

SIMPLEx MO Q&A

Please email questions with the subject line “SIMPLEx AO” to expedite responses.

Change Log		
Revision	Date	Description of Changes
01	02/08/2018	Added # 1 – 3
02	02/09/2018	Added request about “SIMPLEx Draft AO” in the subject line.
03	02/14/2018	Added # 4
04	02/23/2018	Expanded #3, Added # 5 – 11
05	04/25/2018	<p>Added link to document that lists changes between draft and final PEA.</p> <p>Modified #1, contribution now ½ of Total Mission Cost</p> <p>Modified #4, “Lucy and Psyche” changed to “Psyche and IMAP” and deleted “Draft” from subject line for questions</p> <p>Deleted #5, no longer relevant</p> <p>Modified #6, Lucy language removed.</p> <p>Delete #7, Appendix A has the correct information in the final PEA</p> <p>Delete #8, Appendix A has the correct information in the final PEA</p> <p>Modified #9, “Lucy and Psyche” changed to “Psyche and IMAP”</p> <p>Delete #10, Deleted because Lucy opportunity no longer available</p> <p>Modified #11, “Lucy” was removed</p> <p>Added #12 – 46</p>
06	05/10/2018	<p>Updated “Summary of Major Changes” document URL</p> <p>Modified #4, “Psyche and IMAP” changed to “Lucy, Psyche and IMAP”</p> <p>Un-deleted #7, provided a new answer</p> <p>Un-deleted #8, provided a new answer</p> <p>Modified #9, “Psyche and IMAP” changed to “Lucy, Psyche and IMAP”</p> <p>Un-deleted #10 Because Lucy opportunity is available again</p> <p>Modified #11, “Psyche” changed to “Lucy and Psyche” in the answer</p> <p>Delete #15, Because Lucy opportunity is available again</p> <p>Modified #18, “Psyche” changed to “Lucy, Psyche” in the answer</p> <p>Modified #19, changed the cut-off date to July 24, 2018</p> <p>Added #47 - 50</p>
07	05/15/2018	Added #51
08	05/24/2018	Modified #51, Added #52 - 65
09	06/05/2018	Added #66 - 68
10	06/19/2018	Added #69
11	06/26/2018	Added #70, 71

Items that have changed between the Draft PEA and the Final PEA are listed in the following document:

https://soma.larc.nasa.gov/SIMPLEx/pdf_files/SIMPLEx-PEA-Summaryofmajorchanges-V07-BR.pdf

Q-1 The PEA document doesn't seem to have a limitation for non-U.S. participation. Could you please clarify?

The sum of non-U.S. contributions of any kind to the entirety of the investigation is not to exceed one-half (1/2) of the proposed Total Mission Cost. Refer to Sections 4.1, 4.5.5 of the PEA for additional details. Note that this is different than what was stated in the draft PEA and the original Q-1 answer.

Q-2 Where is the link to the SIMPLEx PEA?

1. Go to <https://nspires.nasaprs.com/>
2. Click on "Solicitations"
3. Click on "Open"
4. Type "SIMPLEx" in the Keywords search window
5. Click on "Small Innovative Missions for Planetary Exploration"

Q-3 Can the launch Vehicle such as a commercial RLV be used? If yes to what extent will budget cover the cost? Will SIMPLEx consider buying secondary launch services on commercial launches, provided the cost is included in the proposal? For LEO and GTO launches, will the primary payloads be government spacecraft?

Launch services will be provided by NASA at no cost to the investigation for up to an ESPA-class SmallSat. Selected missions will launch as a secondary payload on one of the specific flight opportunities described in Appendix A of this PEA. No other methods for access to space are offered in SIMPLEx.

For LEO or GTO opportunities, NASA intends to procure launch services for SIMPLEx secondary payloads from commercial launch providers, regardless of the owner of the primary payload.

Q-4 Are the Lucy, Psyche and IMAP teams available for direct consult, particularly on trajectory questions, or are they firewalled from SIMPLEx proposers?

All questions, including those about the Lucy, Psyche and IMAP missions or their trajectory should be directed to Doris Daou (doris.daou-1@nasa.gov) with the subject line "SIMPLEx AO" and the answers will be provided in this Q&A.

