Question(s) and Answer(s) 1

Q1. In several places in the RFP there are statements like the one in Section 2 ("Summary") on p.3, which says, "Planetary science investigations associated with priority planetary target bodies for future CSA mission contributions. Priority planetary target bodies are Mars and the moon."

I am considering proposing the study of an asteroid exploration investigation and instrument. The above statement would seem to rule out support for that under this RFP, since asteroids are neither the Moon or Mars.

However, in the Statement of Work (on p.40), it says that, "For SDS 2, a new type of instrument must be proposed providing that the detailed definition of associated investigations are in line with objectives as outlined in (MRD-2) or are consistent with recent planetary mission findings." And in MRD-2, Objective PG-S-1 on p.30, in the "Small Bodies and Outer Planet Moons" section, says regarding asteroids that, "There is a need for detailed characterization of the geology, topography, mass, volume, internal density distribution, composition, mineralogy, near-surface regolith water content and geophysical properties of these objects to understand their origin and evaluate their resource potential," and identifies as a specific Investigation, "Surface investigation of near-Earth objects (e.g. landers/penetrators engaged in measuring physical properties; on-site geological and mineralogical investigation; and sample returns)."

So it is unclear to me whether the RFP is intended to be able to support such an asteroid investigation and instrument related study, or conversely whether the "Priority planetary target bodies are Mars and the moon" statements are specifically intended to rule out asteroid exploration targets.

Could you please let me know what the intention is here?

A1. The CSA is seeking science investigations associated with Mars and the moon as the priority for this science definition study (SDS 1 and SDS 2). This is clearly stated in throughout the bid, as identified and referenced in the question.

Further, note that in Attachment 1 to Part 4, section "1.2.2 Evaluation Criteria and Benchmark Statements", subsection "3 Relevance of the proposed science objectives to CSA", the evaluator will be looking for the specific criteria whereby "The scientific objectives address Mars or the Moon for planetary science". This does not, however, "rule out" the proposal, as the questioner specifically asks.

Q2. Under the heading "Life Sciences", p. 40 of the RFP document, the sentence: "Risks associated with space that have been encountered by humans are listed in Table 2." should read "Risks associated with space that have been encountered by humans are listed in Table 3." i.e. Table 2 should be Table 3, correct ? Is work on "Radiation" that does not make use of the "mouse model" or "C. elegans" eligible?

A2. Indeed, there is a typo and the list is in Table 3. Regarding the second question, any proposal that does not involve research using mice or C. elegans is not eligible for funding through this announcement. However radiation research is an important research area and future competitions will provide funding opportunities for research using other models.

Q3. I am trying to make sure that I properly understand the intent of the RFP; I hope you can help me.

To simplify my questions here, I can tell you that I am considering a proposal aimed at the SDS-2 category in the Statement of Work, "Other Instrument Investigation."
In particular, as noted earlier, I am developing a novel type of instrument that is aimed to carry out a novel type of asteroid science exploration activity.

On p.39, the SOW calls for Studies to carry out "initial investigation of science needs in areas of CSA priority through the development of science approaches, models and tools " which "may allow for the refinement of scientific hypotheses so that possible measurements or approaches to be made in subsequent space experiments are identified." So far so good: now is about the right time in my instrument development work, to better define the science objectives enabled by this instrument.

On p.40, the SOW says that "in the context of planetary science, proposals are sought for detailed definition of an investigation in line with priority planetary bodies...described in...(MRD-2)." Again so far so good (if you decide that asteroids are included here). The purpose of the Study is to define in detail an Investigation. *Not* to actually *carry out* that Investigation. I presume that the "Investigation" would be the actual space mission that uses the instrument to make measurements, and the analysis and interpretation of those measurements. Am I correct in that interpretation?

If so, then I interpret the following wording in the Bidder Instructions as follows:

- On p.12, it says that the Executive Summary shall highlight various elements, including the "Project Objectives." Does this refer to the objectives of the *Study*? Or to the Objectives of the *Investigation*?

- (Ditto for the Targeted Technology and Main Technical Innovations)

- In section 4.1.1 on p.12, it says that "The proposal should...clearly state the project's scientific objectives..." Is that the Scientific Objectives of the *Study*, or of the *Investigation"?

- Section 4.1.2 on p.12 says that "The proposal should elaborate on...how meeting the proposed objectives would impact the field of planetary science." Again, are those the Objectives of the Study, or of the Investigation? For example, the Investigation has the potential to greatly impact the field of planetary science. The Study, however, is a preparatory activity for the Investigation, and as such will not have any real impact on that field of scientific study, not directly. It could have an *indirect* impact, if the Investigation being studied ends up being carried out, following the completion of the Study. So, I just want to make sure that I properly understand the scope of what should be described in the proposal, regarding this criterion.

- Ditto in Section 4.1.3 on p.12, where it says that "The proposal should...demonstrate the relevance of the proposed science objectives to CSA program goals..." I assume here it's talking about the goals of the eventual Investigation, rather than the goals of the Study. Is that right?

- Similarly on pp.23 onwards, where the evaluation criteria and benchmark statements are listed. E.g., to get a score of (D) under Criterion 1, "The proposed science objectives are clearly described..." Are these the science objectives of the eventual Investigation, which will be studied during the Study? Or are they the objectives of the Study itself?

- Ditto for the Objectives specified in Criteria 2 and 3.

A3. The SOW section "A.2 Objective" describes that "The objective of CSA ExCore Science Definition Studies is to define science measurement needs for future planetary science, space astronomy and life sciences mission investigations, with the goal of maturing science solutions to CSA ExCore Science Readiness Level 2, in preparation for a CSA ExCore Concept Study." Therefore, the interpretation of the questioner appears correct, in that "investigations" are future mission investigations.

Note that this is further defined in the Science Readiness Level scales, which are summarized in the same section, A.2, "Table 1: The CSA ExCore Science Readiness Level Scale (further described in MRD-1)".

The "study", by contrast, refers to this "concept study" or "science definition study", which is the work undertaken towards defining that investigation and the scientific objectives.

The Executive Summary, should be a high-level description for public dissemination, and can include all relevant descriptions of the science objectives and target investigations, as well as a brief overview of how these will be addressed with the proposed study. This is left to the discretion of the bidder.

Section 4.1.1 differentiates between "scientific objectives" and "project objectives" and states, "The proposal should: (i) clearly state the project's scientific objectives;" and "(iii) explain how the project's objectives can advance the state of the art by addressing relevant gaps in understanding."

Section 4.1.2, "Expected impact of the proposed science objectives (Evaluation Criterion 2)" is followed by the description, " The proposal should elaborate on: (i) how meeting the proposed objectives would impact the field of planetary science; (ii) how the scientific objectives address challenging questions central to the field of planetary exploration that are likely to persist beyond 2020. " Indeed, this refers to a science investigation (data production proven through successful mission operations) having an impact on the field of planetary science.

The follow-on questions should be clarified by similarity.