National Aeronautics and Space Administration

Discovery 2019 AO Science Evaluation

Thomas Wagner, PhD
Lead Program Scientist for Discovery

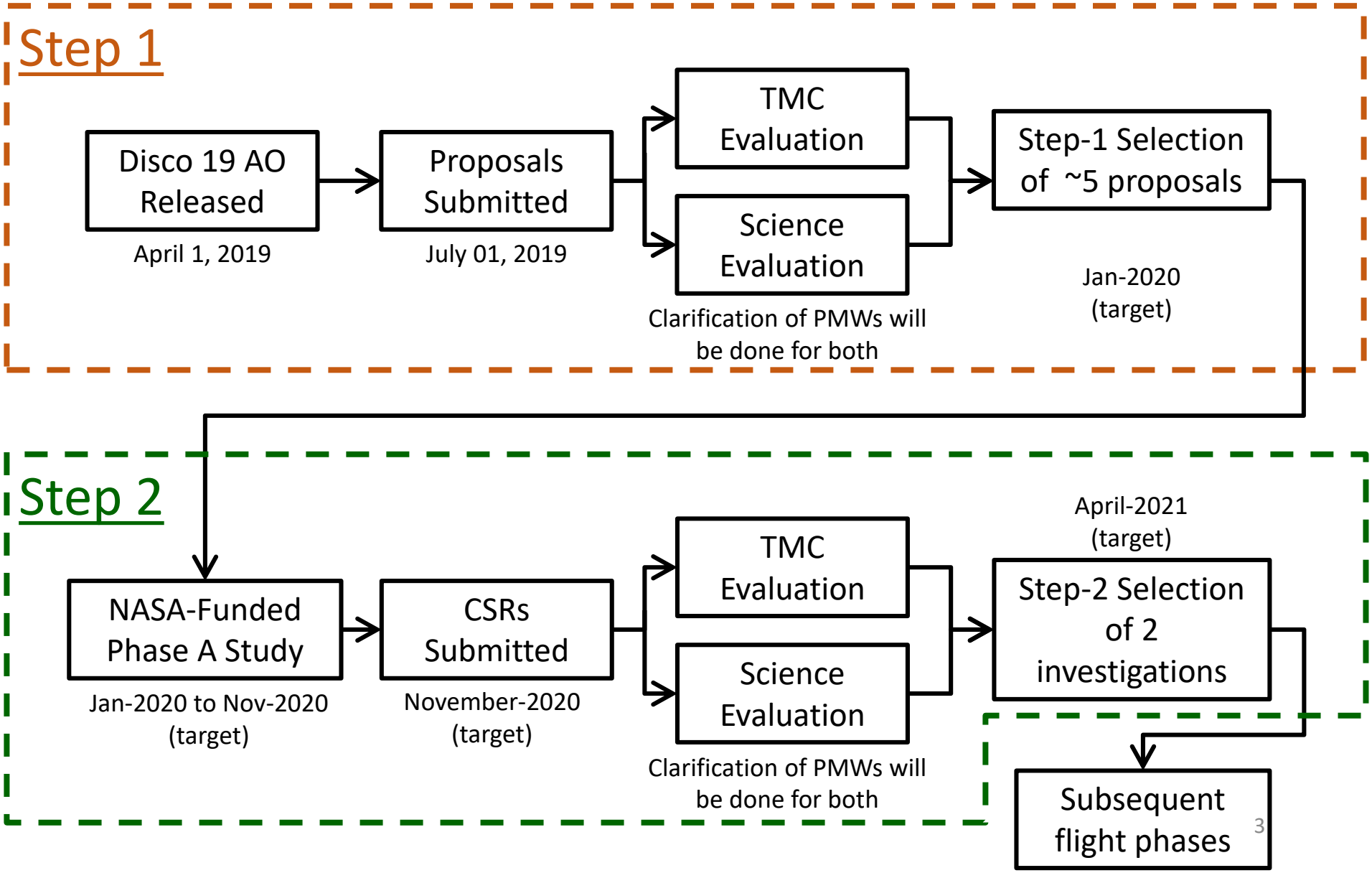
Pre-Proposal Conference for Discovery 2019

