Project Management for Scientists

Proposal Organization

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Outline

- Competitive Funding

- Proposal Lifecycle

- Successful Proposals

- Proposal Checklist

Why Write Proposals?

- Is proposal writing really worth my time?

- What are my chances of getting funded?

- Which agency/organization will fund my proposal?

- What is agency/organization really looking for in proposal?

- Do I have to know the 'right people' to get funded?

- How much money should I ask for?

- Fundamental question: Is it all really worth it?

Why Grants Programs?

- Funding agencies/organizations
  - Perceive gap they want to fill
  - Fund proposals matching their funding priorities
  - View grants as investments for better future
- Competition expected to provide highest return on investment

Proposal = Marketing

- Proposal advertises scientific idea(s)

- Audience: reviewers, funding agencies

- Some proposals rejected because of non-conformance with RFP

- Some proposals rejected because they contain bad ideas

- Most proposals rejected because they contain good ideas but are poorly organized and written

Scientific project Life Cycle

3 phases, each can be treated as a project:

- Pre-proposal project (exploratory work, makes proposal believable)

- Proposal project (largely definition and coarse planning)

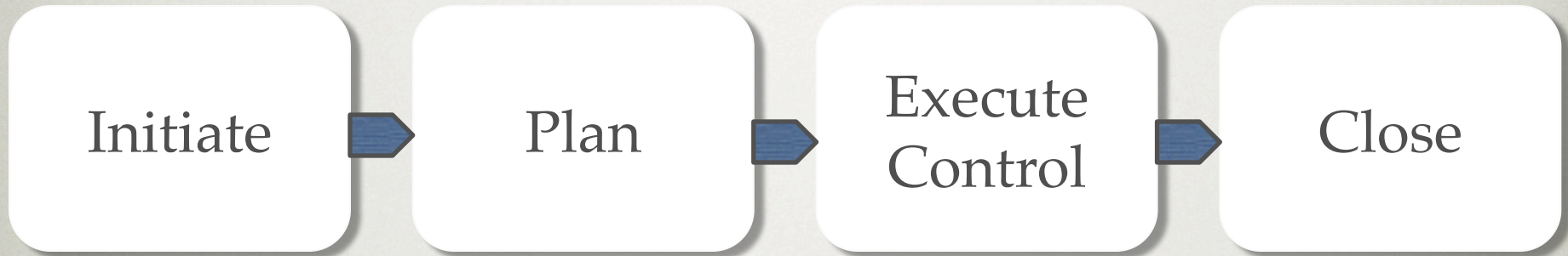- Actual project (largely detailed planning, execution, control, closure)

Space Project Lifecycle

- Pre-Phase A: Conceptual Study

- Phase A: Preliminary Analysis

- Phase B: Definition

- Phase C/D: Design and Development

- Phase E: Operations Phase

Proposal (Project) Life Cycle

Initiate → Plan → Execute Control → Close

- Linear progression with decision points at boundaries
- Each box has a given set of inputs and outputs

Proposal Planning

- Plan like a project

- Budget: about 1% of money asked

- Schedule: plan backwards from deadline, don't forget reviews and authorization

- Scope: typically given by Request for Proposal (RFP)

Initiate Proposal

What is the problem?

- Input: science vision, idea, initial requirements; Request for Proposal (RFP)

  - Top-down ➔ vision, strategic goal, project

  - Bottom-up ➔ collection of smaller ideas/projects

- Activities:

  - Determine key players and their roles and responsibilities in the proposal phase

  - Establish proposal document system (e.g. Word)

- Output: proposal charter

Example Stakeholder Issue

Email from funding agency to project director:

"? and I have been strategizing a bit more on ways to increase the chances of getting the D&D proposal funded. We have concluded that it will help a lot for the ? role to be as prominent as possible and to be highlighted in the Directorate/Division that funds ?. If ? can sensitize his ? Directorate as to the importance of ? for ?'s long term benefit, that will be important."

Plan Proposal

How are we going to get it done?

- Input: proposal charter
- Activities:
  - Review RFP (Request for Proposals)
  - Clarify roles and responsibilities of writers
  - Proposal kick-off meeting
  - Detailed proposal writing plan (table of content, schedule, outside reviews, authorizations)
  - Learn from successful proposals to similar RFPs
- Output: proposal writing plan

Example Proposal Outline

1. Description of the general design concept (1-2 pages)
2. Systems Engineering (4-5 pages)
3. Site Testing (5-10 pages)
4. Technical Description
5. Technical and Trade Studies
6. Preliminary Design (1 page)
7. Critical Design (1 page)
8. Preparation of bid packages

Execute & Control Proposal

Are we on track?

- Input: Project Plan
- Activities:
  - Manage scientific ideas, requirements
  - Communicate writing status
  - Manage writing, schedule including reviews, authorizations
  - Control proposal content changes
  - Manage team
- Output: Proposal

Close Proposal

- **How did we do? What did we learn?**
- Input: Proposal
- Activities:
  - Submit
  - Learn from reviewers' comments
  - Celebrate if successful
- Output: happy team ready to do next proposal

Successful Proposers

- Are outstanding leaders

- Have vision

- Motivate

- Bring people together

- Know that proposal is fundable

- Know/influence the funding politics

- Write well

Successful Proposals (1)

- Received before deadline

- Written within allocated limits

- Fulfill RFP (Request for Proposals) requirements

Successful Proposals (2)

1. Agreement among proposing team on the goals of the proposal

   - Clear scientific goals

   - Fuzzy goals lead to fuzzy proposals

   - Ensures that everybody wants the same thing

   - Well documented origin and/or motivation of scientific goals

Successful Proposals (3)

2. Proposal writing plan that shows an overall path to submission with clear responsibilities that can be used to measure the progress of the project

- Proposal is unique, requires unique plan

- Shows who is responsible for what and when

- Shows what is possible

- Details of resource estimates

- Early warning system for resources and schedule

Successful Proposals (4)

3. Constant, effective communication among everyone involved in the proposal

- Plans and charts do not write proposals
- Proposals written by people who agree on goals and how to meet them
- Success comes from
  - Coming to agreements
  - Coordinating actions
  - Recognizing and solving problems
  - Reacting to changes

Successful Proposals (5)

4. A controlled scope

    - With (often) fixed resources and schedule (submission deadline), scope is most likely to change

    - Changes in proposal scope and their impact must be understood and agreed upon by everybody

Successful Proposals (6)

5. Management support

- Proposed work embedded in larger entities (e.g. programs)

- Larger entity provides people, equipment, buildings, policies, etc.

- Larger entity often has to sign off on proposal (authorization, resource commitment)

- Impossible to write proposals without some help from larger entity

Successful Proposals (7)

- Science of proposal organization = project management

- Art of proposal writing such as political and interpersonal skills, creative ideas, intuition, writing skills etc. should not be underestimated

- Many arts can be learned

Proposal Org. Checklist

- ❑ Idea matching funding priorities
- ❑ Complete Request for Proposal
- ❑ Right people on proposing team
- ❑ Right people on proposal writing team
- ❑ Past, successful proposals for same/similar call
- ❑ Table of Contents
- ❑ Writing assignments and deadlines
- ❑ Internal reviewers
- ❑ Financial planning support
- ❑ Internal approval(s)