

Writing a Research Proposal



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WHY ARE YOU INTERESTED?



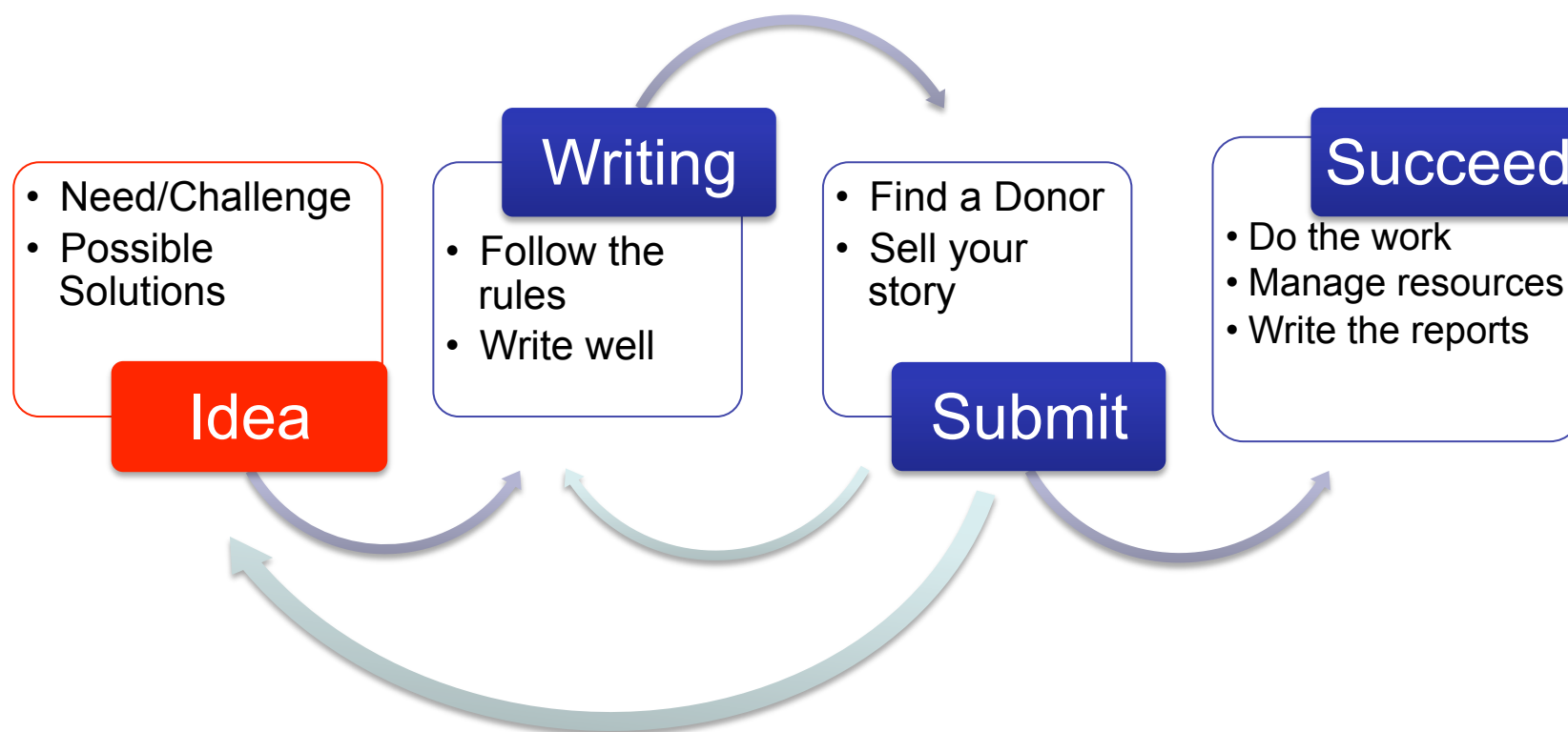
WHY ARE YOU INTERESTED?

- Stipend support
- Travel support
- Research project support
 - Supplies, equipment, student support
- Instrumentation
- Special projects
 - Symposia, workshops, outreach, educational
- Focus and elaborate scientific ideas!



THE IDEA

LIFECYCLE OF A PROPOSAL



Developing Proposal Ideas

- What are your goals?
 - Helps define grant type
 - Helps prioritize your interests
- Find a challenge that excites you
 - Old problems – new solutions?
 - New problems
 - Overlap between different field



- Do your homework!
 - What is known?
 - Refine!



Developing Proposal Ideas

- Write the title of a possible research proposal
 - Should be no longer than one sentence
- Where did this idea come from?
- What would you have to do to be sure you have a good idea?