April 26, 2019

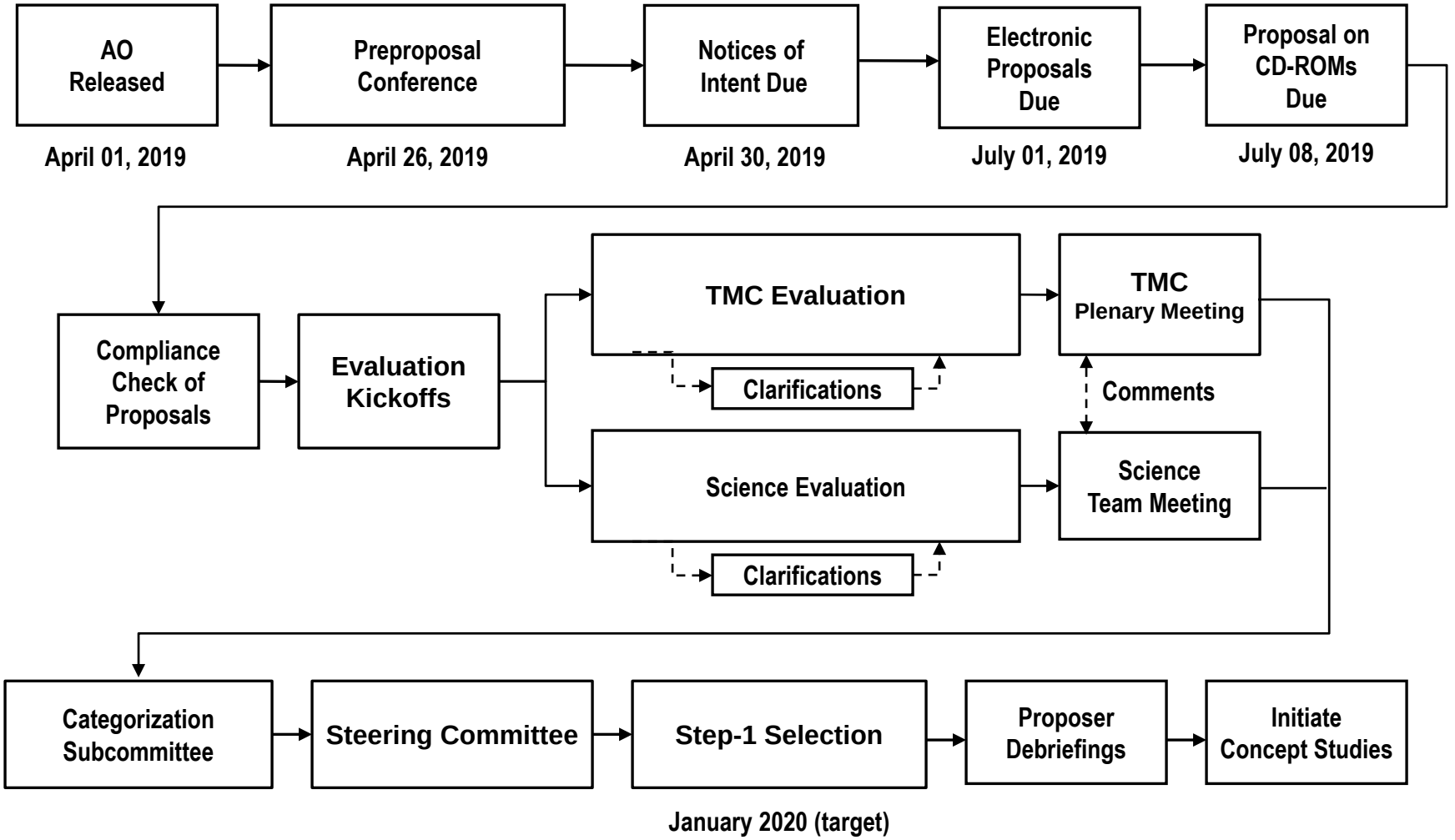
Peer Review

- Proposals submitted to NASA will undergo the evaluation and two-step selection process described in the Discovery 2019 AO.
- All reviewers with access to proposals will be required to sign a Non-Disclosure Agreement or equivalent.
- Proposals will be assessed against criteria given in Section 7.2 of the AO by panels of individuals who are peers of the proposers in the relevant scientific areas.
  - **Panel members will be instructed to evaluate every proposal independently without comparison to other proposals.**