~~**Q-5 Is the 1 Jul 18 proposal submission date for Lucy and Psyche firm, meaning that the final PEA is to be released around the end of March?**~~

~~NASA will do its best to keep to this schedule. Please provide us all questions and comments as soon as possible to expedite the process for making required changes and the approval of the final release of the PEA.~~

Q-6 Is the "Spacecraft Orbit at Separation" data in Appendix A, Table A-1 valid for the entire launch window of the primary mission?

The values given are representative (do not change much) throughout the launch period.

Q-7 What is the coordinate frame for the "Spacecraft Orbit at Separation" data in Appendix-A, Table A-1?

Appendix A in the final PEA has the correct information.

Q-8 What are the initial heliocentric Keplerian orbit elements at Earth departure for Lucy and Psyche? Or the Psyche inclination, eccentricity and semi-major axis at Earth departure?

Appendix A in the final PEA has the correct information.

Q-9 Regarding the Lucy, Psyche and IMAP launch opportunities, after separation of the primary mission from the upper stage, will provisions be made to allow a restart of the upper stage engine so as to send the

secondary mission on a slightly different trajectory, and can delta-V be provided by the upper stage after primary separation? If so, how much?

It may be possible to re-light the upper stage after primary separation, but NASA has not yet assessed the impact this may have on the launch vehicle procurement. Therefore, proposers should not assume that additional delta-V or trajectory control will be available.

Q–10 Does the Lucy trajectory include a Venus flyby?

No, Lucy will not encounter Venus.

Q–11 Can you provide more information about the IMAP and EM-x launch opportunities listed in Table A-1 in Appendix A?

The Interstellar Mapping and Acceleration Probe (IMAP) selection has not been made. Once the mission is selected, the trajectory information will be provided similar to what was provided for Lucy and Psyche. EM-x refers to a future flight of the Space Launch System (SLS). NASA will provide further information as it becomes available.

Q–12 Why is the cost cap stated as a range? And why is the range so low? A cost cap of \$15M - \$55M is probably not sufficient for high-quality deep space science missions, especially given the requirements for unencumbered reserves and a nine-month schedule reserve for launch delays.

The cost cap for SIMPLEx is consistent with NASA's expected budget. The recent Planetary Science Deep Space SmallSat mission studies have shown that there is compelling science to be done across the full price range from below \$55M to \$100M. The cost cap is stated as a range because NASA expects to receive and fund high quality proposals across the entire \$15M to \$55M range. NASA may elect to make one award, multiple awards, or no awards, for each available launch opportunity. The number of awards will depend on the quality of the proposals and the proposed mission costs.

Please note that the solicitation has been amended to increase the limitation for non-US contributions to 50% of the Total Mission Cost as opposed to PI-Managed mission cost. Thus, partnered contributions can double the total value of a mission because Total Mission Cost includes contributions.

The expectation for the nine-month funded schedule reserve to cover launch delays is that all hardware will be completed before any delays are encountered, and that only a barebones team would be funded during the delay.

Q-13 Is there a cost cap for the Phase A/B studies? Is it possible to start the process for long lead purchases prior to PDR?

While there is no explicit cost cap on the allowable Phase A/B costs, Requirement 75 of the SALMON-3 AO states that “no more than 25% of the PI-Managed Mission Cost shall be spent prior to KDP-C (Confirmation).” Cost reasonableness is part of the evaluation criteria, and NASA will consider the cost of the Phase A/B studies in determining final selections. Long lead time procurements may not be included in Phase A/B. Long lead items will be approved at confirmation.

Q-14 Will the Bridge phase always be invoked if you are down-selected to proceed into Phase C, or only in certain cases? If so should it be included in the schedule?

Each Phase A/B contract will be amended to include a priced option for a bridge phase, to be exercised for investigations downselected to proceed into Phase C. The bridge phase is intended to cover a five-month period of Phase C/D effort to provide program continuity while negotiations are completed to modify the contract to include Phases C/D and E/F.

