# Writing More Effective Grant Proposals
# NSF Project Summaries

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# NSF Project Summary: Grant Proposal Guide

THE NATIONAL SCIENCE FOUNDATION

PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE

Part I - Grant Proposal Guide

**NOTE**: new Grant Proposal Guide went into effect December 26, 2015.

# NSF Project Summary: Proposal Development Guide

**b.** **Project Summary**

Each proposal must contain a summary of the proposed project not more than one page in length. The Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity.

The overview includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed. The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.

The Project Summary should be written in the third person, informative to other persons working in the same or related fields, and, insofar as possible, understandable to a scientifically or technically literate lay reader. It should not be an abstract of the proposal.

If the Project Summary contains special characters it may be uploaded as a Supplementary Document. Project Summaries submitted as a PDF must be formatted with separate headings for the overview, statement on the intellectual merit of the proposed activity, and statement on the broader impacts of the proposed activity. Failure to include these headings may result in the proposal being returned without review.

# NSF Project Summary: The Format

Each proposal must contain a summary of the proposed project **not more than one page** in length.

The Project Summary consists of:

- an overview
- a statement on the intellectual merit of the proposed activity
- a statement on the broader impacts of the proposed activity

# NSF Project Summary: The Format

*"Proposals that do not contain the Project Summary, including an overview and separate statements on intellectual merit and broader impacts, will not be accepted by FastLane or will be **returned without review**."*

- A quote from the PREVIOUS NSF Grant Proposal Guide.
- UM ORSP believes this warning still applies.

# NSF Project Summary: The Overview

*"The **overview** includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed."*

- Who       who will conduct the project
  *e.g., Physicists and Chemists*
- What       what will be accomplished (objectives)
  *will characterize the behavior of X in condition Y*
  *will develop a new course in X characterization*
- Where       where is the team; where will they work
  *from the University of MS will travel to LIGO…*
- How       how will they do it (methods)
  *using computer modeling and lab experiments*

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# NSF Project Summary: The Overview

*"The **overview** includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed."*

Think of this in terms of your opening statement.

- Concise
- Memorable
- Easy to understand

- The lens through which the rest of your proposal will be viewed.

# The Overview: Examples

*"The project will develop a framework for the design, construction, testing, and optimization of dynamically tunable, ultra-thin metamaterial cloaks for shrouding arbitrarily shaped, complex objects from terahertz and microwave radiation."*

# The Overview: Examples

*"A light scattering instrument will be acquired and operated at the University of Mississippi. The new instrument will enable UM investigators and collaborators in disciplines ranging from Chemical and Civil Engineering, to Chemistry, Biochemistry, and Pharmacology to elucidate the relationship between solution structure and resulting material properties at the nanometer scale."*

# NSF Project Summary: Intellectual Merit

*"The statement on **intellectual merit** should describe the potential of the proposed activity to advance knowledge."*

- What is the problem/knowledge gap
- What is your great idea
- How is it different from what has been done
- How will it advance/transform knowledge

Think in terms of what will be publishable in peer reviewed journals.

# NSF Project Summary: Broader Impacts

*"The statement on **broader impacts** should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes."*

Broader Impacts: Will the project….
- Utilize activities that are directly related to specific research projects
- Utilize activities that are supported by, but are complementary to the project
- Fully engage women, persons w/ disabilities, & underpresented minorities
- Improve STEM education and educator development at any level
- Increase public scientific literary and public engagement w/ science & technology
- Improve well beings of individual in society
- Develop a diverse, globally competitive STEM workforce
- Increase partnership between academia, industry and other
- Improve national security
- Increase economic competitiveness of the United States
- Enhance infrastructure for research and education

## NSF Project Summary: Broader Impacts

Do not confuse broader impacts with education and outreach activities.

- Your proposal may have research objectives, educational objectives, service objectives, or some combination.

- In achieving your research, educational, or service objectives, or through related activities, you might ALSO achieve a side benefit that is not something you can necessarily publish. If so, that is a broader impact.

