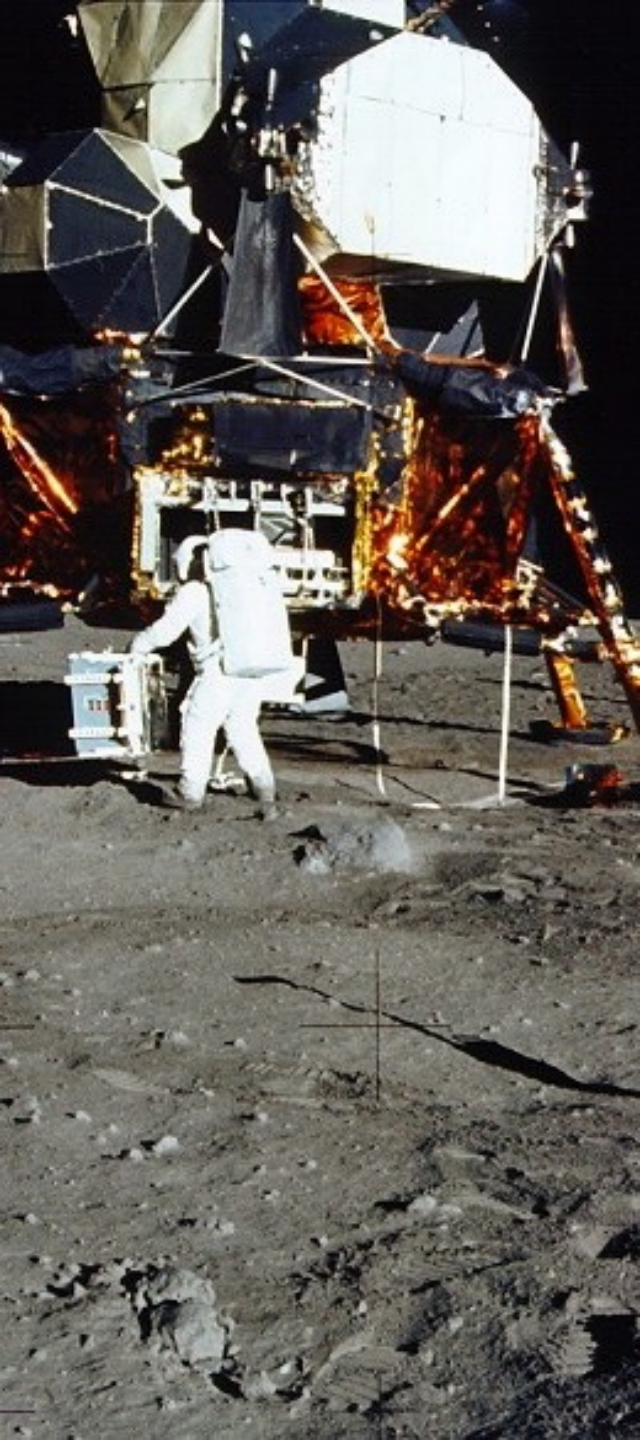




HUMAN LANDING SYSTEM

Kent Chojnacki

Manager, Systems Engineering
& Integration (SE&I) Office



Human Landing System

HLS

The first human landing systems in history to be developed by U.S. industry will take astronauts from lunar orbit to the surface and back again.

- Carries crew to the lunar surface and returns them to lunar orbit
- Serves as a habitat on the lunar surface for early Artemis missions
- Houses equipment for surface activities including moonwalks, sample collection, and scientific experiments

Initial Human Landing System

HLS

Uncrewed demo and first Artemis crew landing

- APR 2020** ● Base Period Selections Announced
- MAY 2020** ● Base Period Contracts Awarded
- AUG 2020** ● Contractor Certification Baseline Reviews
- OCT 2020** ● Option A Solicitation Issued
- DEC 2020** ● Contractor Continuation Reviews
- APR 2021** ● SpaceX selected for Option A Design Development Test and Evaluation (DDT&E) and a Crewed Demo Mission*
- JULY 2021** ● Option A Contract Award**
- NOV 2021** ● US Court of Federal Claims Upholds SpaceX Selection, Progress Resumes