~~Q-15 Why was the Lucy launch opportunity dropped?~~

~~The schedule for proposing and building a secondary mission for the Lucy launch opportunity was very aggressive and depended on this final solicitation being released on March 30. Missing the March 30th deadline by *almost four weeks* does not leave enough time for proper evaluation of proposals and combined with the upcoming winter holidays, the decision was made to remove the Lucy opportunity. (updated 04/26/2018)~~

Q-16 **Since new commercial launch vehicles are coming online, can a SIMPLEx proposal include their use? If so, to what extent will the budget cover the cost? Can a delivery vehicle not specifically identified in Appendix A be used to deliver of a science instrument? And would a submission that included the costs of delivering a small science payload to the Moon still meet the SCM criteria?**

Launch services will be provided by NASA at no cost to the investigation for small complete missions as described in the PEA. Selected missions will launch as a secondary payload on one of the specific flight opportunities described in Appendix A of this PEA. No other methods for access to space are offered in SIMPLEx.

Appendix A has been amended to include commercial lunar launch opportunities in support of NASA's Lunar Discovery and Exploration Program. Only small complete missions are solicited by this PEA. NASA will be soliciting for rideshare payloads (such as instruments) through a different announcement.

Q-17 **For GTO launches, the planetary bodies accessible at a given delta-V depend on the 3-dimensional orientation of the GTO orbit and its timing. What should proposers assume about the availability of specific GTO orbits and potential launch dates?**

Proposers may describe specific GTO and/or LEO launch opportunities if they know of them, but NASA may not be able to procure space on that particular launch. Proposers are encouraged to include a description of the LEO/GTO orbit needed to satisfy the science objectives of the proposed mission, and the robustness of the proposed mission to a variety of launch opportunities. Separate proposals are not required for missions that may be able to be launched on multiple opportunities.

Q-18 **Do the launch opportunities include the possibility of carrying a proposed SIMPLEx spacecraft aboard the spacecraft itself, to be released in the vicinity of the primary mission's target? Must the proposed SIMPLEx missions conduct science that enhances the science to be done on the primary mission?**

Selected SIMPLEx SmallSats will not be carried by the primary spacecraft itself, and will not be released in the vicinity of the target asteroids for Lucy, Psyche or L-1 for IMAP. The primary spacecraft will be released from the upper stage before the secondary payload is deployed.

There is no requirement for SIMPLEx science objectives to be related to the science objectives of the host mission.

Q-19 When will proposals be reviewed? How will it be decided which proposals are selected to be reviewed by the technical/cost/management (TMC) panel?

All proposals received by the first deadline listed in Appendix A (July 24, 2018) will be reviewed by a science panel as described in the PEA. A subset of those proposals will be sent for review by the TMC panel, based on the results of the science panel evaluations and programmatic considerations including NASA's interest in selecting high quality proposals that span the stated cost cap range.

NASA will announce the next review cycle date after the first round of selections are made. The next proposal due date will be announced well in advance of the deadline, which is likely to be no earlier July 2019.

Q-21 Is the cost mechanism expected to be Firm Fixed Price or Cost Reimbursable?

The funding mechanism for SIMPLEx is Cost Reimbursable.

Q-22 Are SmallSats that orbit the Earth or Sun eligible if they observe solid solar system bodies other than the Earth and Sun for their science goals? Will the potential IMAP SIMPLEx opportunity be for a SmallSat Planetary mission or for a SmallSat Heliophysics mission?

SmallSats that orbit the Earth or Sun are acceptable as long as NASA's strategic objective in planetary science are met as outlined in section 2.1 of the PEA. The IMAP opportunity within this SIMPLEx solicitation is for a Planetary Science Mission as described in Section 2 of the PEA.

Q-23 In the SIMPLEx Goals and Objectives (section 2.2), does "simultaneous measurements at multiple locations" imply the use of a network of several SmallSats, or can this concept be simply interpreted as enabling measurements over large areas at once with one single SmallSat?

Making simultaneous measurements at multiple locations was listed as an example of planetary science that might not be possible in other ways. Either interpretation included in the question is fine.

Q-24 Is it possible to also allow a 3Ux4U configuration? How about 27U, which is becoming a CubeSat-class standard? Can ESPA-class spacecraft be of any shape? The mass capability of the ESPA and ESPA Heavy rings has substantially increased, so will NASA increase the mass limit for the definition of “ESPA-Class”? Appendix A calls out that an ESPA Grande slot is allowed, but the volume envelope in 4.4.3 does not accommodate that capability. Appendix A shows that ESPA rings are not available on EM-x. Does that mean that ESPA-class spacecraft proposals are not allowed?