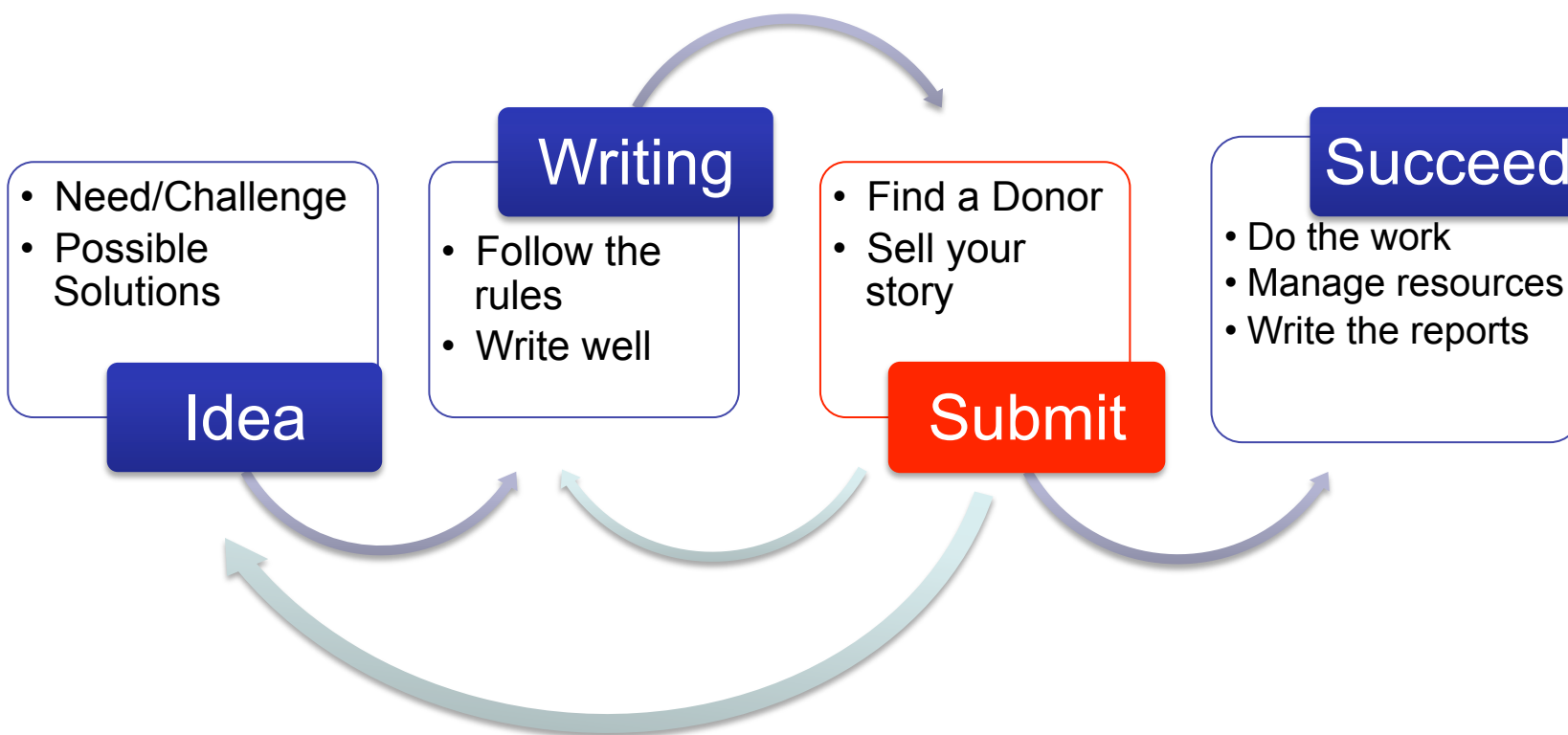
Developing a Story

- Expand your proposal title to a paragraph. Address the following:
 - What is the problem you are trying to address?
 - When your project succeeds, what will have changed?
 - Who will care?



SUBMITTING A PROPOSAL

LIFECYCLE OF A PROPOSAL



Types of Funding

- **Grant - Assistance**

- purpose is to transfer money, property, services, or anything of value to recipient in order to accomplish a public purpose
- No substantial involvement is anticipated between the sponsor and the recipient

- **Cooperative Agreement - Assistance**

- substantial involvement between sponsor and recipient

- **Contract - Procurement**

- acquire property or services for direct benefit or use of the funding source

Grant vs. Contract

- Grant

- project conceived by investigator
- agency supports or assists
- performer defines details and retains scientific freedom
- agency maintains oversight

- Contract

- project conceived by agency
- agency procures service
- agency exercises direction or control
- agency closely monitors

Federal Sponsors



- Most federal agencies issue solicitations on a regular basis calling for proposals in a particular area. These have strict deadlines.
- Federal agencies have detailed requirements and forms.
- Proposals to federal agencies generally will go out for peer review.
- Some federal agencies have a mission and your research must closely match their interests (U.S. Department of Energy, NASA), while others are not, and you may submit a research project of your own creation (National Science Foundation, National Institutes of Health).
- Federal agencies send reviews if a proposal is rejected. If you don't receive them, ask for them.

Other Sponsors



- Many proposals to foundations or corporations are called "letter proposals", only several pages long, and will need to stress what you propose to do, why it is important, and how you will do it.
- In some cases, proposals will only be accepted by invitation.
- They generally do not send your proposal for a peer review but instead have a review panel.
- Read their guidelines carefully to determine their areas of interest. If you and they "fit", submit your letter proposal if they do not list specific proposal requirements.
- If you are rejected you may never know why. Reviews are often not sent.

Funding Alternatives in Brazil: CNPq, Edital Universal



- Edital Universal is an important and obvious alternative for a first grant.
- The money will probably not be enough. This year: R\$ 30.000,00.
- Check very carefully the guidelines. Your next chance will be only in the following year.

Funding Alternatives in Brazil: CNPq, Other Possibilities



- CNPq supports research on specific topics. Good alternative to get more substantial funding.
- It is possible to apply for scholarships at CNPq. This can help your Institution and your group.
- Check CNPq website often to know the current opportunities.
- Be aware about the deadlines!