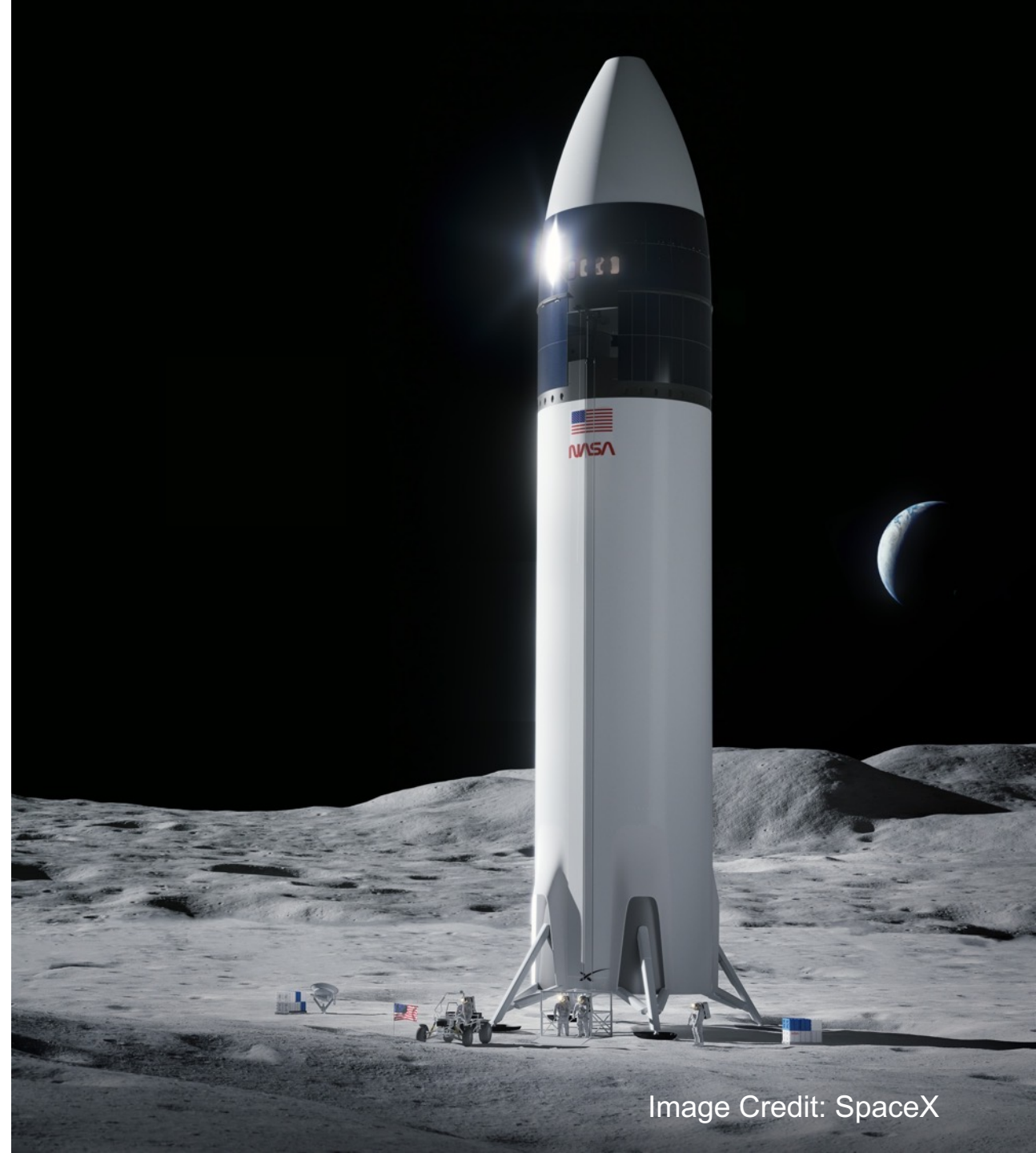


Image Credit: SpaceX

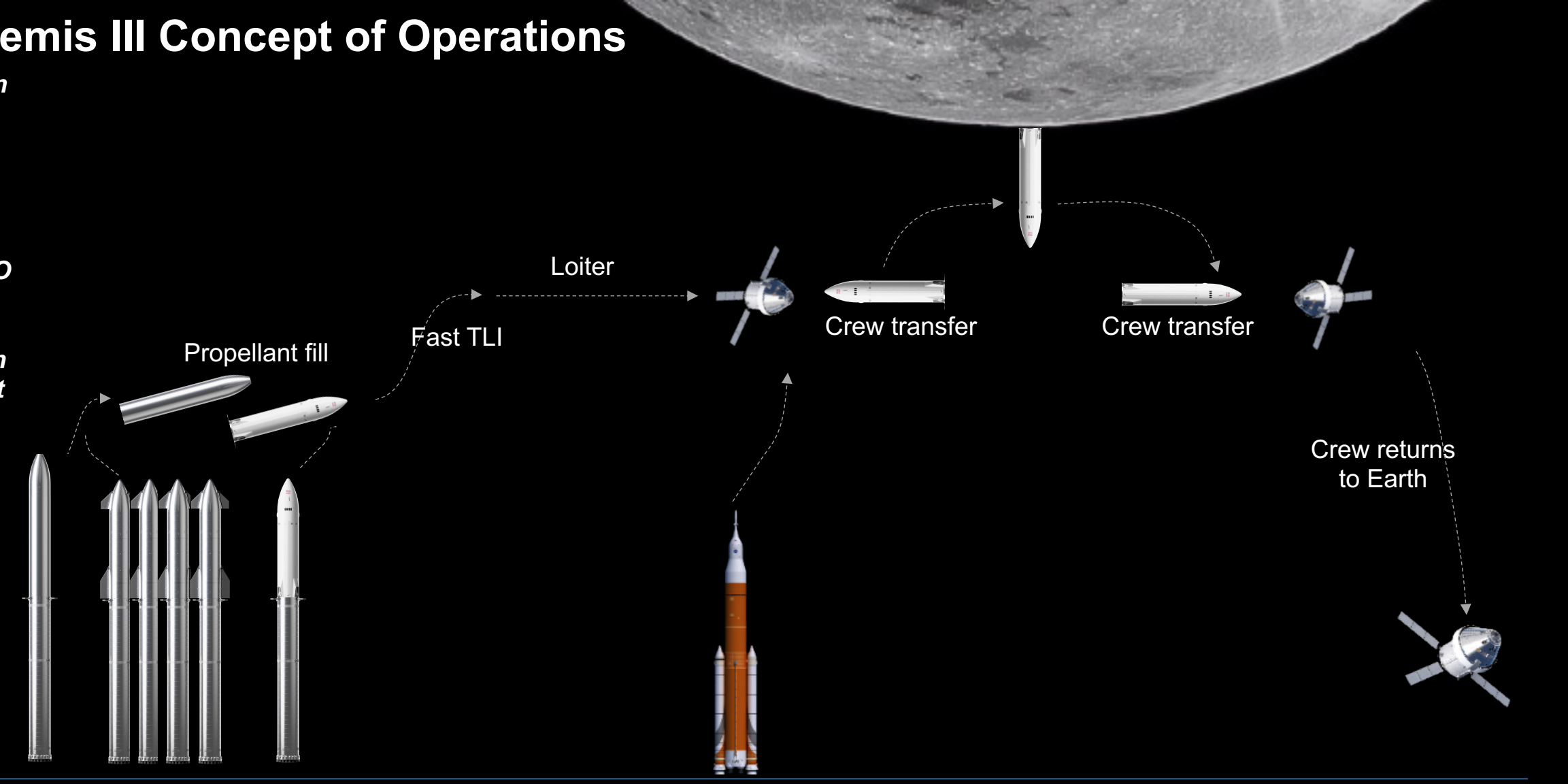
Artemis III Concept of Operations

Moon

NRHO

Earth Orbit

Earth



Propellant aggregation

HLS Starship launches

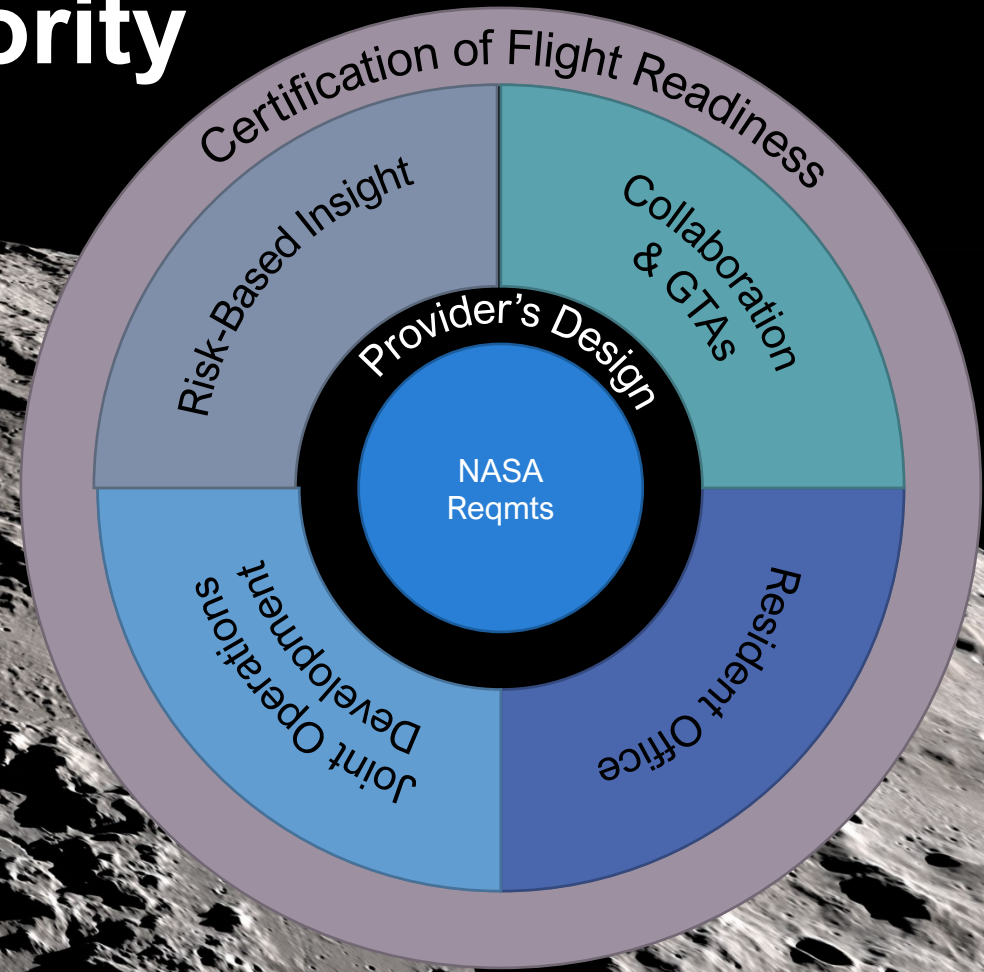
Extended loiter if needed

Orion launch

Variable Stay on the Moon

Crew returns to Orion

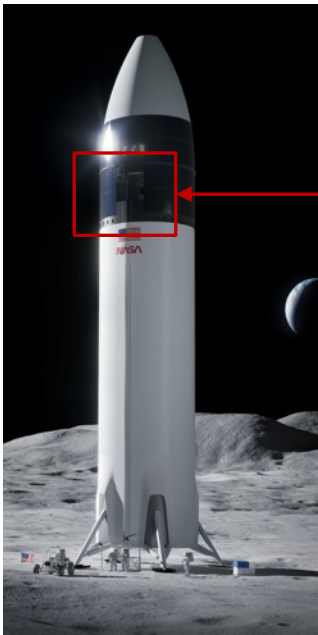
NASA Maintains Ultimate Authority



Certification of Flight Readiness is based on:

- Design Certification built on NASA-Approved Hazard Controls, Verification Objectives and Verification Closures against NASA-mandated requirements
- Provider compliance to NASA-Approved Design and Certification Standards
