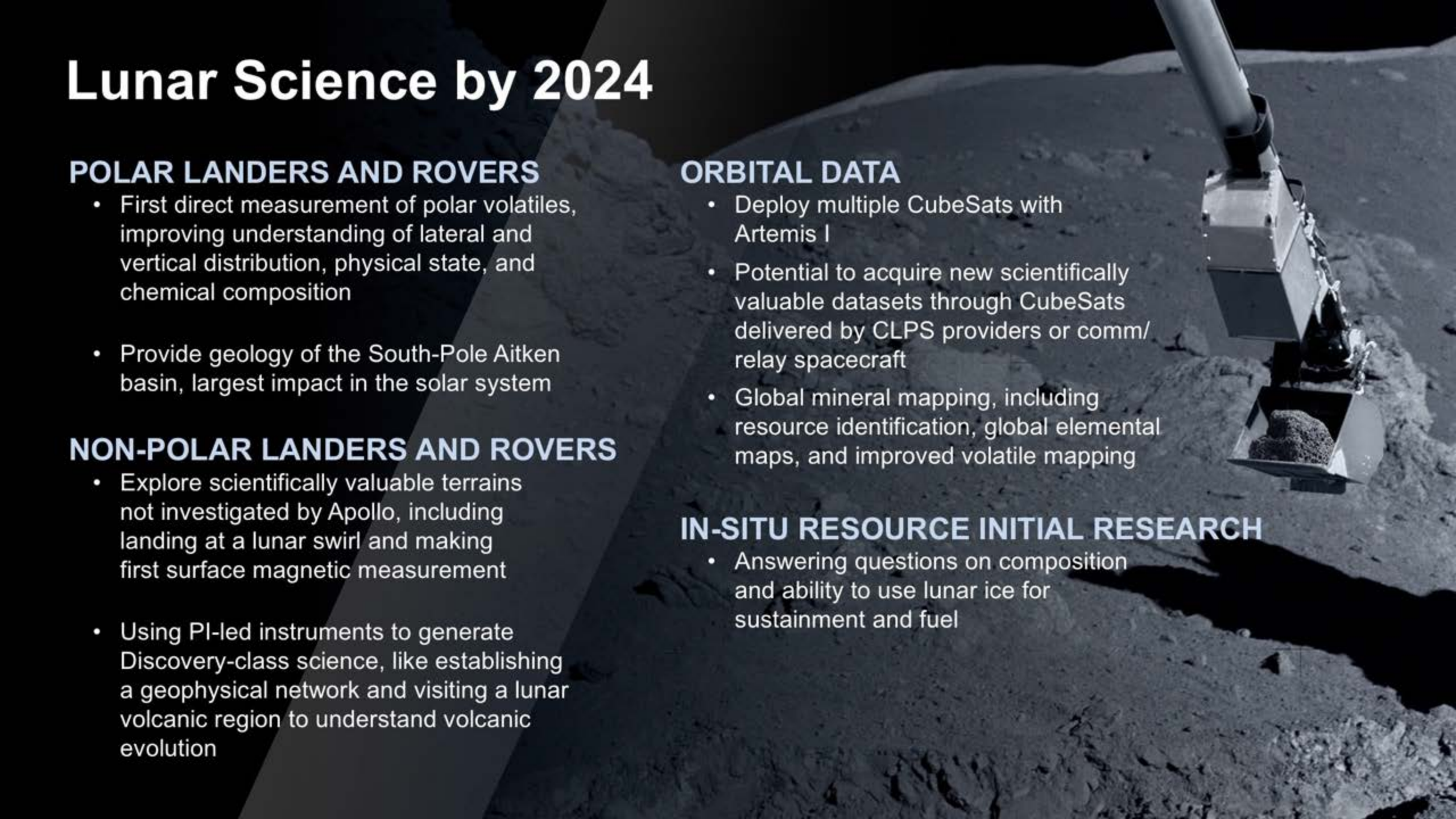
## SMD

- Commercial Lunar Payload Services (CLPS)
- Prioritize science objectives of Artemis III (2024 mission) and coordinate with HEOMD on science objectives for Artemis IV and beyond





# Lunar Science by 2024



## POLAR LANDERS AND ROVERS

- First direct measurement of polar volatiles, improving understanding of lateral and vertical distribution, physical state, and chemical composition
- Provide geology of the South-Pole Aitken basin, largest impact in the solar system