Funding Alternatives in Brazil: FAPESP



- Only for those working in the state of São Paulo.
- Probably all the money necessary for the group.
- Certainly the best agency in Brazil.
- No deadlines for routine grants and scholarships.
- The application is analyzed before review, so you can correct it, but this will delay.
- More rigorous and technical evaluation than CNPq. Without a good proposal, you will not get it approved even with a very nice CV.
- Forms are available on the web! Read them to know exactly the questions the referee will need to answer. Add the “answers” through your application.
- Check FAPESP website often to know specific alternatives about funding.

Funding Alternatives in Brazil: Other Possibilities



- Check your Institution and University for funding alternatives, special for recent hired professors.
- Check the state agency for funding. They are not as regular as FAPESP, but also good alternatives.
- Check other National agencies (FINEP, CAPES, etc), particularly for specific projects.
- Check international agencies (TWAS, STINT, DAAD, etc): special programs for young scientist and/or collaborations.

Funding Alternatives in Brazil: Important summary

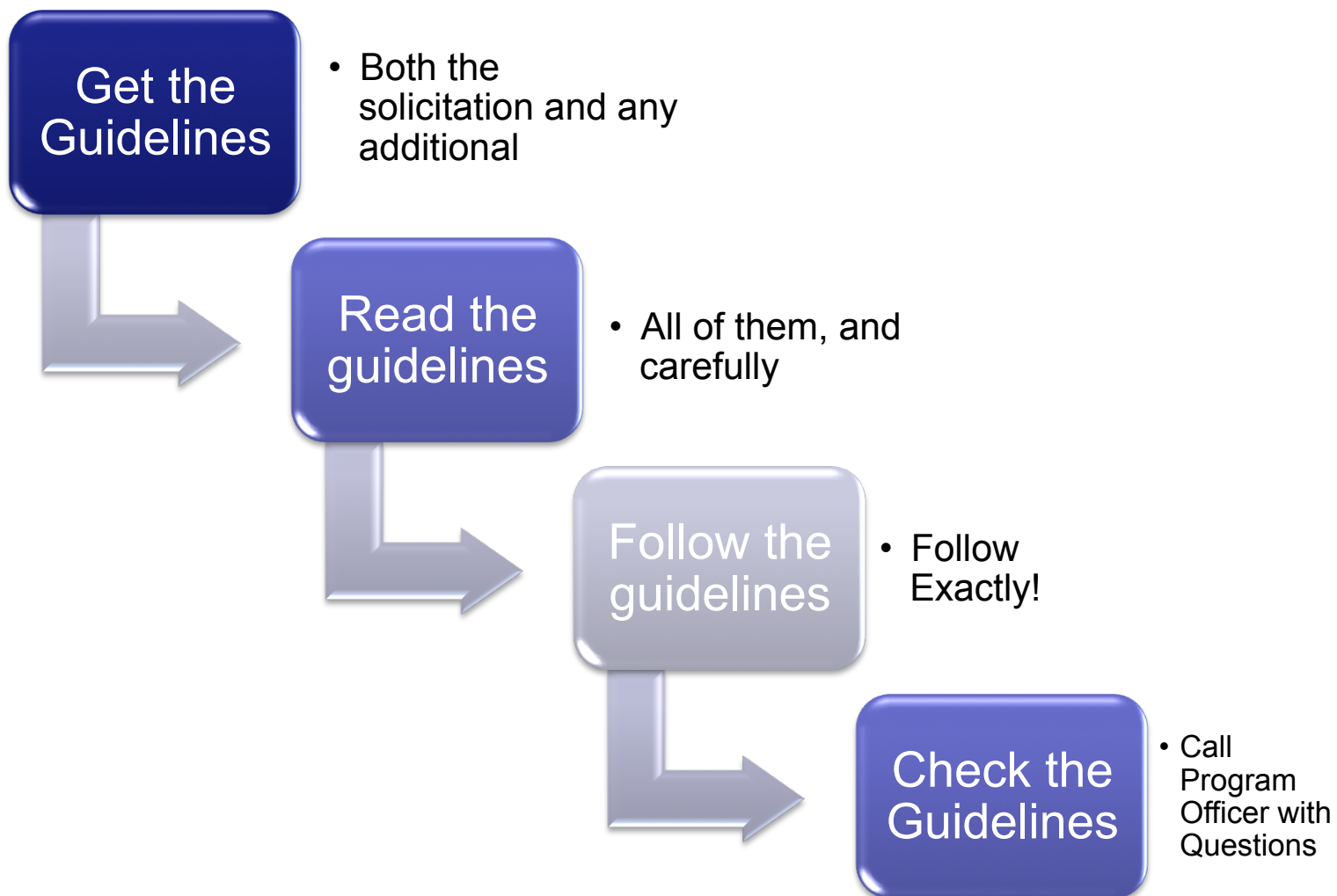
- There are many alternatives for young scientists!
- It is a very good moment in the career to get funding...
- ...but as always you need to fight for the grants! No one will appear in your office to give you the money.
- Do not get accommodate with financial situation of Brazil.

