

Partnership Opportunity Document (POD)
for
NASA's Goddard Space Flight Center (NASA's GSFC)
Earth Venture-Mission-2 Concept
Spacecraft, Launch, and Proposal Support

August 10, 2015

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1.0 GENERAL INFORMATION

Contracting Office Address

NASA's Goddard Space Flight Center
Code 210
Greenbelt, MD 20771

2.0 INTRODUCTION/SCOPE

This proposal opportunity is in response to the NASA Announcement of Opportunity (AO), Earth Venture Mission - 2 (EVM-2) element of the Earth System Science Pathfinder (ESSP) Program, NNH15ZDA008J, which is expected to be released in August, 2015. NASA's GSFC is developing a mission concept to be proposed for this AO. The partnership opportunity is being issued to select a teaming partner to provide a spacecraft, instrument to spacecraft integration support, integration support for the spacecraft to launch vehicle, and launch.

The proposed mission is currently in pre-Phase A. This phase ends with a Step 1 proposal that will be due 3 months after the AO is released. If the proposal is selected for implementation, the mission will proceed into Phase A, per NPR 7120.5E. The following schedule should be used as a basis for responses to this opportunity:

Partnership Opportunity Document released	August 10, 2015
Responses due	August 10 + 14 days 2015
Partner Selection announced	August 10 + 18 days 2015
Step 1 Proposal in response to EVM-2 AO	AO release date + 3 months
Selection(s) Announced (target)	Proposal due date + 8 months
Initiate Investigation (target)	Proposal due date + 11 months
Launch Readiness Date	NLT June 30, 2022, or 5 years after the contract is in place, whichever is earliest

2.1 COST

Total cost and cost fidelity are important issues for the mission trade studies. The cost cap for this AO is \$166 million in Fiscal Year (FY) 2018 dollars. This cost includes the instrument, spacecraft, instrument to spacecraft integration support, integration support for the spacecraft to launch vehicle, and launch, as well as required contingency (25% or greater reserves). Reserves will be held at the Project level, and not with the partner.

There will be no exchange of funds between the teaming partners for the portion of this partnership opportunity dealing with the preparation of the initial submission (Pre-Phase-A, Step 1 proposal) to the EVM-2 AO. Funding will be available for subsequent phases should the candidate mission concept be competitively selected for those additional phases.

2.2 DESIRED MISSION SERVICES

NASA's GSFC is interested in formally establishing a partner to provide the following services for this mission: hosting of one instrument on a low Earth orbiting spacecraft, instrument to spacecraft integration support, and launch. The primary science instrument will be provided by NASA's GSFC for accommodation. All interested parties are required to respond to this POD in accordance with Section 4 below.

2.3 PROPOSAL SUPPORT

It is expected that the selected POD respondent will provide support using their own resources to help develop the required EVM-2 proposal elements in response to the EVM-2 AO in the areas of a well-defined and documented spacecraft, instrument accommodations, instrument to spacecraft integration support, integration support for the spacecraft to launch vehicle, and launch services. This will involve meeting with the Principal Investigator (PI) and other proposal team members to help define the end-to-end performance requirements, including providing well-defined interfaces to the spacecraft in the form of Interface Control Documents (ICDs), to define the system architecture, to identify study topics, and to predict flight performance. This will include cost estimation for mission phases. The period of performance for this interval is expected to last 3 months, starting in August 2015.

If the mission is selected for development and launch (Phases A-F), the partner will be responsible for the design and development of the spacecraft, instrument accommodations and integration support, integration support for the spacecraft to launch vehicle, and launch. The period of performance for this interval is expected to last approximately 5 years, starting late 2016/early 2017. These dates and times may change depending on selection timelines and budget allocations or phasing.

3.0 MISSION OVERVIEW

In order to meet the mission requirements, the spacecraft shall have a minimum 24 month on-orbit design lifetime, with a desired 36 month lifetime.