- Provider processes and NASA process controls as ascertained by NASA risk-based insight

Working with NASA to Ensure Crew Safety, Comfort, & Performance



Crew cabin VR evaluation



Airlock

Crew and Cargo Elevator

Sustainable Human Landing System Studies and Risk Reduction

Recurring HLS development and services for all subsequent Artemis crew landings

- APR 2021** ● Sustainable HLS Request for Information (RFI) Issued
- JULY 2021** ● NextSTEP Appendix N BAA Issued: Sustainable Human Landing System Studies and Risk Reduction
- SEPT 2021** ● Lunar Exploration Transportation Services (LETS) RFI Issued
NextSTEP Appendix N BAA Awards
- TBD 2022** Sustainable HLS Draft Request for Proposals (RFP) Issued to U.S. Industry

- In preparation for LETS, NASA selected five providers to develop lander design concepts, evaluate mission requirements, and mitigate risks by conducting critical component tests and advancing the maturity of key technologies
 - Blue Origin Federation of Kent, WA
 - Dynetics (a Leidos company) of Huntsville, AL
 - Lockheed Martin of Littleton, CO
 - Northrop Grumman of Dulles, VA
 - SpaceX of Hawthorne, CA



QUESTIONS?

Stay Connected



[@NASAArtemis](https://twitter.com/NASAArtemis)



[@NASAArtemis](https://www.instagram.com/NASAArtemis)



[@NASAArtemis](https://www.facebook.com/NASAArtemis)



blogs.nasa.gov/artemis

Sign up for updates at nasa.gov/subscribe

nasa.gov/artemis