Discovery 2019 AO Process Flowchart



Step-1 Proposal Evaluation Flow



Evaluation Criteria

The criteria are grouped into three forms, A, B, and C. (Section 7.2)

Each form focuses on a different aspect of the proposal:

- Form A assesses the scientific merit; the compelling nature and programmatic value of the science investigation and science questions
- Form B assesses the merit of the plan for completing the proposed investigation from a scientific perspective
- Form C assesses the detailed technical feasibility of the implementation

Forms A, B, and C are independent of one another and we avoid convolving them

- When assessing the science merit (Form A), we assume that a workable approach to conduct the necessary investigation is proposed (Form B) and that the team can build the instrument to specifications (Form C)
- But they are separate, and carefully consider how peer reviewers with expertise in these different factors will consider these factors individually

Section 7.2

Science Evaluation

- The *Science Evaluation Panel* will evaluate the *Intrinsic Science Merit* (Form A) and *Science Implementation and Feasibility Merit* (Form B) of the proposed investigation.
  - Intrinsic Merit evaluation factors (A-1 through A-3) are given in Section 7.2.2 of the AO.
  - Implementation and Feasibility Merit evaluation factors (B-1 through B-5) are given in Section 7.2.3 of the AO.

- This evaluation will result in narrative text, including specific major and minor strengths and weaknesses, as well as adjectival ratings for the Intrinsic Merit and Implementation Merit.

- **Form C and the *Technical, Managerial and Cost Panel* will be covered in the following presentation.**

Sections 7.2.2 and 7.2.3

Revisions to Form A and B

Evaluation factors have been revised for Discovery 2019 to:

- Combine the previous Factor A-3 into Factor B-1.
- Consolidate data adequacy and sufficiency and their attendant plans from Factor B-1 into B-3.

The intent is to simplify the review process, not to change proposal requirements.

Form weightings for Categorizations have not changed (Section 7.2.1)

For categorization, scientific merit is weighted approximately 40%, scientific implementation merit and feasibility is weighted approximately 30%, and TMC feasibility, is weighted approximately 30%.

Section 7.2

Clarifications

During the evaluation process, NASA may request clarification of specific points in a proposal; if so, such a request from NASA and the proposer's response must be in writing.

NASA plans to request clarification on potential major weaknesses identified for all of the evaluation criteria (Forms A, B, and C) that are identified early in the review process.

- NASA will request clarification in a uniform manner from all proposers.
- The ability of proposers to provide clarification to NASA is limited, as NASA does not intend to enter into discussions with proposers.
- A typical limited response is to direct NASA's attention to pertinent parts of the proposal without providing further elaboration.
- Other weaknesses may be identified later in the process.

Section 7.1.1

Descoping to Threshold Mission

- The differences between the Baseline and Threshold missions are intended to provide resiliency to address cost and schedule growth during the mission lifecycle.
- The decision to descope to the Threshold mission invariably has a negative science impact, but it should achieve the minimum science acceptable for the investment, which is evaluated in Factor A-3.
- This degradation should be counterbalanced with adequate resource savings (e.g., mass, power, schedule, budget) that enable the project to address serious resource challenges in other areas.
- NASA recognizes that, in some circumstances, the Threshold Science Mission may be identical to the Baseline Science Mission and will provide no resiliency.

Sections 5.1.4 and 5.3.6

Categorization and Steering

- Subsequent to the evaluation process, NASA will convene separate Categorization and Steering Committees, composed wholly of Civil Servants and Intergovernmental Personnel Act appointees.

- The Categorization Committee will consider the evaluation results and categorize the proposals as defined in Section 7.1.2 of the AO.

- The Steering Committee will review the results of the proposal evaluations and categorizations, and conduct an independent assessment of the evaluation and categorization processes.

Sections 7.1.2 and 7.1.3

Selection

- The results of the proposal evaluation will be presented to the Associate Administrator for the Science Mission Directorate (SMD AA), who will make the final selections.

- *The overriding consideration for selection will be to maximize scientific return and minimize implementation risk while advancing NASA's science goals and objectives within the available budget for this program.*

- *In addition, the SMD AA may take into account a wide range of programmatic factors in deciding whether or not to select any proposals and in selecting among top-rated proposals...* See section 7.3 for details.

Section 7.3

Questions?

Artist rendition of the asteroid Psyche.
Credit: Peter Rubin/ASU