Proposal elements

Karel Schrijver
HSS2015

Four perspectives

- What convinces an agency to fund your proposal?

- How to convince a reviewer (panel) to rate you highly?

- How to convince the funder that you will succeed?

- What should you do beyond the proposal itself?

Proposal foundation

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Proposal foundation

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  - Responsive to the Opportunity

  - High reviewer rating

  - Demonstrated (scientific and technical) feasibility at low (or at least managed) risk

  - Requisite (team) expertise and commitment

  - Past (team) performance

Proposal style & elements

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  - "Joy to read": well written, illustrated, documented

  - Show context of work (progress and questions) by others

  - Provide succinct, quotable reasons, goals, and milestones

  - "Self-contained" but adequate: don't force reviewers to leave your document to read other documents to understand the basic idea, and don't provide more technical details than needed

  - Demonstrate that you thought about why, why now, how, when, and with whom

  - Assimilate critique from one or more colleagues ("red team" your draft … and don't do that on the last day)

Feasibility

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  - Think about "TRL" (techology readiness level) whether it is for hardware, software, or methodology

  - Address risk, risk management, and alternative outcomes

  - Argument for resources: time, personnel, IT, data, tools, …

Proposal activities

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- Lay the groundwork:

  - Your project cannot be a secret (which does not mean you have to give away all the details): communicate with colleagues to get feedback, support, buy-in, and partnerships

  - Build a track record in the literature of your work (or your team's) and of the feasibility of the proposed project

  - Build community recognition/support: present in, or even (co)-organize meetings or topical sessions

  - Nudge agency or national strategic plans: submit white papers, volunteer to participate in committees and panels, …

Success rates

- Acceptance rates for research proposals in heliophysics: about 1 in 5 to 7

- Success rates for instrument/mission proposals in NASA/SMD: somewhere between 1 in 10 to 1 in 30

- Lesson: submit only "excellent" proposals! (research proposals take, on average, 180 "writing hours" to complete; instrument/mission proposals often exceed $1M)

- Don't take it personally if even the "excellent" proposal is not funded (which happens to roughly 1 in 2) or if your proposal comes out just under excellent without adequate identification of "weaknesses" (panel makeup does matter)