Questions to Ask Before Writing

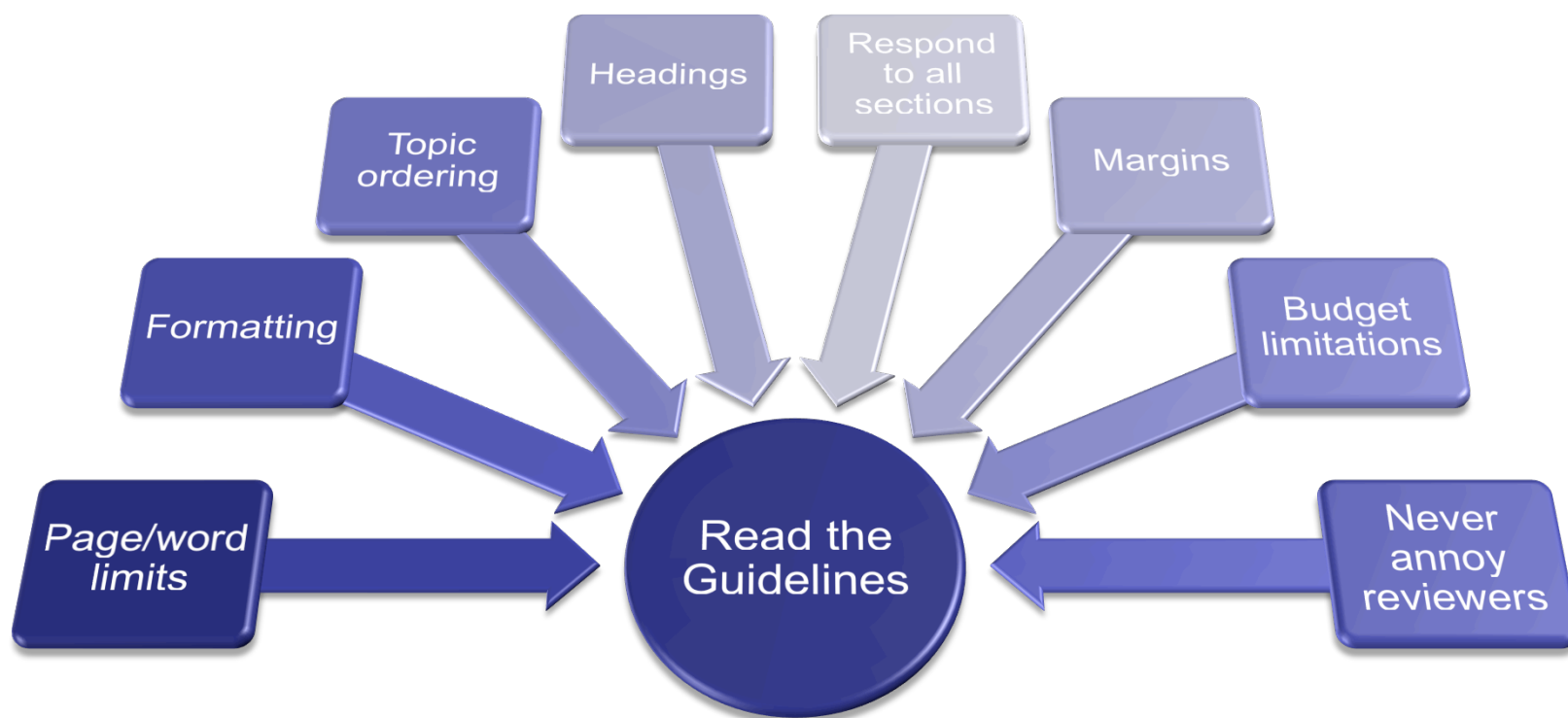
- Do the Agency's (or program's) goals match yours?
- Has the Agency funded projects similar to yours?
- Has the Agency funded institutions similar to yours?
- Are you eligible?
- Can you meet requirements on your own or do you need a team?
- Is the funding level sufficient?
- Are matching funds required?