The PEA has been amended to allow 3Ux4U configurations. Although the 27U is becoming a standard, for now it is not allowed. Proposed ESPA-class spacecraft can be of any shape within the volume constraints given in the PEA.

The PEA has been amended to allow a larger volume for ESPA Grande proposals. NASA is limiting this solicitation to small satellites with a mass of 180 kg or less to keep overall costs lower. It is our current understanding that only CubeSats may be allowed on future EM flights. If this changes, Appendix A will be amended.

Q-25 May a separate propulsion module be proposed to be placed in an additional ESPA port? May the ESPA ring itself be proposed for use in the SIMPLEX mission?

Proposers may propose multiple spacecraft, including a separate propulsion module. Proposers may propose to use the ESPA ring itself, only if the proposed use does not preclude the mounting of additional secondary payloads.

Q-26 Please confirm that SmallSats investigations that utilize propulsion systems are acceptable, potentially subject to a waiver.

Yes, the use of propulsion systems may be proposed, potentially subject to a waiver.

Q-27 Will the mass margins be specified on wet mass or dry mass?

The mass margins should be specified on the dry mass.

Q-28 Is the use of DSN included or removed from the project cost cap?

NASA missions that use standard services will not be charged by SCan for recurring cost for aperture or per-minute fees. Some fees may apply depending on the type of service requested. Please refer to *Mission Operations and Communication Services* document for additional details.

Q-29 Who is the NASA Point of Contact (POC) for information about DSN mission operations services and cost.

The PEA has been amended to include the following POC for the Deep Space Network:

Brian Giovannoni
Brian.J.Giovannoni@jpl.nasa.gov

Q-30 In the case of a proposed Mars investigation, can existing orbital assets be used as telecom relays or do all communications need to be direct to Earth?

Existing telecom relays may be proposed, but studies have been shown that they are typically not as effective as direct-to-Earth communications since they are designed to look down to the surface, and not up to higher altitudes.

Q-31 Proposals will be accepted at any time, but there is a cut-off date for each specified launch opportunity nominally four years before its expected launch readiness date (LRD). Does this mean “at least 4 years” or “not more than 4 years” before the expected LRD?

Neither, it means nominally four years. That value could be a bit more, or it could be a bit less.

Q-32 Is it possible to accelerate Phase A/B to be somewhat faster than 12 months?

Yes, that may be proposed but all downselections will be made at the same time.

Q-33 Will there be specific requirements for flight system contingencies and design margins on technical resources such as mass, power, volume, and data rate?

The proposers should follow sound design principles and good engineering practices for contingencies and design margins for technical resources such as mass, power, telemetry, etc. Proposers may follow NASA Goddard Gold Rules, JPL Guidelines, or other well established institutional guidelines for recommended contingencies and margins. Use the formulas in SALMON-3 AO to calculate margins and contingencies.

Q-34 Section 7.1 of the Draft PEA refers to Section 4.1.2 of the SALMON-3 AO states that each PEA will specify the program-specific safety, reliability, and quality assurance requirements document. It then refers to document DISC-RQMT-002 which requires that all contractors and suppliers shall hold an AS9100 certification. May that requirement be waived?

PMP-RQMT-002, *Planetary Missions Program Office Safety and Mission Assurance Guidelines and Requirements* document applies to SIMPLEx. The Final PEA has been corrected to refer to this safety and mission assurance document. Tailoring processes are defined in NASA-STD-8709.20, Management of Safety and Mission Assurance Technical Authority (TA). If any SMA requirement cannot be met, a deviation or waiver shall be submitted to the PMPO. A waiver may be requested to demonstrate safety and mission assurance compliance without AS9100 certification.

Q-35 Given that SIMPLEx is designated as the same Category (3) and Risk Class (D) as the Astrophysics and Heliophysics SMEX programs, is the same level of rigor expected for flight hardware with respect to analysis, testing and mission assurance? If not, will the recently released guidelines for Class D missions be tailored in the SIMPLEx call?

