National Aeronautics and Space Administration

R&A Charge to SMD Advisory Committees

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Astrophysics Advisory Committee (APAC)

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Background

It is always good practice to periodically step back and review processes to gain insight and spot new opportunities.

This task has been formulated by SMD (Front Office, Division Directors, R&A Leads & Division Advisory Committee Exec Secs) and the NAC Science Committee (SC).

Ideal task for the new SMD Division Advisory Committees (ACs) working with NAC SC:

- ACs set up to tackle short term, discrete questions and produce actionable advice directed to the right levels.
- NAC SC Chair sent a letter to the SC members including the Chairs of the four ACs that reinforced the linkages between the committees and noted that the R&A charge is forthcoming.

Two questions to be asked of the ACs

Does the SMD R&A program have effective processes in place to solicit, review and select high-impact/high-risk projects?

Does the SMD R&A program have effective processes in place to solicit, review and select focused, interdisciplinary, and interdivisional projects?

Naturally, there are sub-questions

For high-impact/high-risk research:

a) What is your committee's working definition of a high-impact project? A high-risk project?

b) Are there aspects of the solicitation, review and selection process that could be added, removed or modified that would allow SMD to more effectively elicit and support high-risk/high-impact projects or, is the current practice of soliciting by topic and evaluation for merit followed by flagging high-impact/ high-risk projects for the selection official adequate?

c) If it were to be recommended that solicitations or evaluation methods be modified for high-impact/high-risk projects, how should these be designed?

d) Acknowledging the value of incremental progress on achieving strategic objectives, and thus recognizing that much of the research that SMD supports will be of moderate impact, how should SMD determine the correct balance between moderate impact research and high-impact/high-risk research?

Naturally, there are sub-questions

For interdisciplinary and inter-divisional research:

a) How should SMD determine the right balance between division-specific and interdivisional research?

b) Once determined, does SMD have effective processes in place to achieve this balance?

c) How should each of SMD's divisions determine the right balance between discipline-focused and interdisciplinary research?

d) Once determined, do SMD's divisions have effective processes in place to achieve this balance?

e) Is SMD missing out on important interdisciplinary and/or interdivisional work because of the way in which we solicit, review, and select projects? If so, what specific research foci are missing?

f) Are there aspects of the solicitation, review and selection process that could be added, removed, or modified that would allow SMD to more effectively elicit and support interdisciplinary and or interdivisional projects?

g) If it is recommended that solicitations or evaluation methods be modified for interdisciplinary and/or interdivisional projects, how should these be designed?

h) What role, if any, should collaborative research structures such as NIH-style "Program-Project" grants, virtual institutes (the NASA Astrobiology Institute (NAI) and Solar System Exploration Research Virtual Institute (SSERVI)) and research coordination networks (the Nexus of Exoplanetary System Science (NExSS)) play?

Practicalities

Asks the SMD advisory committees to work on the “how” of these inquiries, not the “why.” The advice delivered should address the issues at a tactical use-focused level, rather than focusing on generalities at a strategic level.

Each sub-question should be addressed in the response.

Opportunity to offer ideas that NASA SMD may not have considered.

Materials to be provided

- R&A program solicitations
- Proposal evaluation criteria
- Working definitions (see next slide)
- SMD R&A program statistics (*e.g.,* proposal selection rates, 2008-2015)
- SMD policy documents
- *An Enabling Foundation for NASA's Earth and Space Science Missions* (2010). A report by the Space Studies Board of the National Academies.
- *Review of the Restructured Research and Analysis Programs of NASA's Planetary Science Division* (2017). A report by the Space Studies Board of the National Academies.

Other available and relevant material, as requested (*e.g.,* titles/abstracts of selected proposals, division-specific information on how high-impact/ high-risk and other proposals are handled)

Working Definitions

High-Impact: Research whose outcome, if confirmed, would have a substantial and measureable effect on current thinking, methods or practice.

High-Risk: Research that tests novel and significant hypotheses for which there is scant precedent or preliminary data or that are counter to the existing scientific consensus.

Are these definitions good enough to start with?
How can they be improved?

Multidisciplinary: Research in which contributions from two or more different disciplines *are independently or sequentially applied*, *providing additive contributions* to the solution of a common problem.

Interdisciplinary: Research in which contributions from two or more different disciplines are *jointly applied, providing interactive contributions* to the solution of a common problem.

Interdivisional: Research that simultaneously advances the strategic objectives of more than one SMD Division. Such research may be multi- or inter-disciplinary but need not be.

The ACs will be asked to improve these definitions, if they see fit to do so.

Schedule

July – November (5 months); 2 AC meetings

July 15: Release of charge and materials from SMD AA to the SC, and from each DD to the division advisory committee.

Mid-July: Committee Chairs send the charge and materials to members in advance of first meeting

July – Sept: First committee meeting with work on the charge. Unified SMD presentation with common messages will be made to each committee. Committees review information and begin deliberations. Sub-group may be formed for interim work.

Sept – Oct: Second division committee meeting with work on the charge, deliberate and produce written answers (could be recs/findings). Each committee is requested to provide a presentation to the DD, as well as a letter.

Nov: Chair of each division committee is requested to make a presentation at the SC meeting. SC deliberates and produces written answers (could be recs/findings). SC Chair provides a summary and overview presentation to the SMD AA, as well as a letter.

SMD will gladly work with the Division Advisory Committees to accommodate scheduling issues/adjustments.

Any questions?

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