

National Aeronautics and
Space Administration



EXPLORE SCIENCE


Commercial Lunar Payload Services (CLPS)

UNCOPUOS STSC Panel
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Steven W. Clarke

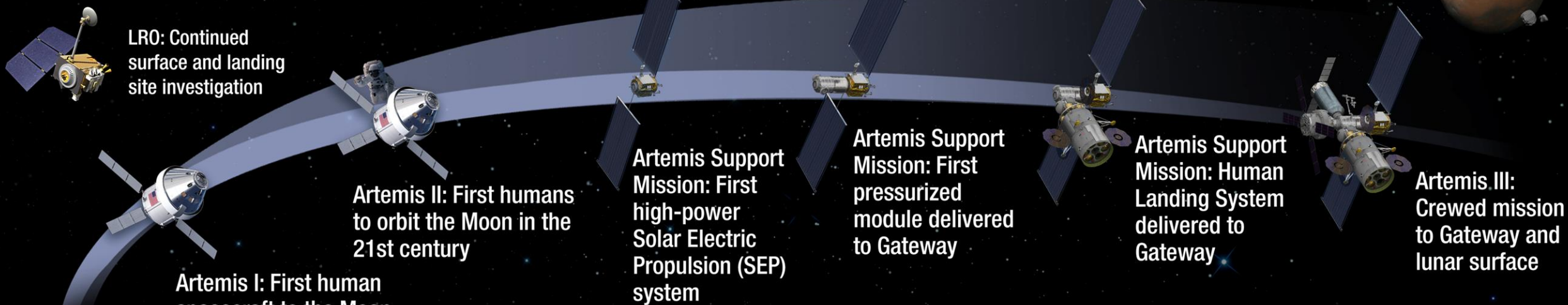
Deputy Associate Administrator for Exploration
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Space Policy Directive 1: To The Moon, Then Mars



“Lead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities. Beginning with missions beyond low-Earth orbit, the United States will lead the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations...”

Humans Return by 2024



LRO: Continued surface and landing site investigation

Artemis I: First human spacecraft to the Moon in the 21st century

Artemis II: First humans to orbit the Moon in the 21st century

Artemis Support Mission: First high-power Solar Electric Propulsion (SEP) system

Artemis Support Mission: First pressurized module delivered to Gateway

Artemis Support Mission: Human Landing System delivered to Gateway

Artemis III: Crewed mission to Gateway and lunar surface

Commercial Lunar Payload Services
- CLPS-delivered science and technology payloads

Early South Pole Mission(s)
- First robotic landing on eventual human lunar return and In-Situ Resource Utilization (ISRU) site
- First ground truth of polar crater volatiles

Large-Scale Cargo Lander
- Increased capabilities for science and technology payloads

Volatiles Investigating Polar Exploration Rover
- First mobility-enhanced lunar volatiles survey

Humans on the Moon - 21st Century
First crew leverages infrastructure left behind by previous missions

