

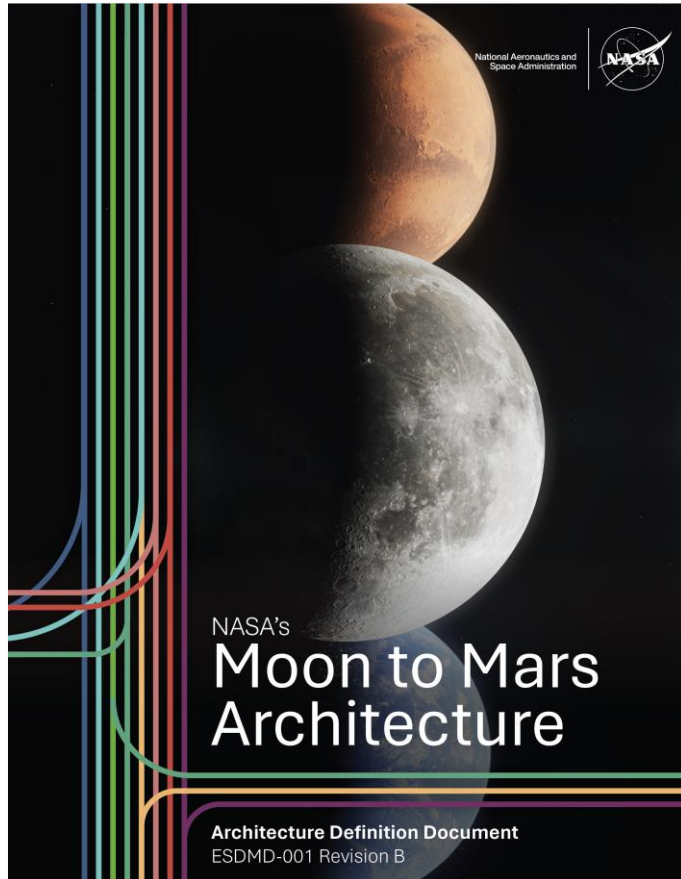


# Sustained Lunar Presence Policy

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# 2024 Architecture Products

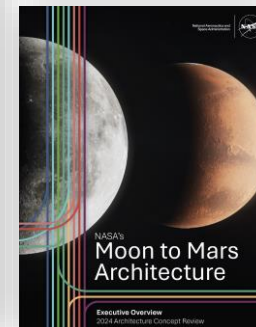


## NASA's Architecture Definition Document

## Architecture White Papers



## Executive Overview



## NASA documents its roadmap for deep space exploration in the Architecture Definition Document (ADD).

The agency updates the ADD yearly and publishes it alongside other public-facing products including white papers on relevant topics and an executive overview of the architecture.



Revision B  
Published  
December 13



NASA's Moon to Mars  
Architecture Website  
[nasa.gov/architecture](https://nasa.gov/architecture)

# Architecture Segments



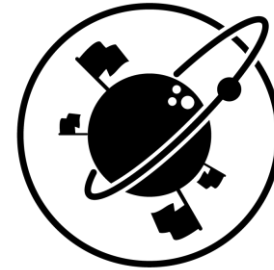
Human Lunar Return

Foundational Exploration

Sustained Lunar Evolution

Future  
Segments

Humans to Mars



Human Lunar Return

Foundational Exploration

Sustained Lunar Evolution

Humans to Mars

**Initial capabilities**, systems, and operations necessary to **re-establish human presence** and initial utilization (science, etc.) on and around the Moon.

Expansion of lunar capabilities, systems, and operations supporting **complex orbital and surface missions** to conduct utilization (science, etc.) and **Mars forward precursor missions**.

Enabling capabilities, systems, and operations to support **regional and global utilization** (science, etc.), **economic opportunity**, and a steady cadence of human presence at the Moon.

**Initial capabilities**, systems, and operations necessary to **establish human presence** and initial utilization (science, etc.) on Mars and continued exploration.

**Segment** | A portion of the architecture that integrates sub-architectures and progressively increases in complexity and objective satisfaction.