A Special Distinction is not being made for SIMPLEx versus other Class D missions in relations to the rigor expected for flight hardware with respect to analysis, testing and mission assurance. Guidelines provided in SALMON-3 AO, SIMPLEx PEA, NASA NPR documents, and relevant documents in the Program Library should be used to determine the rigor needed for analysis, testing and missions assurance.

Q-36 Can SIMPLEx proposal teams have both a PI and Deputy PI, assuming a clear division of responsibility can be established?

Designation of a Deputy PI is recommended, however is not required (Section 5.4.1 SALMON-3 AO). Adequacy and robustness of the management approach including the capability of the management team will be evaluated.

Q-37 Would NASA consider conducting an optional “Step 0” very early in the selection process to perform a quick evaluation of short proposals to determine which are qualified to submit full proposals?

No. NASA needs Step-1 proposals to properly evaluate the proposed concepts.

Q-38 Section 4.6.1 states: "For technologies and subsystems that do have flight heritage, claims of heritage must be supported by a description of the similarities in design and flight environments between the heritage and the proposed mission. This must be summarized in the body of the proposal, and more fully described in a non-page-limited appendix." Does this mean that proposals submitted to SIMPLEx can have a Heritage section that has no limit on the number of pages?

The PEA has been corrected to adhere to the standard page limits for appendices. SALMON-3 limits the heritage appendix to 30 pages.

Q-39 Can NASA delete this requirement for the submission of CD-ROMs?

No. CD-ROMs are requested for archiving purposes in case the electronic version is inaccessible.

Q-40 Can the page limits for Sections F and G (especially for Version B) be increased?

The PEA has been amended to increase the page limit to 20 pages for Sections F and G.

Q-41 It is surprising to see that the science data is required to be posted so quickly. Only a maximum of 6 months is allowed to post the data which seems a bit short to perform commissioning activities, ensure algorithms are correct and QA the data product before releasing it to the public.

It is NASA policy that all science data returned from NASA investigations led by a NASA-funded PI to be made available immediately in the public domain. There shall be no period of exclusive access. Barring exceptional circumstances, data product latency may not exceed six months.

Q-42 The SIMPLEX PEA states, "By the investigation closeout, the investigation will deliver to the planetary data system (PDS) all final data products, along with the scientific algorithm software, coefficients, ancillary data used to generate these products, and the algorithm and calibration documentation." Is it typical to request that the ancillary and calibration data be delivered to PDS?

The investigation team will make the mission data fully available to the public through a NASA-approved archive, in this case PDS. Archival data products will include low-level (raw) data, high-level (processed) data, and derived data products such as maps, ancillary data, calibration data (ground and in-flight), documentation, and related software and/or other tools necessary to interpret the data (SALMON-3, Section 4.4.3).

Q-43 Table 2 includes a "Student collaboration (SC) beyond SC incentive" in PI costs. We would like to include student collaboration in our proposal. Can you please clarify what is the "SC incentive?"

SC is offered by NASA as an option that is defined to be up to 1% of the PI-Managed Mission Cost. The proposed NASA cost of the SC, up to the SC incentive, will be outside of the PI-Managed Mission Cost. If the SC costs

NASA more than the SC incentive, then the balance of the NASA cost of the SC must be within the PI-Managed Mission Cost.

Q-44 If a science enhancement option (SEO) is proposed as part of the broader mission proposal, is the cost of said SEO included within the \$55M cap on PI-managed mission cost?

NASA considers any proposed SEO activities as optional. Costs for proposed SEO activities must be defined, but will not count against the PI-Managed Mission Cost.

Q-45 Do contributions from non-US sources require specific agreements with NASA, or are they automatically accepted if included in the calculation and discussion of the Total Mission Cost? Can NASA fund non-U.S. participation?

Contributions from non-US sources will require an agreement. NASA's Office of International and Interagency Relations has a streamlined process to handle competed missions. NASA will not pay international participants for their contributions to SIMPLEX missions.

Q-46 Are Notices of Intent (NOIs) mandatory or optional?

NOIs are mandatory, per the Final PEA, and are due 60 days prior to the proposal cut-off date for the intended review cycle.