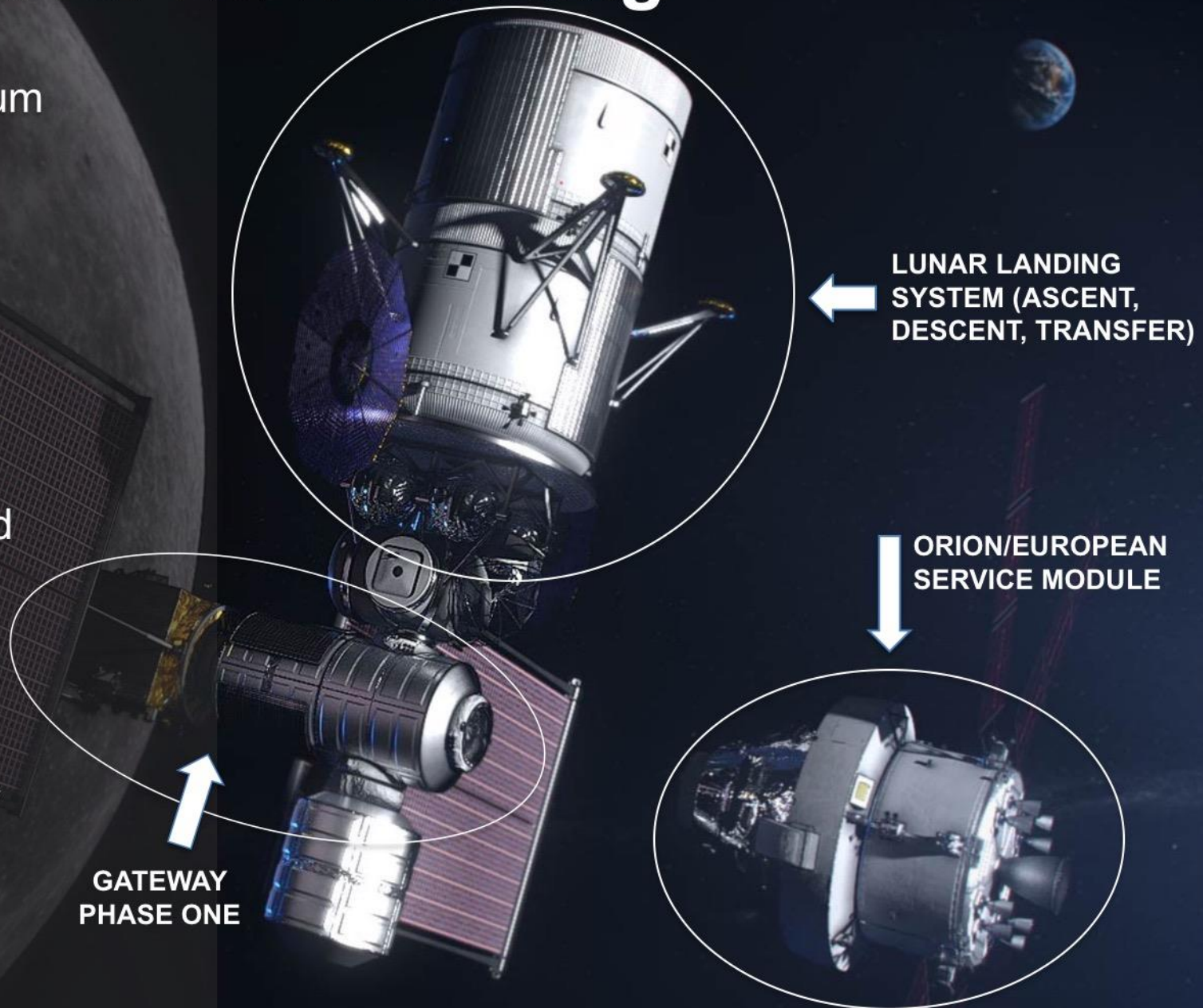
LUNAR SOUTH POLE TARGET SITE

2020

2024

Gateway is Essential for 2024 Landing

- Initial Gateway focuses on the minimum systems required to support a 2024 human lunar landing while also supporting Phase 2
- Provides command center and aggregation point for 2024 human landing
- Establishes strategic presence around the Moon – US in the leadership role
- Creates resilience and robustness in the lunar architecture
- Open architecture and interoperability standards provides building blocks for partnerships and future expansion





BLUE ORIGIN



*Commercial Lunar
Payload Services
(CLPS)*



*Working together to deliver science and
technology to the lunar surface*

DRAPER



Astrobotic Technology



Peregrine Lander

PAYLOADS:

Exploration

- Laser Retroreflector Array (LRA)
- Navigation Doppler Lidar for Precise Velocity and Range Sensing (NDL)
- Surface Exosphere Alterations by Landers (SEAL)