Before Writing

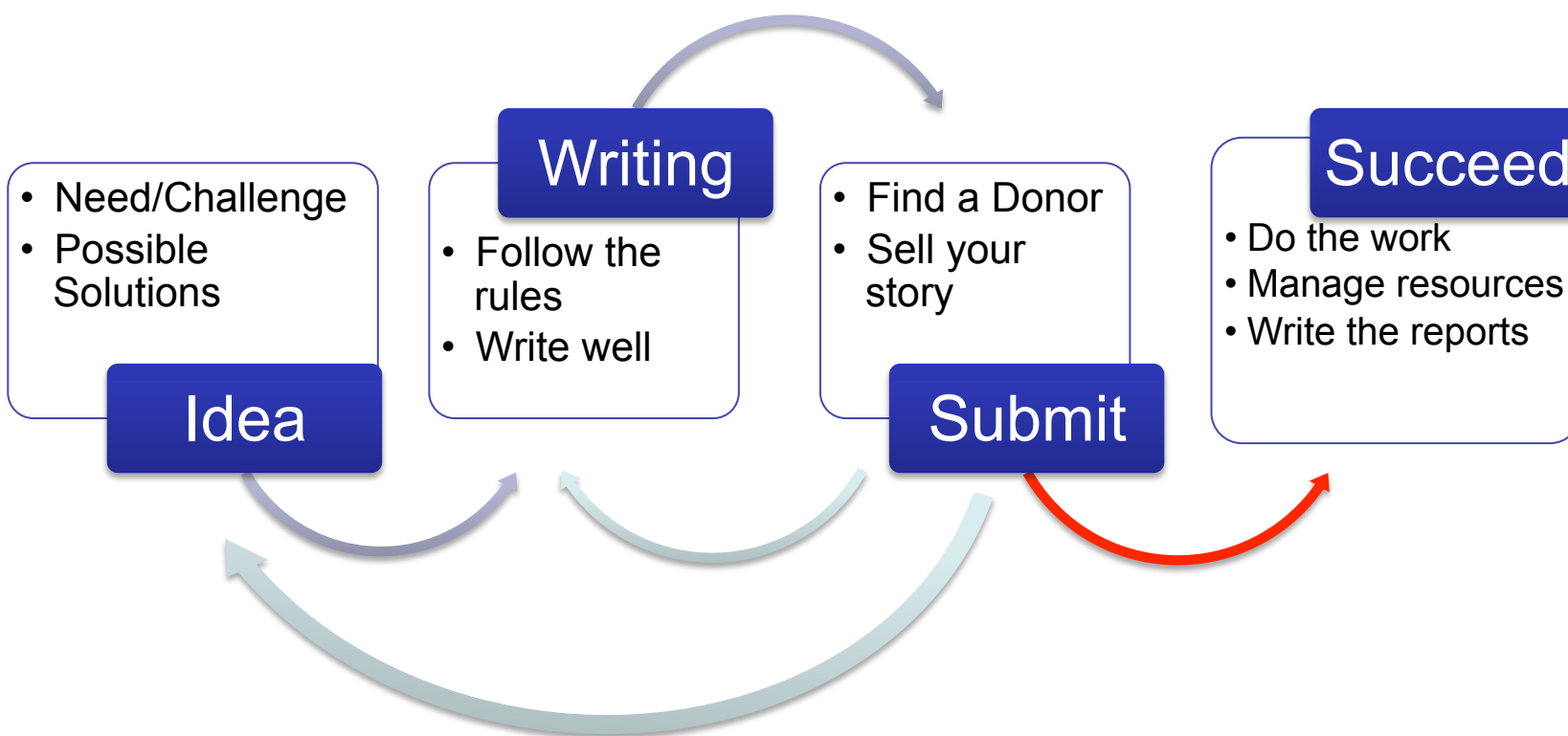


When Writing

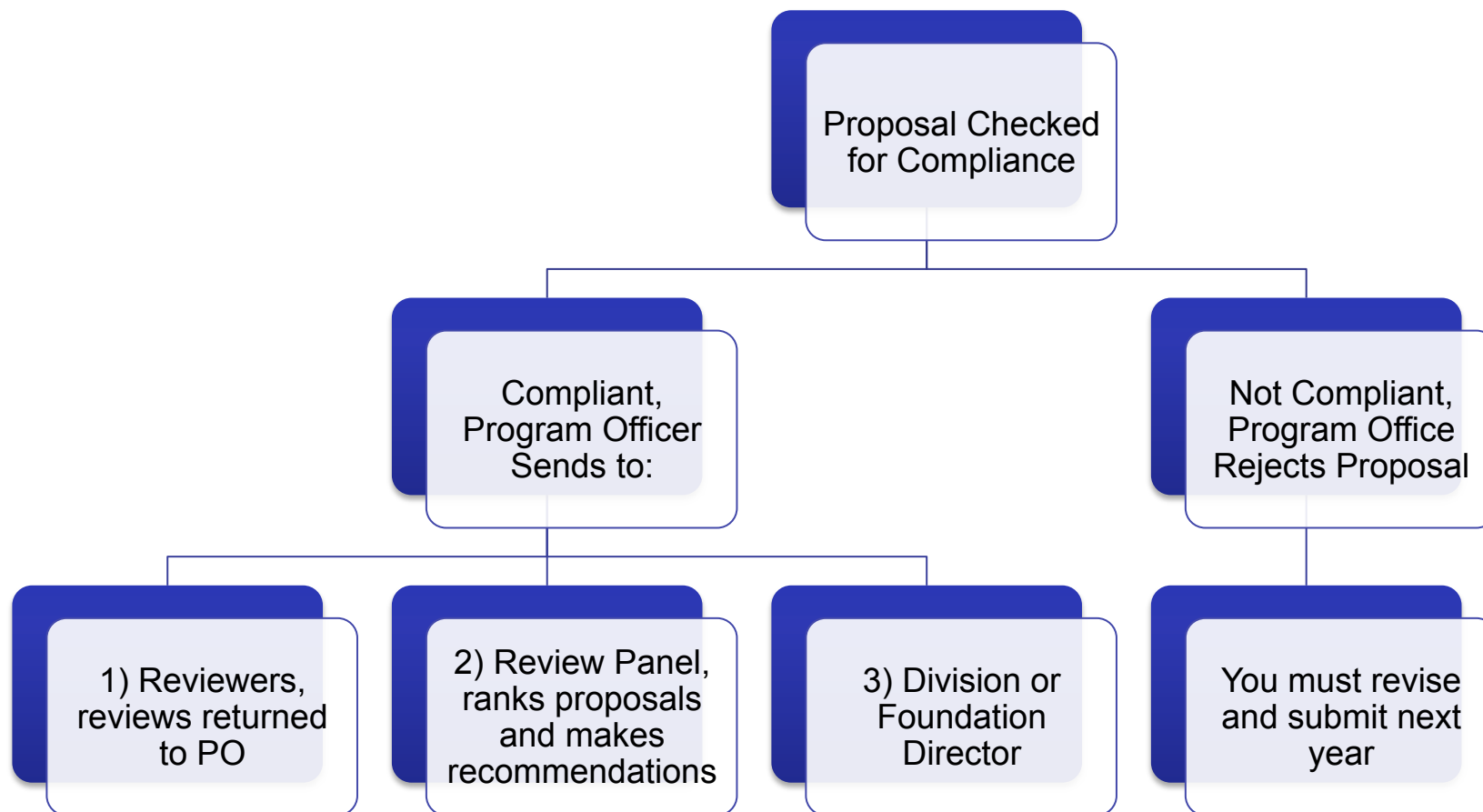


AFTER PROPOSAL SUBMISSION

LIFECYCLE OF A PROPOSAL



Upon Arrival



NSF Merit Review Criteria



Intellectual Merit

- Advancing knowledge and understanding
- Proposer qualifications (and results of prior work)
- Creative and original concepts?
- Conception and organization
- Resources