# Policy Implications for Moon to Mars

## Lunar Landing and Operations Policy Analysis Report

- Addresses technical and policy considerations NASA should account for when:
  - Selecting lunar landing and operations sites
  - Implementing tools to protect operations and U.S. interest
- Provides options and recommendations to address seven identified challenges to lunar operations potentially mitigated by policy measures.

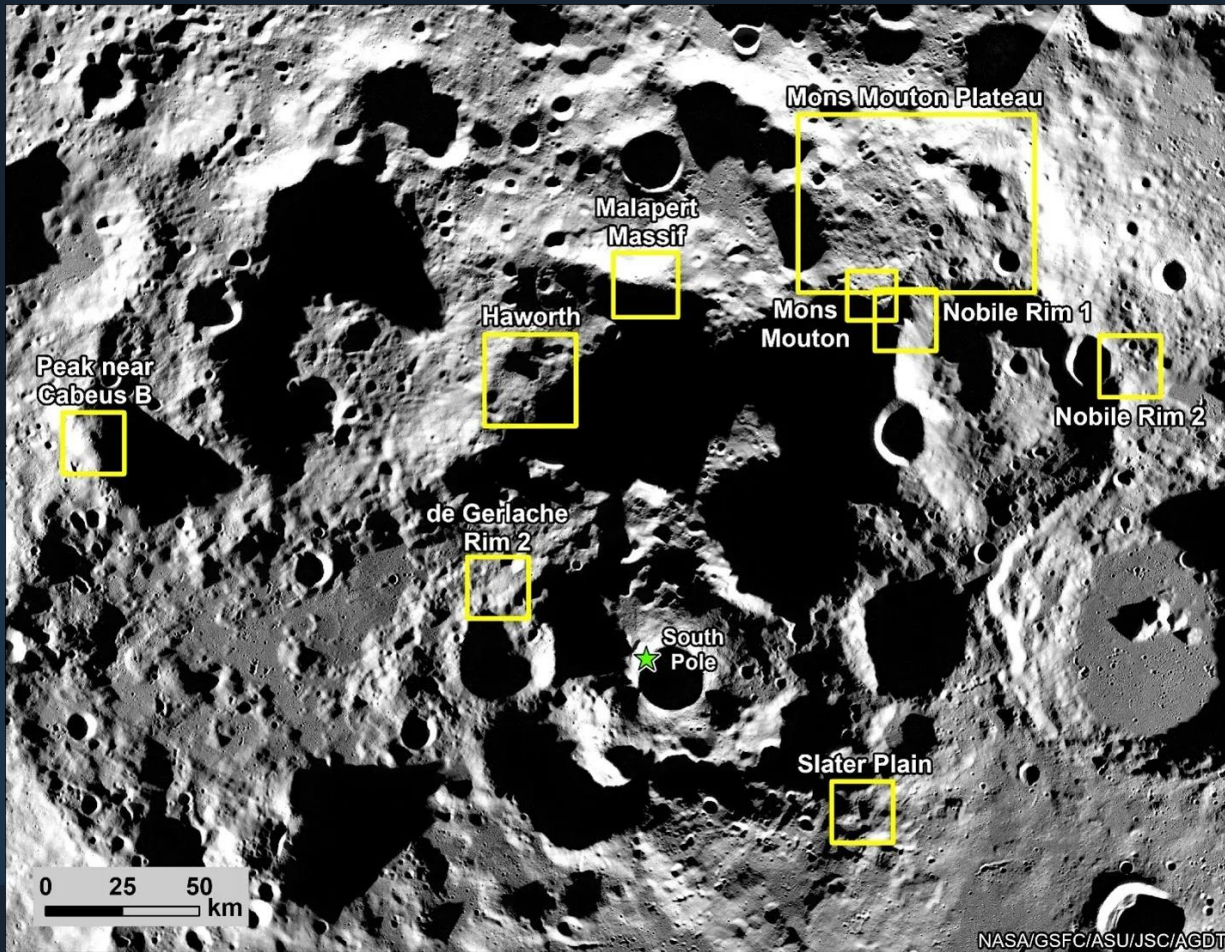
## Policy Questions Framework

- 12 broad policy questions based on the M2M Objectives that can be used as a framework for future science and exploration missions:
  - To be used early in a program or project's lifecycle to help mission directorate leadership, program managers, and mission teams think through potential policy questions.
- To be used by NASA, US, and international space communities to minimize negative impacts while maximizing positive ones