# Broader Impacts: Underrepresented Groups in STEM

One way to make a broader impact is by actively involving individuals from groups historically underrepresented in STEM degree programs and careers.

NSF defines these groups as follows:

- African Americans
- Women
- Hispanics
- Native Americans
- Native Alaskans and Hawaiian Islanders
- Persons with Disabilities

# Broader Impacts: Be Specific

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The PI has mentored four high school, nine undergraduate, and four graduate students to date, over 50% of whom are from underrepresented groups and this commitment will continue during this project period.

# Be Specific: Example Broader Impacts Statements from Actual Successful UM Grant Applications

Mississippi leads the nation by far in the percentage of residents who are African Americans: 37%. (Louisiana is second next at 32%).

At the University of Mississippi, over the past 10 years (2002-2011), minority enrollment has increased by 78.9 % and African-American enrollment is up 84.0%. Last fall, 24.2% (nearly one in four) of UM students were minorities and 16.5% were African-American.

The team will develop a K-12 outreach program of science demonstrations at the North Panola high school, North Panola Junior high school and Green Hill elementary schools. 97% of the students at these schools are African American and 87% qualify for free lunch programs. Through this outreach program, students will be recruited into high school, undergraduate and graduate research programs.

# Broader Impacts Statement: Examples

*"The project will enhance, and include more opportunities for undergraduate research into, electrical engineering course curricula at two universities; strengthen the research and education collaboration network between the two universities; improve science literacy at both institutions and in the general public; engage graduate and undergraduate students in research; and help prepare a more diverse STEM workforce in two states with very high percentages of underrepresented minorities—African Americans in Mississippi (37%), and Hispanics in Texas (32%)."*

# Broader Impacts Statement: Examples

*"Over the project period, approximately 100 undergraduate students (including ~40 women and ~30 African Americans) will gain working familiarity with or appreciation of the capabilities of the acquired instrument through its integration into three UM undergraduate courses; whether or not these students advance into research careers in STEM, they will be more scientifically literate from the experience, and better able to both appreciate and articulate the importance of science in society."*

# NSF Project Summary: Third Person

*"The Project Summary should be written in the **third person**."*

- Can be active or passive voice:
    - *A team of chemists at the University of Mississippi will do X.* (3rd person active voice)
    - X will done by the project team to discover Y. (3rd person passive voice)

- However, the Project Description *may* be written in 1st person, and *should* be written with *active voice*.
    - *We will study X. We will then model Y.*
    - *I will do this and look for that.*
    - *The team will accomplish objective A.*

# NSF Project Summary: Understandable by Lay Readers

*"The Project Summary should be be informative to other persons working in the same or related fields... and...insofar as possible, understandable to a scientifically or technically literate lay reader."*

- Avoid using jargon
- If you must use jargon, define it first
- Save more technical language for the Project Description (and define it there, too)
- Ask a colleague from another department/discipline to read your summary and ask if they understand it
- Ask a family member or friend if they understand it
- Ask a peer within your department/discipline to read it. Do they find it informative?

# NSF Project Summary: Not an Abstract

*"The Project Summary… should **not be** an abstract of the proposal."*

- Refer to the work that will be accomplished, not the proposal sections that will follow.

- Fast forward to the end of the project period. What do you hope will have been accomplished? Write that.

- Try not to give the problem background in the summary; save that for the project description.

# The Overview: Examples (A Bad Overview Statement)

*"In 2010, then Mississippi Governor Haley Barbour negotiated with AT&T to create the Mississippi Optical Network (MissiON). In this proposal, we describe our vision to use NSF funds to upgrade MissiON, a regional higher education research network. The plan is to: 1) increase aggregate connectivity through the Internet2 POP from 10Gbps to 100Gbps; 2) incorporate for the first our state's Mississippi's 15 community colleges; and 3) incorporate (and connect for the first time to Internet2) a regional university from the Delta. We plan to enable greater participation in data-intensive research across our state.*

Exercise: What is wrong with this overview statement?

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Exercise: What is wrong with this overview statement?

