

## CONTRIBUTED IDEAS FOR ENHANCEMENTS TO THE MERIT REVIEW PROCESS

IT BASED	
<b>Increased use of virtual panels</b>	More proposals could be reviewed by reviewers that discuss the proposals as a panel but do so via videoconference or teleconference rather than coming together in a single, physical place.
<b>Expanded use of <i>ad hoc</i> reviews</b>	Panel reviewers sometimes point to the advantages of using ad hoc reviewers. One reason some Program Officers and divisions are reluctant to make greater use of ad hoc reviewers is a perception that it impedes achievement of the 6-month dwell time goal. However, some programs regularly use ad hoc reviewers and are able to meet dwell-time goals. Both groups could benefit from enhancements to NSF's business systems that simplify the use of ad hoc reviews. Examples include: tools that automatically suggest a number reviewers, filtered for COI, based on textual analysis of the proposal and the history of reviews of proposals from the PI; easy generation of review requests; ability to assign clusters of proposals to one or more ad hoc reviewers; presentation of a 'reviewer record' that includes the frequency with which a reviewer declines requests to review and timeliness/completeness scores for reviewers; the automatic generation of email reminders; automatic recording of when reviewers decline requests to review or fail to respond; ability for Program Officer to add a score to the reviewer record indicating the completeness of a review; standardize to request turnaround in two weeks unless PO grants exception (e.g. for a complex proposal).
<b>Machine-learning tool to flag potentially uncompetitive proposals</b>	A machine learning tool based on textual analysis of NSF's corpus of past proposals and the reviewer assessments of those proposals may be able to flag incoming proposals that are likely to not fare well in merit review. Program Officers would then look at the flagged proposals to see if they agree (in which case the proposal could be declined without going out for external review) or disagree (in which case the proposal would be sent out for external review).
<b>FastLane screening tool to ensure submitted proposals are compliant</b> <i>(IdeaShare contribution)</i>	<p>"Where possible place computer controls and checks to enforce proposal requirements. For the remaining items, hold the institution (SRO) responsible. NSF could provide the tools it uses to institutions to help check compliance.</p> <p>It will eliminate staff NSF time used for checking for compliance, deciding how to best deal with non-compliant proposals and in taking those actions. As a result, RWR will be rarely used. File update will be used, as intended, to correct errors (discovered by the the PI) or make changes prior to the deadline.</p> <p>These changes stand to reduce NSF staff workload and make the merit review process fairer and faster."</p>
<b>Searchable database of reviewers</b> <i>(IdeaShare contribution)</i>	"We need a searchable database of reviewers that we can adapt and build upon. [There was work] along these lines a few years ago -- we need to get this effort back on track. Journals are using much more sophisticated software."
<b>College of <i>ad hoc</i> reviewers</b>	By a combination of contacting known reviewers and providing opportunities for people to volunteer to review through the NSF website, develop a large pool of reviewers who agree to provide ad hoc reviews of up to xx proposals per year for the next 3 years with a relatively short turnaround time. This College of Reviewers could be used to simplify and expand the use of ad hoc review in general and/or provide quick screening reviews to assist programs in determining which proposals would not benefit from a review involving a larger number of reviewers or a panel.

<b>PI/PO/REVIEW BASED</b>	
<b>PI response to reviews prior to decision</b>	A few NSF programs provide PIs of proposals “on the bubble” a chance to respond to reviews. Some other funding agencies do this routinely. The European Peer Review Guide, which aims to harmonize funding agency review standards across Europe, advocates that PIs be given a chance to respond to, at the least, ad hoc reviews prior to the proposals consideration by a review panel. The goal of such a step is to enable PIs to correct any factual errors or misunderstandings on the part of the reviewers. For those NSF programs that wish to provide PIs an opportunity to comment on the reviews, this step could be expedited by enhancements to FastLane, including: a software switch by which a Program Officer can release reviews to the PI (before PO recommend) and automatically generate a request for comment within a set time-frame; a simpler interface for the Program Officer to check reviews for inappropriate content prior to clicking the switch; and a FastLane module for the PI to use when submitting his or her comments.
<b>Wiki-based, asynchronous review panels</b>	This is a hybrid approach with elements of both ad hoc review and a review panel. A set of reviewers is assigned to a proposal. Each submits an independent written review. Once a reviewer has submitted his or her review, he/she can see the other written reviews and begin a discussion on a secure, Section 508 compliant Wiki site of the merits of the proposal with the other reviewers. Reviewers’ identities are hidden (using labels like Reviewer 1, Reviewer 2 etc.) At the end of a set period (e.g. one or two weeks) each reviewer may submit a revised version of his or her review and the Wiki site is then locked. Both the original and revised reviews are retained, along with the Wiki discussion, and provide input to the Program Officer. (A variation of this would include a Wiki discussion moderator – either an NSF staff member or a reviewer who has received appropriate training. Another variation could be structured more like a panel: the reviewers would look at a set of proposals; reviewers would be able to see each other’s identities; a scribe would be assigned for each proposal and would prepare a summary of the panel’s asynchronous discussion.)
<b>Shadow panels</b>	An independent assessment of the transformational potential of the work may help to more explicitly include it as a factor in the decision process and mitigate the tendency toward risk aversion in standard panels. A separate review panel (the “shadow panel”) would be convened with the primary purpose of identifying potentially transformative research proposals. Results from both the standard and shadow panels would inform the Program Officers in making their funding decisions.
<b>Provision of PO comments</b>	eJacket currently includes a mechanism by which Program Officers can provide feedback to principal investigators through a Program Officer Comments field. Mandating the provision of Program Officer comments would help improve the quality of feedback to the PI and provide greater understanding of the reasons for an action.
<b>Accomplishment-based awards</b>	NSF primarily asks for project-driven proposals. (There are exceptions; for example, accomplishment-based renewals – seldom used - and graduate research fellowships.) Some funding organizations have had success with accomplishment-based funding. Should the NSF portfolio of award types be expanded to include a broader accomplishment-based award, modeled after accomplishment-based renewals but with some or all of the following extensions: can be based on non-NSF funded prior research accomplishments; proposals can be from successful collaborative groups of researchers; proposals can be from new investigators if they have a significant track record of published work.
<b>Short-form proposals</b>	Provide programs the option to use a shorter, more compact proposal form than is the norm to help reviewers focus on the ideas rather than the proposer. E.g., 5-page proposals that focus only on the main purpose and potential impacts of the research. One page must describe the broader impacts of the proposed research. Review either by ad hoc reviewers or a panel. Proposals may be reviewed using blind review. Bio Sketch & C&P become single-copy documents. The Program Officer is the one who considers PI productivity etc.
<b>Double-blind review</b>	Separate proposals into two parts: <b>a.</b> Project Description, References Cited, and Budget Justification; <b>b.</b> Project Summary, Results of Prior NSF Support, Current and Pending Support, Biographical Sketch(es), Facilities, Equipment & Other Resources & Special Information/Supplementary documentation. Instruct PIs not to identify themselves or their institutions in part (a). <b>Version 1:</b> Reviewers will be provided, and requested to review, part (a) only. Program officers will base funding recommendation on reviewer input, content of part (a), and PO’s assessment of part (b). <b>Version 2:</b> Use a 2-stage review. In stage-1, reviewers will only consider part (a). After initial reviews are submitted, the reviewers will then consider part (b) and provide a separate statement about qualifications & resources available for the project.