## Non-Interference of Lunar Activities

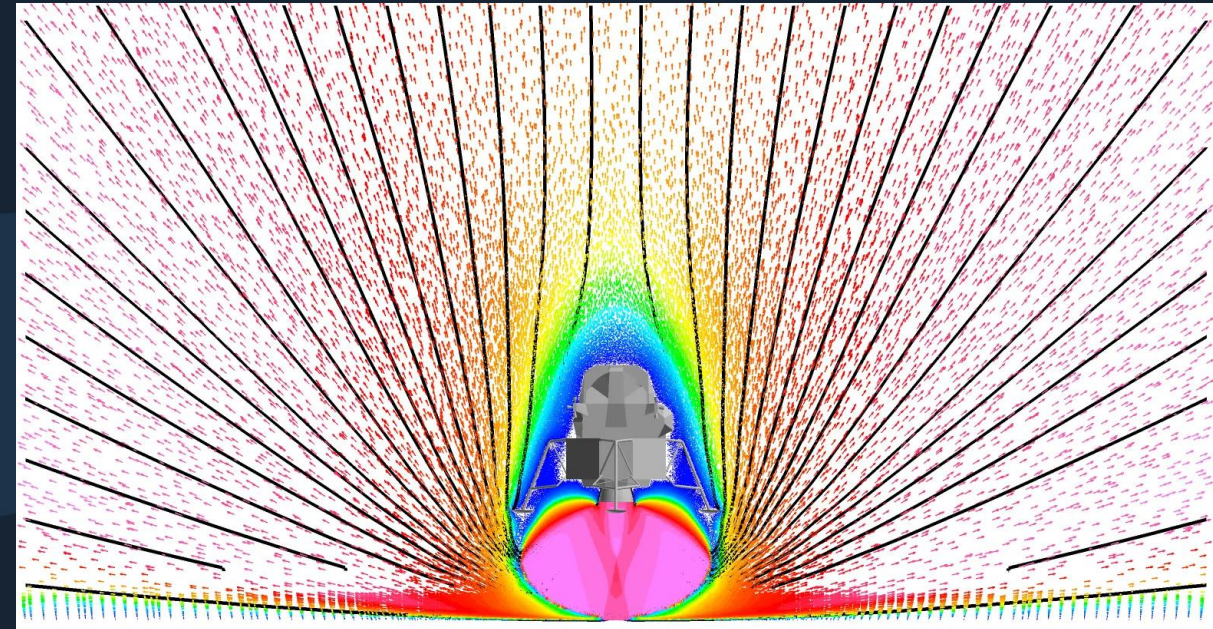
- Public survey of lunar interference concerns and recommended mitigation mechanisms of the Artemis Campaign
  - 7 categories across operational phases that vary in space and time
  - Physical, thermal, EMI, contamination, shadowing, seismic, and aesthetic
- Mitigate = Coordinate & communicate
  - Leverage relevant tech
  - Share CONOPS
  - Infrastructure
  - Responsible use of sites





Nine candidate landing regions for NASA's Artemis III mission, with each region containing multiple potential sites for the first crewed landing on the Moon in more than 50 years. The background image of the lunar South Pole terrain within the nine regions is a mosaic of LRO (Lunar Reconnaissance Orbiter) WAC (Wide Angle Camera) images.

Credit: NASA



Apollo Lunar Module plume impingement at a distance of 5 m above the landing surface. Image shows plume gas velocity vectors colored by velocity magnitude (blue = low, magenta = high) as well as streamlines indicating the strong upward flow direction under vacuum conditions.

NASA



# Panel Members

## Stephen Indyk

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