Q-47 Paragraph 2.4.1 of the SIMPLEX PEA states that the mission is designated as Class D as defined in NPR 8705.4 Risk Classification for NASA Payloads document. Appendix B of that document states that the Mission Lifetime (primary baseline mission) for Class D is "Short, < 2 years." Is the definition of "Mission lifetime (primary baseline mission)" Phase E and F, only Phase E, or only the component of Phase E during which the intended observations are being made?

Section 4.5.5 of the SIMPLEX PEA defines the proposed mission lifetime of the investigation as Phase E. Investigation teams should propose the mission lifetime that is appropriate to achieve the science objectives. The proposal

must demonstrate that the instrument(s) and flight systems are designed to perform the necessary operations during that mission lifetime.

Q-48 May we propose to fly as a secondary payload on one of the launch opportunities listed in Appendix A, without requesting NASA funds to develop our spacecraft?

Yes, Contributions from sources other than NASA are described in Section 4.5.5 of the PEA, *PI-Managed Mission Cost*. All proposed missions including those that do not require NASA funds for spacecraft development will have to be reviewed for science merit and technical feasibility before any selection decision is made.

Q-49 What is the expected schedule for awards?

For proposals submitted by July 24, 2018, selections are expected to be announced by late February, 2019 and it may take as long as three months after the selection announcement for the contracts to be awarded.

Q-50 Can the Lucy launch opportunity be reinstated?

NASA has responded to the community's strong interest in proposing to the Lucy launch opportunity by adding it back to Appendix A. Proposers should note that contracts may not be awarded until May, 2019 for the selected mission(s) and long lead items may not be procured in Phase A/B.

Q-51 PEA J, Section 4.5.5, Table 2, lists that Student Collaboration beyond SC incentive is within the PI-managed mission costs and Question Q-43 in the SIMPLEX Q&A document clarifies that the NASA optional incentive is 1% of the mission cost. Both of these statements suggest that a Student Collaboration is solicited under PEA J.

However, in PEA J, Section 7.1, the AO required specifications section has a bullet point that states: "Section 5.6.2 of the SALMON-3 AO states that the PEA may state that proposals may define a Student Collaboration (SC) that is a separate part of the proposed investigation. This PEA does not so state and makes the further clarification in Section 4.5.5." Therefore, my interpretation of this statement is that

since the PEA "does not so state" a separate Student Collaboration, a Student Collaboration cannot be proposed. Please clarify.

In addition, what is the amount of the SC incentive?

Student Collaborations are being solicited under PEA J. Student Collaboration options are limited to 1% of the PI-Managed Mission Cost (SALMON-3, section 5.6.2).

Q-52 What is the difference in definition between Student Collaboration and Education & Public Outreach – especially as it applies to undergraduates?

Student Collaboration provides the opportunity for authentic, real-world experiences that span development through the operational phases of a mission. Undergraduate Student Collaboration is a priority because it is at this critical junction that individuals, including from groups traditionally underrepresented or underserved in STEM, make decisions to pursue and persist in degrees that will provide the skills required by the future space science workforce. See Section 5.6.2 of SALMON-3 AO for further details. Education & Public Outreach is no longer offered in AOs.

Q-53 Table A1 of the PEA includes yes/no boxes about the use of the ESPA Ring. The last three entries (lunar, IMAP, and EM) say no to ESPA ring. Does that mean that if I want to do a lunar mission I cannot use an ESPA ring? Will there be one available in future?

That is correct, for the first review cycle you may not propose a mission that requires an ESPA ring for flight on a commercial lunar opportunity. Commercial lunar opportunities are still being developed, so for now we have restricted these opportunities to CubeSats. We will revisit this decision as more is learned about the available capabilities and will update Appendix A appropriately.

Q-54 After the science review is completed and you decide what goes forward to TMC, will those not on the list be notified?

Proposers that are not selected for advancement to the TMC review panel will be notified.

Q-55 **NOIs must include as many names as possible. We can certainly include people we know are certain. Do we have to tell you if we need to add any after the NOI due date? Are we informing you or asking for permission?**

As stated in the PEA, NOIs are required, listing all known funded participants. Additional names may be added until two weeks before the proposals are due, after which time permission from NASA is required to add people.