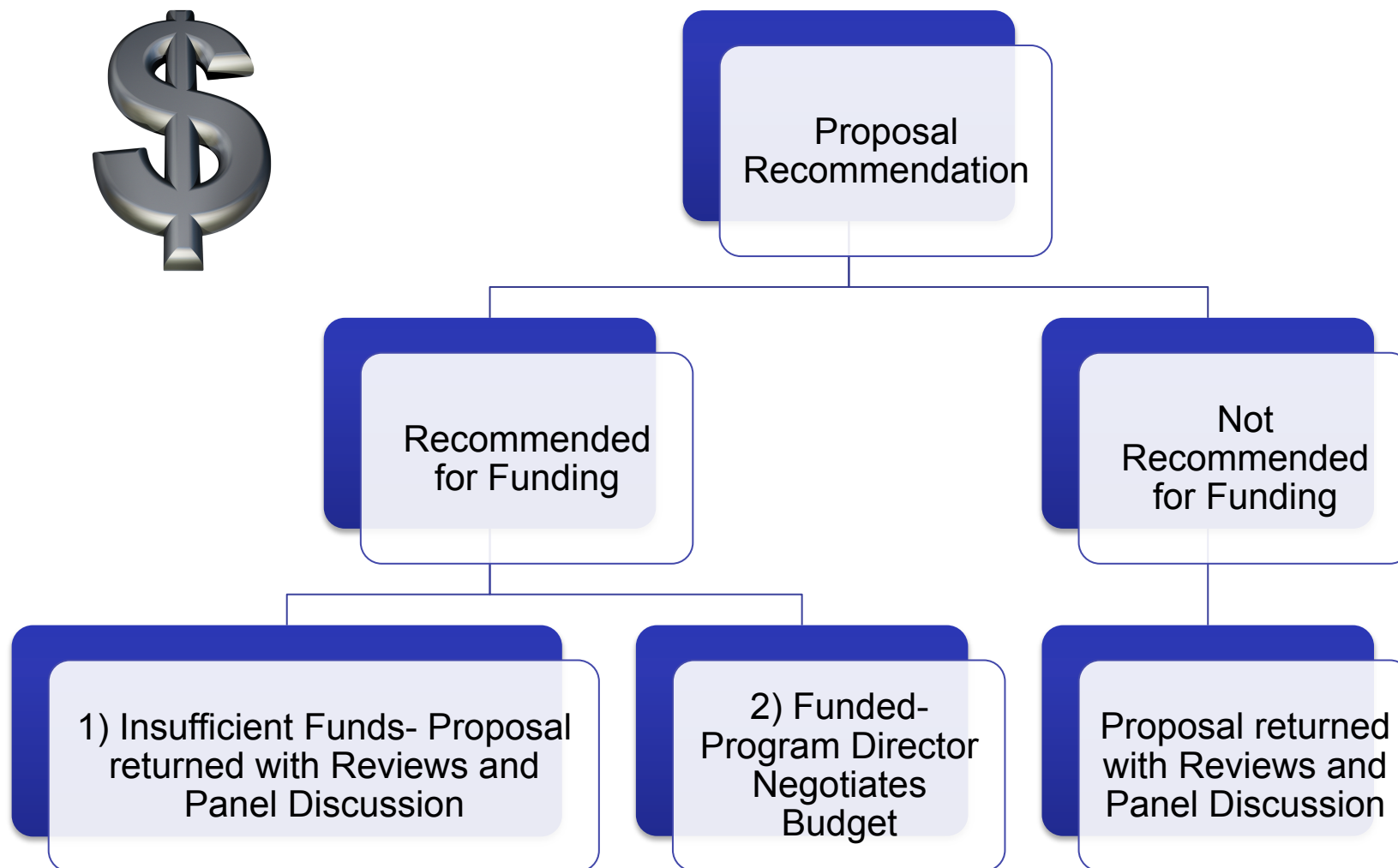
Broader Impacts

- Promoting teaching, training and learning?
- Broaden the participation of underrepresented groups
- Enhance the infrastructure for research and education (facilities, instrumentation, networks and partnerships)
- Broad dissemination
- Benefits to society

