

**Recommendations for EG 1508 practice for the 2012 Discovery Grant competition**

Long Range Planning Committee / Mathematics - NSERC Liaison Committee

The purpose of this letter is to set out three principles for the policies and operating procedures of the Evaluation Group 1508 and its chair and co-chairs. The principles are simply stated as:

## 1. Openness and transparency.

It is important that the process of proposal assessment permits every Evaluation Group member to form a global perspective of the spectrum of dossiers in the competition. As well NSERC should communicate to them at least an approximation of the budget constraints they will be operating under.

## 2. Fairness.

The proposal evaluation process should provide sufficiently detailed comparisons between all proposals in the competition, and should result in grant award amounts that reflect research merit that are equitable across the EG.

## 3. Professionalism.

The members of the Evaluation Group require the appropriate tools for their deliberations, and respect for their judgements when ranking dossiers.

We are including more detailed recommendations below, as to how the procedures of the Evaluation Group 1508 (EG) can be adapted in order to more closely reflect these principles in future Discovery Grant (DG) competitions. Implementation of such procedures is certainly possible within the present model of the EG meetings, and would not entail major changes in policy or practice. Our recommendation is that these procedures be instituted, at least in part, for the upcoming Discovery Grant competition 2012. In a subsequent paragraphs we also include a discussion of issues of particular sensitivity to the mathematics and statistics communities.

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## 1. Openness and transparency.

- (i) Early in the ranking process the NSERC staff should present to the EG an outline of the budget available for the competition, at least in approximate terms, relating it to the mathematics and statistics budgets of the past several years.
- (ii) The evaluation process of the competition should allow each EG member to form a global view of the spectrum of dossiers that are submitted to the 2012 competition, including access to each dossier and a review of the final rankings.
- (iii) Although responsibility for reading and reporting on individual proposals is assigned to a smaller subset (a committee) of each of the three groups (pure mathematics, applied mathematics, and statistics), members of the group (aside from those with direct conflicts of interest) should not be discouraged from taking part in the discussion of the merits of each dossier, and their opinions should be included in the decision on its ranking.
- (iv) The final ranking of each dossier should be supported by a written summary outlining the basis of the EG's decision. This summary is to be returned to the applicant along with the mail reviews of their proposal.
- (v) During the evaluation process NSERC should explain the basis of the calculation of the available budget for the present year. This disclosure should take place before the EG enters into its final rating process of the dossiers under consideration.

## 2. Fairness.

- (i) The EG should make multiple passes through the proposals in the competition, avoiding the inequities that result from one pass/serial rating methods<sup>1</sup>. As in the past, we recommend that a full day is set aside for this overall review, after the detailed evaluations are made and also after NSERC has disclosed the approximate budget figures for the competition.
- (ii) We recommend that there be finer grading of the proposals (e.g. in the form of marks such as  $J^- < J^0 < J^+$ )<sup>2</sup> at least in the critical bins in which it is possible that the funding cutoff will fall. Such a multiple-scale analysis will help in making sensible final budget outcomes, when difficult decisions have to be made by the EG, by allowing bins to be appropriately subdivided<sup>3</sup>.
- (iii) The full EG should be consulted in decisions on dollar amounts assigned to bins, early career researcher awards, and other major grant awards under the aegis of the EG.
- (iv) Researchers have different modus operandi and work in different research environments (e.g. large universities vs smaller institutions). Judgements as to the importance of their contributions should take into account the depth, impact and potential of their work, independently of any pre-proscribed standards of publishing rates and the level and absolute numbers of HQP.
- (v) In fact our recommendation is that the quality and impact of a grant proposal be judged independently from the HQP element, and the latter be treated as a function of cost of research.

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<sup>1</sup>We recommend that that each dossier be addressed at least three times: (1) a preliminary coarse-grained rating, (2) the detailed evaluation and (3) a global comparison and adjustment of rankings. In fact the first step of this evaluation can already be made in the late fall term, at the point when the proposals are submitted and are ready for evaluation. The final step (3) is critical in making fair judgements on the dossiers after EG members have acquired a global perspective of the competition as a whole, and after having made a detailed scrutiny of all of the dossiers and understanding the impact of the budget on the funding level.

<sup>2</sup>or perhaps a finer scaling  $J_1 < J_2 \cdots < J_{10}$  if it seems necessary

<sup>3</sup>In the 2011 competition, the fact that bins could not be reopened nor split, combined with the fact that populations of the bins are normally largest in the middle of the distribution, led to budget decisions that resulted in anomalously low grant allocations for dossiers in the middle bins in pure mathematics and applied mathematics.

### 3. Professionalism.

(i) Members of the Evaluation Group are professional scientists, and the exercise of their mathematical knowledge and judgements made from their scientific experience needs to be treated as important information, and taken into account in the proposal rankings.

(ii) During the EG meeting, its members should have the tools available to them to make important decisions about the depth and significance of the research they are evaluating. This includes the ability to consult reference texts, the MathSciNet, Google Scholar, the ArXiv, journal citation indices, and any other professional material that will aid them in their work, which is to evaluate and compare mathematics research proposals as diligently as they can.

#### Additional comments.

Points of particular sensitivity to the mathematics and statistics communities are the following.

(i) The EG should be sensitive to systematic rating differences between pure mathematics, applied mathematics, and particularly statistics.

(ii) If in going forward the NSERC considers separate mathematics and statistics budgets, the basis of forming these budgets is a particularly delicate issue. This should be treated openly and in a consultative way with the current EG, the liaison committees, and the community as a whole.

(iii) If there is a decision to separate the budgets of statistics and the two mathematics disciplines, this brings up numerous issues. Among these are the question as to where the discipline of probability would fit, and the same question arises regarding financial mathematics. Another question is to whether the grouping should be statistics separate from a combined pure and applied mathematics, or should there instead be three separate budgets for the three groups.

(vi) If it is decided that pure mathematics, applied mathematics and/or statistics budgets are calculated and treated separately, the basis for calculating the subdivisions of the budget should be made transparent.

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