Q-56 **What is meant by “proposals that are not selected for one launch opportunity may be considered for subsequent launch opportunities if appropriate, through the next proposal evaluation cycle.”**

Selectable proposals may, or may not, be considered for future flight opportunities at NASA’s discretion, but that consideration will end once the next batch of proposals are received (the next proposal cycle).

Q-57 **12U CubeSats are described in the AO as nominally 24 kg. Is there a hard requirement for maximum mass identified for this opportunity, or will this be determined later based on dispenser and Launch Vehicle limitations?**

Proposers may describe knowledge of CubeSat dispensers that allow slightly larger masses and the proposal will be evaluated based on the reasonableness of the description.

Q-58 **Per the AO, a spacecraft larger than 12U is categorized as ESPA-Class. Would payloads which are larger than 12U but able to fit on the Atlas ABC and under the 180 kg ABC limit be considered for accommodation as a smallsat without a dispenser for flight on the ABC, or would it have to fly on the ESPA ring only?**

We are currently expecting that spacecraft larger than 12U will be dispensed from an ESPA ring. NASA will determine the most economical way to launch selected SIMPLEx missions. Note that a 12U CubeSat configured as 3Ux4U means 3Ux2Ux2U and 2Ux6U means 2Ux6Ux1U.

Q-59 **We plan to submit a proposal for a GTO launch opportunity and our preference would be to submit later than July 24, 2018. When would our proposal be reviewed? Is a new PEA in 2019 already planned, or is there the possibility that the current PEA might not be followed by another one in 2019?**

The SIMPLEx solicitation is an open call, meaning that Appendix A will be amended with new launch opportunities as they appear and proposals for LEO, GTO, and Commercial lunar launch opportunities may be submitted at any time. The next review cycle will likely be in the summer of 2019. NOIs for that review cycle will be due 60 days before those proposals are due. The specific date will be announced well ahead of time.

Q-60 What is known about the IMAP transfer orbit? Is there an estimate of excess launch vehicle capability that may be available to the ESPA spacecraft?

The trajectory and orbit insertion for IMAP are still to be determined, but the expected range of orbit insertions is:

High Energy Earth Orbit ($C3 = -0.8$ to $-0.1 \text{ km}^2/\text{s}^2$) and
Escape $C3$ greater than or equal to $0 \text{ km}^2/\text{s}^2$.

The declination and right ascension directions will be determined by the primary spacecraft, which is targeting a transfer orbit to a Sun-Earth L1 Lissajous Orbit. Proposed ESPA-class spacecraft for the IMAP opportunity are limited to 180 kg with ESPA-grade dimensions as described in the PEA.

Q-61 What is required in the proposal for the category of international collaborators (e.g. letter of commitment, inclusion of international collaborator costs in the total cost of the mission, etc.), and in case of selection (e.g. international agreement)? I specifically refer to the category of collaborators, i.e. non-key partners, whose costs are covered by non-NASA funding.

Proposers should include a Table describing non-U.S. participation. In addition, proposers should provide Letters of Commitment from funding agencies for non-U.S. participating institutions, and from non-U.S. institutions providing contribution of efforts of anyone on the Proposal Team. International participation would operate on a no-exchange-of-funds basis between NASA and the international collaborators.

Q-62 Could you specify which milestone should we consider in order to determine the end date of the mission? Is it the closeout date of phase F, after all planetary protection maneuvers (if any) have been performed?

The end of phase F is the completion of mission operations, termination of spacecraft operations, and archiving of collected data.

Q-63 We are currently assuming the proposed Small Complete Mission (SCM) can include more than one small spacecraft if needed for the mission, assuming that the SCM otherwise meets all requirements (e.g. the SCM is within the cost cap, the total SCM mass is less than 180 kg, etc.)? We also assume that use of more than one ESPA slot can be proposed. If multiple spacecraft and multiple ports are permitted, can each spacecraft be < 180 kg, assuming that we otherwise meet the requirements for an SCM (e.g. cost cap)?

The use of multiple spacecraft and multiple ESPA slots may be proposed, but the total mass of all proposed spacecraft, combined, must not exceed the SCM limit of 180 kg.