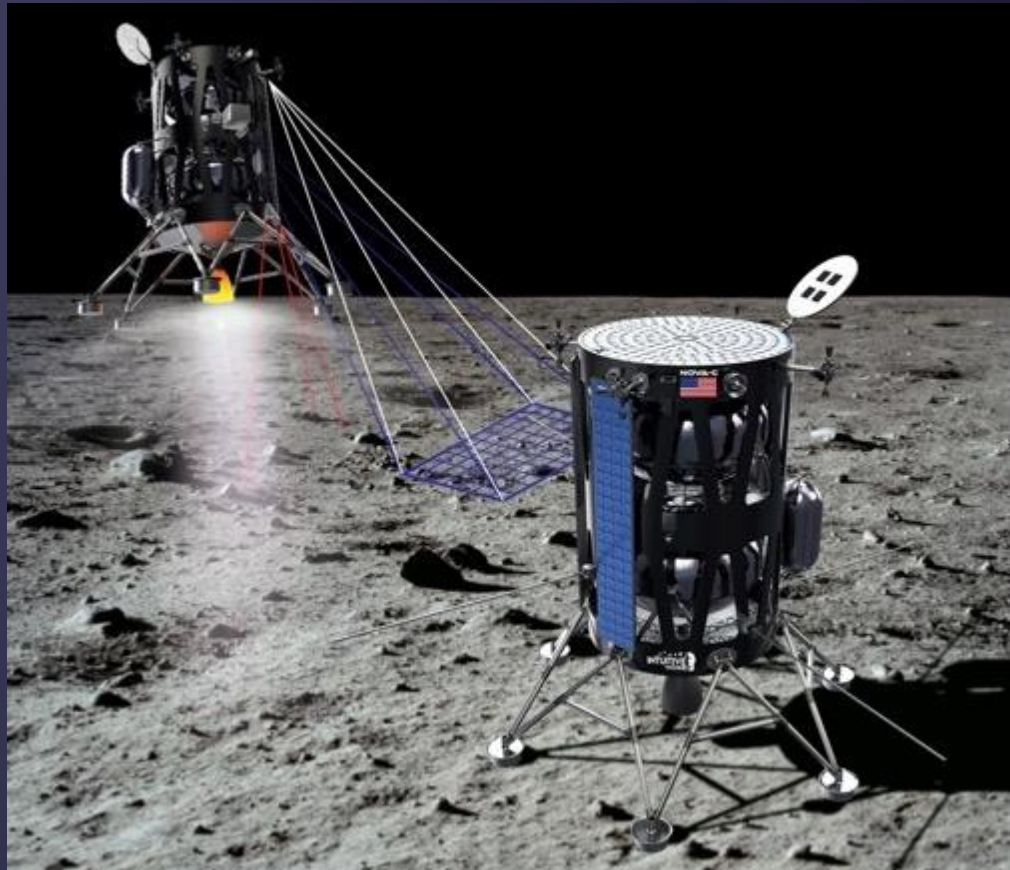
Technology

- Photovoltaic Investigation on Lunar Surface (PILS)

Science

- Fluxgate Magnetometer (MAG)
- Laser Retroreflector Array (LRA)
- Linear Energy Transfer Spectrometer (LETS)
- Mass Spectrometer Observing Lunar Operations (MSolo)
- Near-Infrared Volatile Spectrometer System (NIRVSS)
- Neutron Measurements at the Lunar Surface ((NMLS)
- Neutron Spectrometer System (NSS)
- PROSPECT Ion-Trap Mass Spectrometer (PITMS) for Lunar Surface Volatiles

Intuitive Machines



Nova-C Lunar Lander

PAYLOADS:

Exploration

- Laser Retroreflector Array (LRA)
- Navigation Doppler Lidar for Precise Velocity and Range Sensing (NDL)
- Stereo Cameras for Lunar Plume-Surface Studies (SCALPSS)

Technology

- Lunar Node 1 Navigation Demonstrator (LN-1)

Science

- Laser Retroreflector Array (LRA)
- Low-frequency Radio Observations from the Near Side Lunar Surface (ROLSES)

Lunar Mobility Strategy



A vibrant space-themed background featuring a large blue and yellow nebula, a bright yellow sun, and several celestial bodies including a reddish planet, a ringed planet, and a large dark blue sphere. The scene is set against a starry black sky.

Summary of International Interest

- Australia - Australia Space Agency* & Curtin University**
- Canadian Space Agency
- European Space Agency*
- Italian Space Agency
- Japan Aerospace Exploration Agency
- Korea (Korea Astronomy & Space Science Institute, Exploration Science Working Group)
- Monaco
- Polish Space Agency
- Swiss Space Office**
- United Kingdom Space Agency*
- UAE

* Sol: Statement of Intent

** LoS: Letter of Support



EXPLORE MOON *to* MARS

MOON LIGHTS THE WAY

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