## NON-POLAR LANDERS AND ROVERS

- Explore scientifically valuable terrains not investigated by Apollo, including landing at a lunar swirl and making first surface magnetic measurement
- Using PI-led instruments to generate Discovery-class science, like establishing a geophysical network and visiting a lunar volcanic region to understand volcanic evolution

## ORBITAL DATA

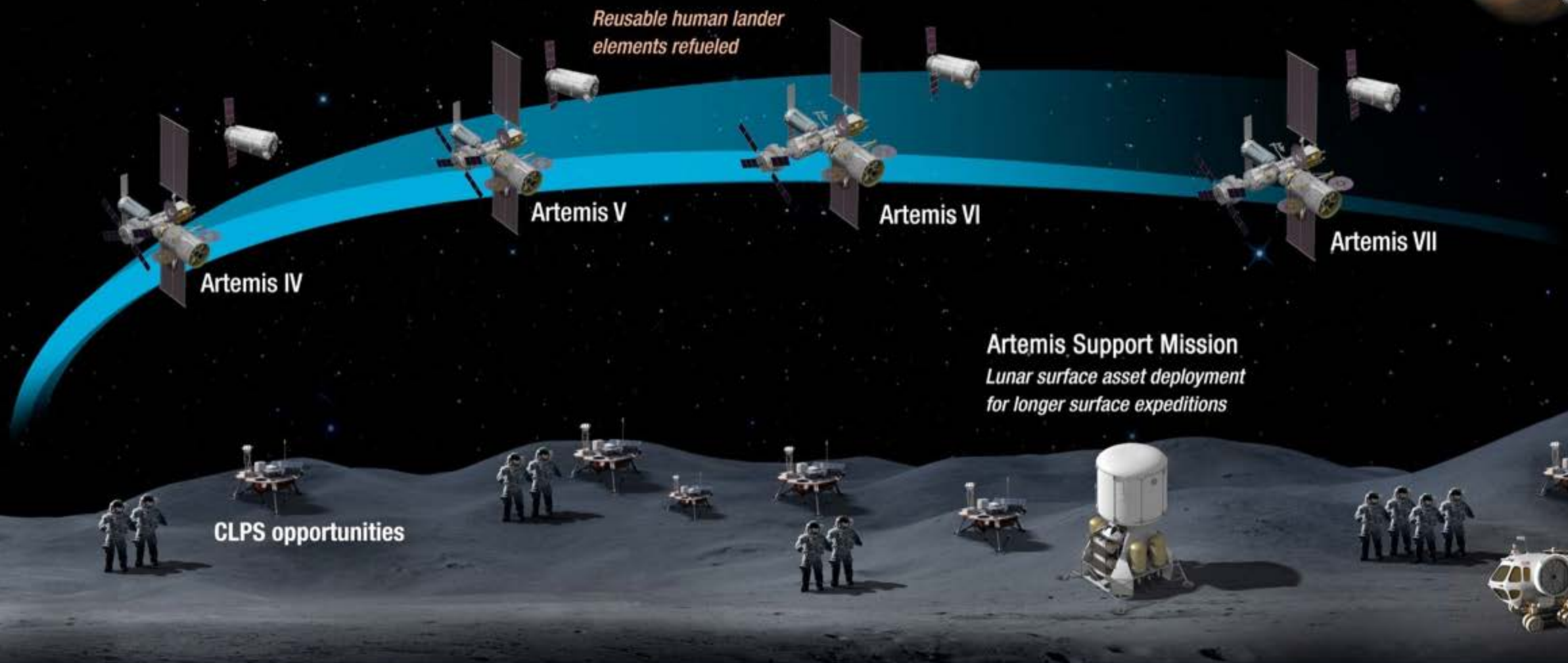
- Deploy multiple CubeSats with Artemis I
- Potential to acquire new scientifically valuable datasets through CubeSats delivered by CLPS providers or comm/relay spacecraft
- Global mineral mapping, including resource identification, global elemental maps, and improved volatile mapping

## IN-SITU RESOURCE INITIAL RESEARCH

- Answering questions on composition and ability to use lunar ice for sustainment and fuel



# Artemis Phase 2: Building Capabilities For Mars Missions



## **SUSTAINABLE LUNAR ORBIT STAGING CAPABILITY AND SURFACE EXPLORATION**

MULTIPLE SCIENCE AND CARGO PAYLOADS

INTERNATIONAL PARTNERSHIP OPPORTUNITIES

TECHNOLOGY AND OPERATIONS DEMONSTRATIONS FOR MARS

2025

2029