Q-64 Are the flight opportunities listed the only opportunities? For example, US Air Force launches are not listed in the appendix. What if the proposer is aware of an opportunity not on the list?

Yes, the flight opportunities listed in Appendix A are the only opportunities that may be proposed. Proposers may suggest possible LEO/GTO opportunities, but NASA will make the final selection. NASA will consider a wide variety of LEO/GTO opportunities, including Earth Science missions, commercial launches, and USAF launches.

Q-65 Table 2 indicates that the Science Enhancement Option (SEO) is within the PIMMC. This is unusual. Is that an error? Is the SEO to be addressed now, or as part of Phase A/B?

That is an error. See response to Q-44 above: "NASA considers any proposed SEO activities as optional. Costs for proposed SEO activities must be defined, but will not count against the PI-Managed Mission Cost."

Q-66 SALMON-3 AO Section 4.3.1 *PI-Managed Mission Cost* appears to be in conflict with SALMON-3 AO Section 5.3.11 *Telecommunications, Tracking, and Navigation*. The former references NASA-provided telecommunications and network services in the latter as examples of costs to be included in the PI-Managed Mission Cost, whereas the latter states "DSN Aperture Fees should not be included in the PI-Managed Mission Cost nor should they appear in any cost table."

Deep Space Network (DSN) Aperture Fees do not need to be accounted for in the PI-Managed Mission Cost (PIMMC). They still need to be estimated and reported as a metric to determine reasonable usage, as stated

in Section 5.3.11 *Telecommunications, Tracking, and Navigation* of the SALMON-3 AO.

Q-67 The solicitation states "A proposal may be selected for development without first being awarded a Step 1 contract if it can be demonstrated to be clearly ready for a PDR" (section 4.5.2 Schedule Requirements and Constraints).

- **If a mission can be clearly demonstrated to be already at PDR level, would it be necessary to hold another PDR or could passage of a NASA-sponsored PDR be sufficient to permit selection for continued development?**

NASA's PMDO must review all PDR material, or better yet, attend the PDR, to determine if the proposed mission is really at PDR level. In addition, the proposed mission must be considered "selectable" after passing both the Science and TMC panel reviews.

- **If a mission is selected for development without first being awarded a Step 1 contract, when could contract award negotiations be expected to begin?**

A proposed mission that is considered already at the PDR level can be brought on contract for Step 2 with contract award negotiations beginning after the selection announcement is made, currently expected in February 2019.

Q-68 Are there some typographic errors in section 7.2, p.J-29 of the PEA? Specifically, can you confirm that section 2.4.1 (instead of 4.2.1) was the intended reference for "Risk Classification?"

Yes.

Can you confirm that sections 4.6.7 and 4.6.7.3 (instead of 4.6.8 and 4.6.8.3) are the intended references in the PEA for "data analysis" and "data archiving" policies respectively?

Yes.

Can you confirm that section 4.6.3 (instead of 4.6.7) of the PEA provides the End-of-Mission requirements?

Sections 4.6.3 (Planetary Protection) and 4.6.6 (Orbital Debris and End-of-Mission Spacecraft Disposal) of the PEA provide End-of-Mission requirements.

Q-69 The PEA says that Planetary Protection (PP) needs to be addressed (section 4.6.3) but the SALMON-3 AO does not include it in the outline. Can we assume that PP can be addressed in an Appendix?

Yes.

Q-70 Section 6.3.3 of the PEA indicates that the PDR will be conducted “12 months following establishment of the initial contracts.” Section 8 of the PEA indicates the down-select would occur “within 3 months” after PDR delivery. The preproposal conference information suggests different teams will have contracts established on different dates, potentially spanning more than three months. This seems inconsistent with the previous two statements. Could you clarify what calendar month we should assume the down-select would occur for planning purposes?

For planning purposes, proposers may assume that authority to proceed will be given in September 2020.

Q-71 Will a selection be made for the IMAP launch opportunity during this SALMON/PEA solicitation and its associated review process due in July 2018 or are only Lucy and Psyche compatible missions being considered or prioritized?

In this review cycle selections may be made for any of the launch opportunities listed in Appendix A, including IMAP.