# The Overview: Examples (a BETTER Overview)

*"The Mississippi Optical Network (MissiON), a regional higher education research network, will be upgraded to: 1) increase by ten the bandwidth of MissiON's connection to a national research network—Internet2; 2) incorporate for the first time Mississippi's 15 community colleges; and 3) incorporate (and connect for the first time to Internet2) a regional university from the Mississippi Delta.  The enhanced network will enable greater participation in data-intensive research by faculty and students from these community and regional colleges, and enhanced data-intensive collaborations between Mississippi's research-intensive institutions and their partners across the national research enterprise."*

# Outreach/Education Objectives vs. Broader Impacts

- The PI's team, which currently includes 5 senior Native American women students, will build a traveling "TickMobile" that, over the project period, will be used to show 1,000 kindergartners in Northeast Mississippi how to safely extract ticks from themselves or other children on the playground.

- The PI will develop and, with the Center for Math and Science Education (CMSE), conduct a "Tick Engineering Camp" over three summers, through which she will recruit future students into undergraduate engineering programs. Over the last 5 years, attendees at CMSE camps have included 50% African Americans and 50% women/girls.

Exercise: Identify potential broader impacts from these objectives.

# NSF Project Summary: in FASTLANE

Three TEXT BOXES are provided:

- Overview
- Intellectual Merit
- Broader Impacts

Information must be entered into all three text boxes, or the proposal will not be accepted.

# NSF Project Summary: in FASTLANE

What is the limit on the total number of characters allowed <u>for the Project Summary</u> (i.e., the sum of the three boxes)?

- The character limit is 4,600 characters in total for all three text boxes.

- The proposer may determine how many characters to use in each text box, but the sum of characters across the three text boxes must not exceed 4,600.

- You must ALSO check to ensure that the printed version of the Project Summary does NOT EXCEED 1 PAGE. **Fastlane will NOT do this check.**

# NSF Project Summary in FASTLANT: Special Characters

- IMPORTANT—Fastlane Text Boxes do NOT allow for "special characters"

- Most proposers will not need to use special characters, e.g., mathematical symbols or Greek letters.

- IF special characters are required, then upload the Project Summary as a Supplementary Document and check the box to indicate this.

- The Project Summary may ONLY be uploaded as a Supplementary Document if the use of special characters is required.

# NSF Project Summary in FASTLANT: Special Characters

- Project Summaries submitted as a PDF must be formatted with separate headings for the overview, statement on the intellectual merit of the proposed activity, and statement on the broader impacts of the proposed activity.

- Failure to include these headings may result in the proposal being returned without review.

- DO NOT use the "special characters" option to bypass the 4600-character limit

# NSF Project Summary: in FASTLANE

FastLane.A1Proj1Text - 1

https://www.fastlane.nsf.gov/servlet/FastLane.A1DetailForm

Google
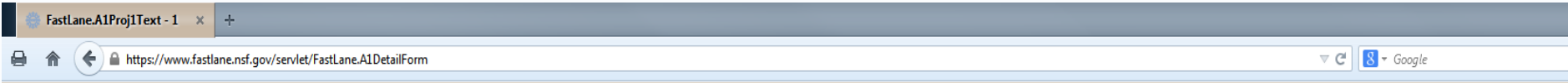
FORM: FastLane.A1Proj1Text

**Project Summary**
*Instructions for Preparation of the Project Summary in FastLane

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**Proposals that do not contain the Project Summary, including an overview and separate statements on intellectual merit and broader impacts, will not be accepted or will be returned without review.**

What should I enter in each of the three text boxes?

**Overview:** Insert a self-contained description of the activity that would result if the proposal were funded and include a statement of objectives and methods to be employed.

**Intellectual Merit:** Describe the potential of the proposed activity to meet the Intellectual Merit criterion

**Broader Impacts:** Describe the potential of the proposed activity to meet the Broader Impacts criterion

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☑ Check here if your Project Summary is uploaded as a Supplementary Document.

# NSF Project Summary: Make a Good 1ˢᵗ Impression



OR