The NASA's GSFC EVM-2 concept consists of a 15 kg mass, nadir-pointed instrument that shall be accommodated on a single spacecraft launched to a 768 km, sun synchronous, earth orbit. The spacecraft must be of an End-Of-Mission (EOM) demisable design, providing the instrument with NLT 50W orbit average, 100W peak power (28-32V system). The spacecraft must provide nadir pointing with control error NTE 6 arcsec; knowledge error NTE 10 arcsec; knowledge stability in 30 seconds NTE 0.3 arcsec (all values 3 sigma). Spacecraft slew rate must not exceed 13 deg/min in any axis. The instrument volume is 0.5 m x 0.5 m x 0.5 m (0.13 m³). The instrument's data rate is 25 Mbits/sec collected over 50% of each orbit.

The concept will be managed by the Goddard Space Flight Center in partnership with the chosen partner who will host the instrument on an existing spacecraft, which uses high-heritage subsystems and proven, well-tested engineering design. Proven launch to space heritage must be demonstrated in the submission in response to this POD. Mechanical, electrical, and thermal interfaces must be well defined by providing the NASA's GSFC EVM-2 team with fixed Interface Control Documents (ICDs) that the NASA's GSFC EVM-2 team can use to show

maturity of the EVM-2 design and design interfaces to the spacecraft and low risk of change or non-conformance. EVM-2 missions have been determined to be Category 3 missions (per NASA Procedural Requirement (NPR) 7120.5E) with Class D payloads (per NPR 8705.4).

3.1 LAUNCH VEHICLE

The launch and related launch services are included as part of this partnership agreement. The partner must show heritage and previous launch success for the launch vehicle proposed to provide the delivery of the spacecraft to the orbit required. Any prior experience the partner has dealing with the launch service provider should also be provided. Launch loads and acoustic levels for the launch environment must be documented in a published User's Guide and shall be provided to NASA's GSFC.

Historic and predicted Rough Order of Magnitude (ROM) costs for launch of the proposed spacecraft on the proposed launch vehicle shall be provided in the response to this POD, as well as letter(s) of partnership interest from the launch service provider(s).

3.2 LAUNCH MANIFEST

The partner must commit to manifesting the NASA's GSFC EVM-2 instrument on a single spacecraft and launch vehicle in a timeframe commensurate with the requirements of the 2015 EVM-2 AO. The mission is required to be launch ready NLT June 30, 2022, or 5 years after the contract is in place, whichever is earliest.

4.0 POD RESPONSE INSTRUCTIONS

Potential respondents are asked to contact the NASA's GSFC EVM-2 team by 5 PM EDT on August 12, 2015 with a **Notice of Interest** (intentionally not called a notice of intent). This Notice of Interest does not create an obligation to respond to the POD, but allows the NASA's GSFC EVM-2 team to disseminate additional details on the mission parameters and requirements and to provide answers to questions from potential partners. **All Notice of Interest respondents will receive a document containing additional details on the proposed EVM-2 mission, which can be used to facilitate a focused response to the partnership opportunity.** These details are proprietary and competition sensitive and are not to be shared outside the teams necessary to prepare a full response. In addition, the second document will contain partner selection criteria.

After receipt of the mission document, respondents may send questions to the NASA's GSFC EVM-2 Team at the e-mail address listed below. All questions and answers will be made available to those who respond to the Notice of Interest. The source of the questions shall be held confidential. Questions and answers that contain information unique to a respondent's proprietary approach will not be shared if they are identified as such.

Notice of Interest shall be sent to Laura.Ottenstein-1@nasa.gov via email with “Notice of Interest” in the subject line, a simple sentence of two expressing interest, and an email address to send further information. For purposes of this partnership opportunity, the NASA’s GSFC EVM-2 Team contact is Laura Ottenstein, Laura.Ottenstein-1@nasa.gov, 301-286-4141.

It is the responsibility of potential respondents to monitor the NASA Acquisition Internet Service (NAIS), NASA’s GSFC Procurement Site

<http://code210.gsfc.nasa.gov/podhome.htm>

for information concerning this POD.

5.0 ACRONYMS

AO	Announcement of Opportunity
GSFC	Goddard Space Flight Center
EVM-2	Earth Venture Mission-2
ICD	Interface Control Document
NLT	No Later Than
NPR	NASA Procedural Requirement
PI	Principal Investigator
POD	Partnership Opportunity Document
ROM	Rough Order of Magnitude
TBD	To Be Determined
U.S.A	United States of America