

Small Lunar Surface Payload Request for Information (RFI)

Summary

The National Aeronautics and Space Administration's (NASA) Human Exploration and Operations Mission Directorate (HEOMD) is seeking information on the availability of small payloads that could be delivered to the Moon as early as the 2017-2020 timeframe using U.S. commercial lunar cargo transportation service providers. Multiple U.S. companies are developing robotic lunar landing capabilities and have expressed plans to provide commercial cargo delivery services to the Moon in the near future. Information on lunar payloads that could be launched as early as 2017 would be valuable to NASA as it works to understand the potential role of the Moon in future exploration activities. Payloads of interest should address one or more of NASA's lunar exploration Strategic Knowledge Gaps (SKGs) or other agency strategic objectives. Responses to this Request for Information (RFI) are sought broadly from U.S. industry, universities, and non-profit organizations, NASA Centers (including the Jet Propulsion Laboratory), and other U.S. government agencies, and these will be used by NASA for planning and acquisition strategy development.

Background

NASA has identified a variety of exploration and science objectives that could be addressed by sending instruments, experiments, or other payloads to the lunar surface. Some of the objectives of interest at this time include understanding the lunar resource potential and the lunar environment and its effects on human life, as described in a set of Lunar Human Exploration SKGs (<https://www.nasa.gov/exploration/library/skg.html>). As part of the International Space Exploration Coordination Group (ISECG), NASA is working with the international community to understand the Moon's resources and identify potential approaches to exploring lunar polar volatiles (<https://lunarvolatiles.nasa.gov>).

Additional strategic objectives are documented in the NASA Strategic Plan (http://www.nasa.gov/sites/default/files/files/FY2014_NASA_SP_508c.pdf).

To address the above objectives as cost-effectively as possible, and pending available future funding, NASA may procure payloads and related commercial payload delivery services to the Moon. As a first step, NASA is interested in assessing the availability of small, low-cost payloads that could be delivered to the lunar surface as early as 2017 on the initial robotic lunar missions envisioned by emerging U.S. commercial space transportation entities. This approach offers NASA the potential to simultaneously address critical strategic objectives related both to exploration and science, and to using commercially provided space services and hardware.

Assumptions

The following assumptions should be considered when providing the response to this RFI. Payload concepts should describe any significant deviations from these assumptions.

- Payload development and operations are highly cost-shared, with significant contributions from the payload provider
- NASA intent is to procure commercial payload services, including ground processing, launch vehicle integration, and delivery to the lunar surface

- Payloads would be available for launch as early as the 2017-2020 timeframe
- All payloads will abide by commercial launch vehicle and spacecraft integration requirements

Response Guidelines

Respondents are requested to include an explanation of the following items:

- Entity information: name, contact information, summary of previous relevant experience, indicate whether a U.S. entity, identify partners and funding sources / investors
- Payload concept:
 - Picture/image, description (e.g. mass, volume, operations concept, expected lifetime, instrument spatial resolution, etc.)
- Value to NASA (relate to SKG, NASA strategic objectives)
- When payload would be available to launch
- Required spacecraft accommodations and interfaces (power, data rate)
- Landing site and orbit constraints
- Lunar surface rover/mobility integration requirement (if any)
- Other payload constraints (attitude, loads, thermal control, in-space transit duration, etc.)
- Current payload maturity level:
 - Is it an existing “orphaned” payload that has already been substantially or fully developed (e.g. flight spare), but is not manifested on any mission? Is it a new payload to be developed from scratch? What are the greatest identified development or funding risks?
- Have any particular U.S. commercial lunar cargo delivery service providers been identified as viable or preferred options for the payload?
- Which services are needed from the cargo service provider? In addition to lunar delivery, are ground processing, launch vehicle integration, or other services required?
- What is NASA’s expected share of the rough order-of-magnitude payload development and operations cost?
- Describe an end-to-end operations concept relating the above requirements, constraints, and service profiles (for example, including service provider mission parameters, services used, surface deployment (if applicable), etc.).

Instructions

Responses to this RFI must be delivered in pdf format to hq-aes@mail.nasa.gov, no later than **December 9, 2016 at 4:00 p.m. EST**. Responses should not exceed 10 pages in length and must be typed in size 12 Times New Roman font. NASA will hold an informational teleconference for this RFI on **November 9, 2016 at 11:00 a.m. EST**. Prospective respondents should call 844-467-4685, passcode 364879 to be connected to this informational teleconference. Questions can be emailed to the following address hq-aes@mail.nasa.gov. All questions submitted will be discussed openly during this teleconference and posted with response under this RFI.

The information obtained will be used by NASA for planning and acquisition strategy development. NASA will use the information obtained as a result of this RFI on a non-attribution basis. Providing data/information that is limited or restricted for use by NASA for that purpose would be of very little value and such restricted/limited data/information is not solicited. NASA does not plan to respond to the individual responses. This RFI is being used to obtain

information for planning purposes only and the Government does not intend to award a contract at this time. As stipulated in FAR 15.201(e), responses to this notice are not considered offers and cannot be accepted by the Government to form a binding contract. This RFI is subject to FAR 52.215-3.

Point of Contact

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