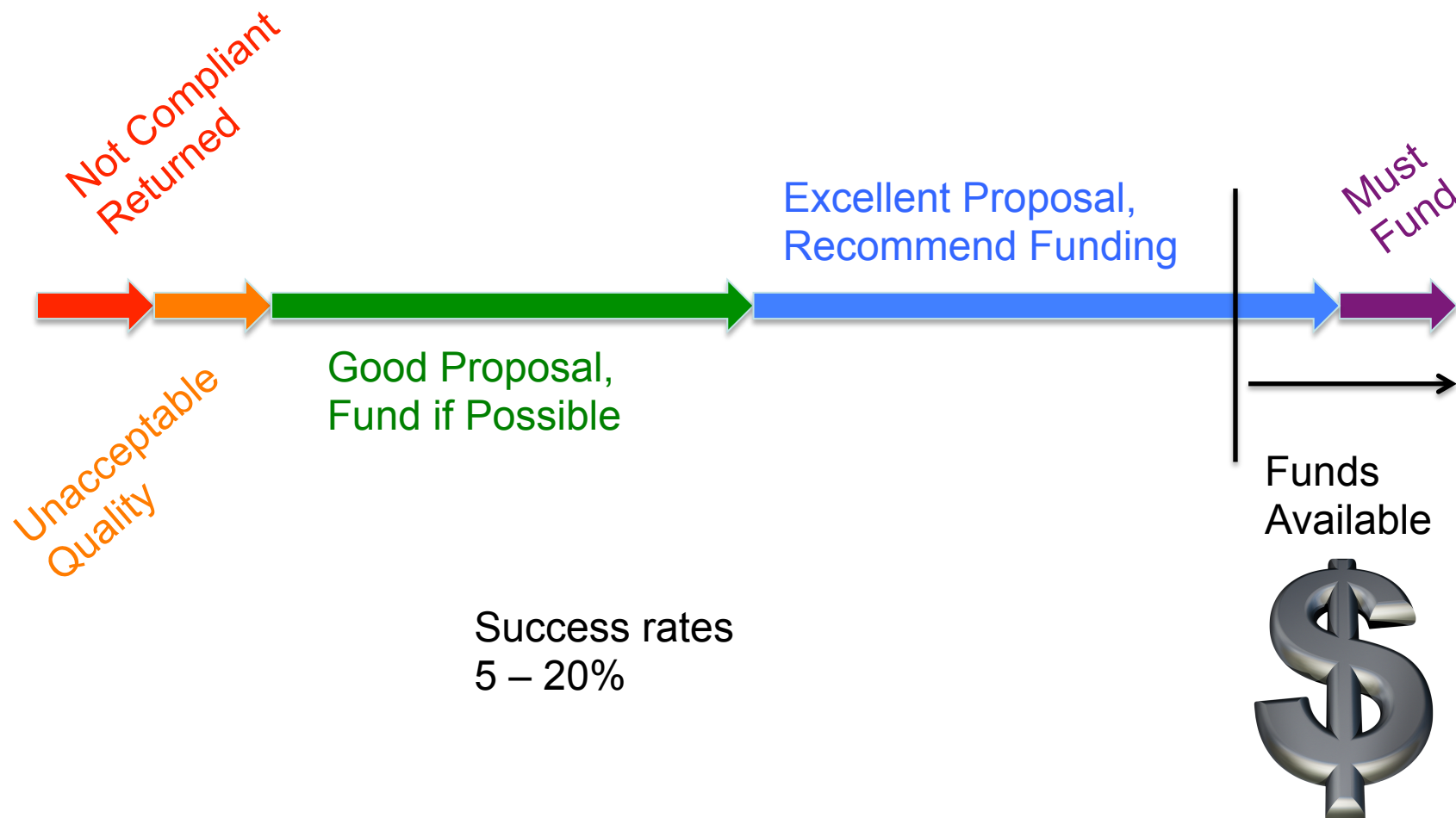


Typical NSF Panel Review Meeting

Upon Arrival



What are your Chances?



Break Time!