<b>WORKFLOW BASED</b>	
<b>Expanded use of preliminary proposals or LOIs</b>	Core programs where proposer and reviewer burden is highest and that routinely accept full proposals might experiment with requiring shorter, simpler preliminary proposals and only invite full proposals from those preliminary proposals that review well. Another option is to require submission of letters of intent. LOIs would not be used to cull the number of full proposals under review, but could be used to get an early idea of the maximum number and scope of projects under review and thus allow the review process to begin earlier.
<b>Decline non-competitive proposals based on PO assessment</b>	Some members of the research community and NSF staff have advocated empowering program officers to return proposals that they believe are non-competitive without sending them out for external review. There are several possible approaches to the filtering of non-competitive proposals by POs without the benefit of external review. Here are three examples: <ul style="list-style-type: none"> <li>• PO may decline without external review; PO's review must state explicit reasons for decline; PI may request that a proposal declined without external review go through external review anyway but then, if it is not recommended for funding, PI must not submit a proposal for 12 months.</li> <li>• PO may decline up to xx% of submissions without external review; a PI may not be declined without external review on two successive proposals.</li> <li>• If a PI has been declined (with the benefit of external review) three times in a row as a PI or co-PI, a PO may not accept subsequent proposals for external review for a year without writing the PO's own review and affirming that the proposal appears competitive.</li> </ul>
<b>Decline based on limited external review</b> <i>(IdeaShare contribution)</i>	"There should be an NSF adopted model review analysis that can be used to make recommendations for obvious declines (those which could be eliminated <i>on the basis of reviews</i> with no further discussion needed). With the static NSF workforce and ever increasing proposal load, we need to adopt more efficient ways of processing proposals that need nothing more than the reviewer feedback. This will require a change in the business practice of many divisions/programs here inside the Foundation."
<b>Demand management</b>	For example, limiting the number of proposals submitted by a PI per year or requiring a waiting period after a string of declines. Can PI-based proposal throttling mechanisms be instituted in a way that does not handicap recent PhDs trying to establish their careers? E.g. PIs more than 10 years past PhD may not submit more than two proposals per year.
<b>Eliminate proposal deadlines</b> <i>(IdeaShare contribution)</i>	"Deadlines drive proposal pressure. They also prevent some PIs from fully formulating their ideas because they are rushing to meet a deadline they just found out about. There are some places in NSF that do not have deadlines (GEO/AGS) for core programs and they have a high success rate and people only propose things when they need money or have a good idea and have a ready proposal. For those who worry about achieving GPRA goals, AGS does not seem to have a problem with this. It is simply a different (and maybe it should be a preferred) way of doing business."
<b>Pro forma decline letter for proposals with no scores above Very Good</b> <i>(IdeaShare contribution)</i>	"To handle the vast new influx of proposals because other agencies that used to fund external science and engineering are limiting or eliminating those efforts (ONR, NOAA, EPA, DOE, etc.), ... we need to find ways to deal with more proposals with the same (or fewer) people. I would like to suggest that the Policy Office create a "canned" decline that is embraced throughout the Foundation that is used for any proposal that is declined that has no score of E. Some parts of the Foundation already do this, but many others do not and their POs are grossly overworked in some cases. It would seem that unless there is an actual need for additional comment from a PO (in their opinion), then management should allow these pro forma declines to move forward without additional PO input. The productivity of a PO could be increased perhaps by as much as 25% to 30% if NSF adopted this. POs would then have more time for building the community, advising PIs, working cross-directorate activities, building cross-directorate trust and networks. Basically things that are more important to our agency's mission than writing documentation of which 90% or more of it will never be seen by another living being once it is DD concurred."
<b>OTHER</b>	
<b>Prizes</b>	Incentives to push beyond current state of the art and improve outcomes using competitions.