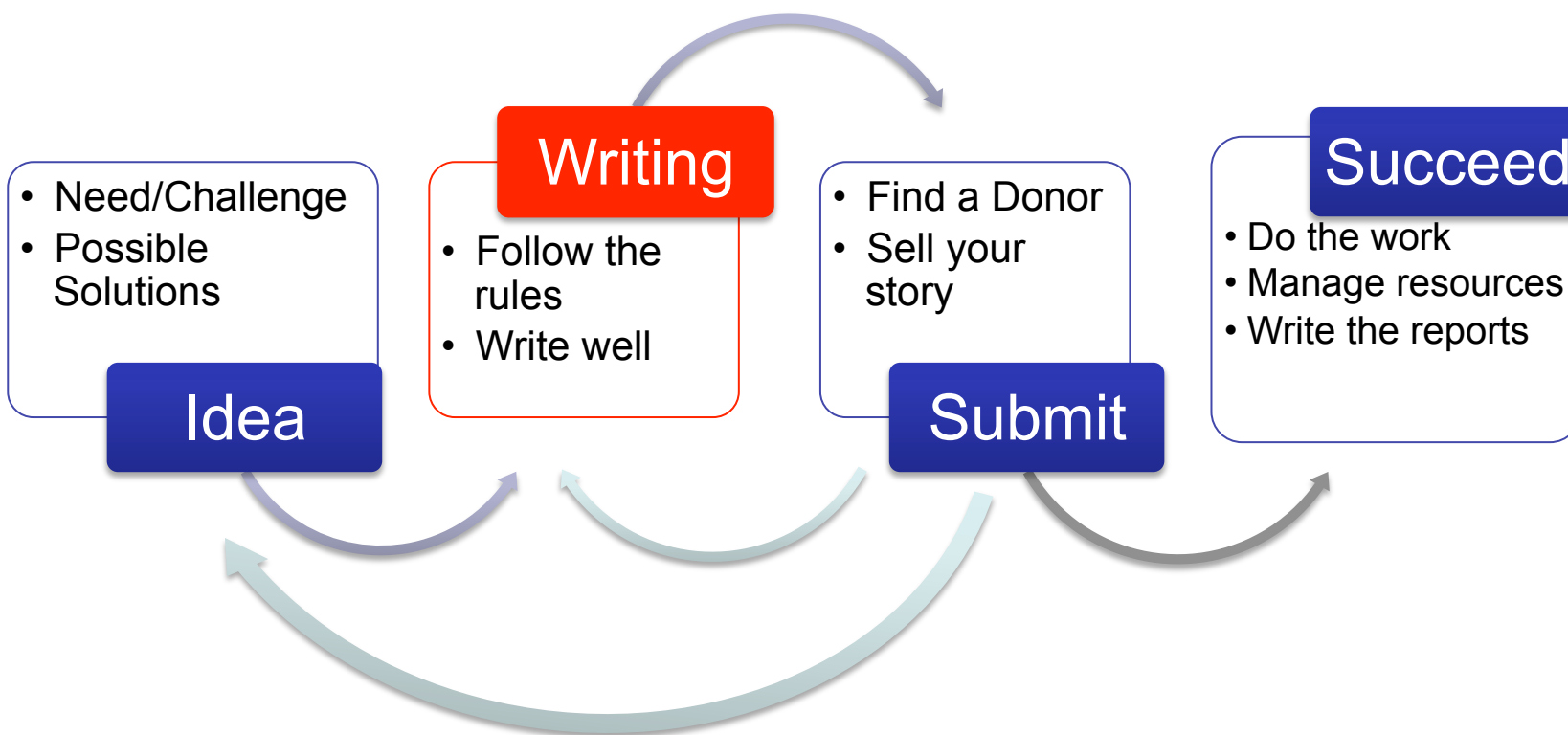


- Please return in 15 minutes.
- Next Topic: Writing the Proposal

“There is no grantsmanship that will turn a bad idea into a good one, but there are many ways to disguise a good idea.” - Norm Braverman, NIH

WRITING THE PROPOSAL

LIFECYCLE OF A PROPOSAL



Project Description – The Outline



From the NSF Grant Proposal Guide:

“The Project Description should outline the general plan of work, including the broad design of activities to be undertaken, and, where appropriate, provide a clear description of experimental methods and procedures. Proposers should address **what** they want to do, **why** they want to do it, **how** they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified. These issues apply to both the technical aspects of the proposal and the way in which the project may make broader contributions.”

General Writing Hints



- Make it EASY for reviewers to read and follow your arguments
- Make your proposals look good
- Write to the funding source
- Write in the correct language of the field - but no jargon
- **Never** write in 1st person
- Make points forcefully, but don't overstate significance
- Write to inform
 - don't use language that is biased
- Write to persuade
 - data from reputable source
 - use current data
 - establish credibility
 - No unsubstantiated opinions

What Reviewers Look For



- What is this person planning to do? (State the problem and hint at the solution in the first paragraph)
- Why is it important?
- Is it innovative? (Innovation is an essential ingredient in proposals today.)
- How is this person going to do it? (Do you propose to use the right tools?)
- Does this person have the skills to succeed?
- Has this person made the case?

Parts of a Proposal



- Cover (or Title Page)
- Table of Contents
- Abstract
- Project Description
 - Statement of problem
 - Goals and Objectives
 - Methodology
 - Qualifications
- Evaluation plan
- Dissemination plan
- References
- Budget and justification
- Vitae
- Other
 - Facilities available
 - Misc. Forms
 - Letters of support or commitment

Title

- Must explain the topic to be addressed
- Often used to assign to review groups
- The reviewers first impression!
- Titles should be:
 - short
 - simple
 - interesting
- Look over the title you wrote earlier, can you improve it?

Abstract



- A stand alone description of the entire proposal
 - It may be all a reviewer reads
 - Cover all major proposal elements
 - Write in 3rd person
 - Intelligible to a non-specialist
 - No acronyms
- Follow length and formatting guidelines
- Must be clear, concise and compelling

- Rewrite your paragraph as an abstract and discuss with your group.

Project Description – The Problem Statement



- Show that you understand the problem
- *Document* that this is an important problem to solve
- Clearly describe the aspects of the problem that your project will address, and what gaps this will fill
- Describe the theoretical or conceptual basis for your project and your knowledge of the issues surrounding your proposed project
- Demonstrate that your approach is creative or innovative
- Anticipate the problems you may encounter and how you will address them
- Describe how this project fits into the already existing goals of the organization or of the particular program
- Write a one or two paragraph problem statement and discuss with your group

Break Time!



- Please return in 15 minutes.
- Next Topic: Goals and Objectives

Project Description – Goals and Objectives



- Will have
 - one or two goals
 - several objectives related to the goals
 - many methodological steps to achieve each objective
- The objectives state the essence of the proposed work in terms of **what** will be accomplished.
- Break the goal down to specific measurable pieces, the outcomes of which can be measured to determine actual accomplishments.

Project Description – Methodology



- What specific activities will allow you to meet your objectives
- Task oriented, specific, detailed
- Essential that you demonstrate all the steps necessary to complete project with each flowing logically from the previous to the next
- Walk the reader through your project
- Describe the activities as they relate to the objectives
- Develop a time line

Project Description – Methodology



- If methodology is new or unique explain why it is better than that previously used
- Specify research design and why it was chosen
- Include descriptions of variables and their relationships
- Define all important terms
- Describe all procedures
- Include pilot instruments and data when possible
- Step-by-step work plan

Thank You!



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