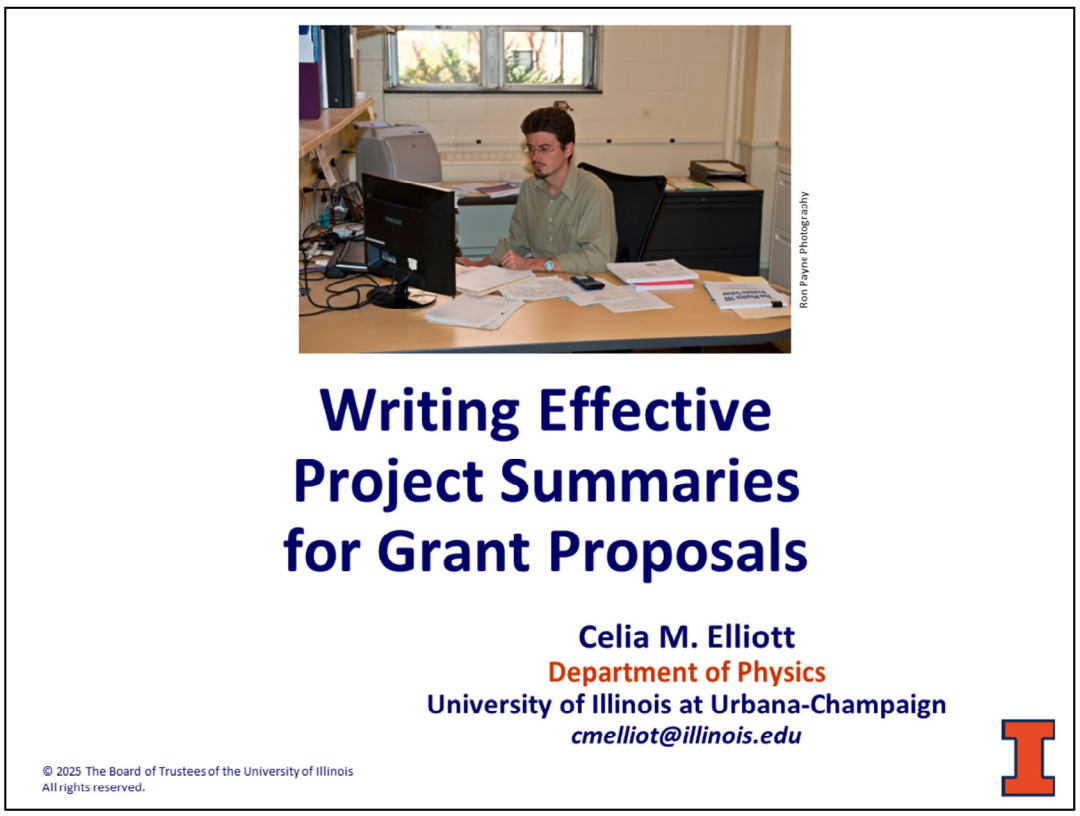


Caveat lector!

1. I am a science writer, technical editor, and research administrator, not a scientist. Further, all my experience in proposal writing has been in physics and nuclear engineering. I think the advice I offer is generally applicable to the physical sciences, but the customary practices in your specific field may differ.

2. Anything I say today is trumped by the general agency guidelines, the instructions in the specific solicitation announcement, and the advice of the cognizant program officer.

First, let's define our terms—
a project summary *is*

a stand-alone document
in a formal multi-part proposal
that explains the goals, methods, and expected outcomes of the project

A project summary is *NOT* a scientific article—

2

Emphasize *meaning*, not technical details, in the summary.

Image taken from *Physical Review* **43**, 491 (1933).

First, let's define our terms—
a project summary *is*

a stand-alone document
in a formal multi-part proposal
that explains the goals, methods, and expected outcomes of the project

A project summary is *NOT* a scientific article—think of it as a *prospectus
why the funding agency should invest in your research

Different agencies call this document different names (abstract, executive summary), and they all have their own rules

3

A prospectus is a document provided by a business to potential shareholders that explains why it's a good idea to invest money in the business. Think about it—a proposal is a request for a funding agency to *invest* in you and your team.

Use all three elements of persuasive argument—logic, authority, and passion—in your project summary.

For more about the role of persuasion in science, see
http://people.physics.illinois.edu/Celia/Persuasion.pdf.

The project summary does for the full proposal what a picture postcard in the museum gift shop does for a famous painting

Project Summary

Project Description

P. Gaugin, *The Swineherd*

It's a miniature version of the full proposal

4

An effective project summary includes all the elements of the full proposal—the motivation, the methods, the expected results, the significance of the work, and the benefit to the funding agency.

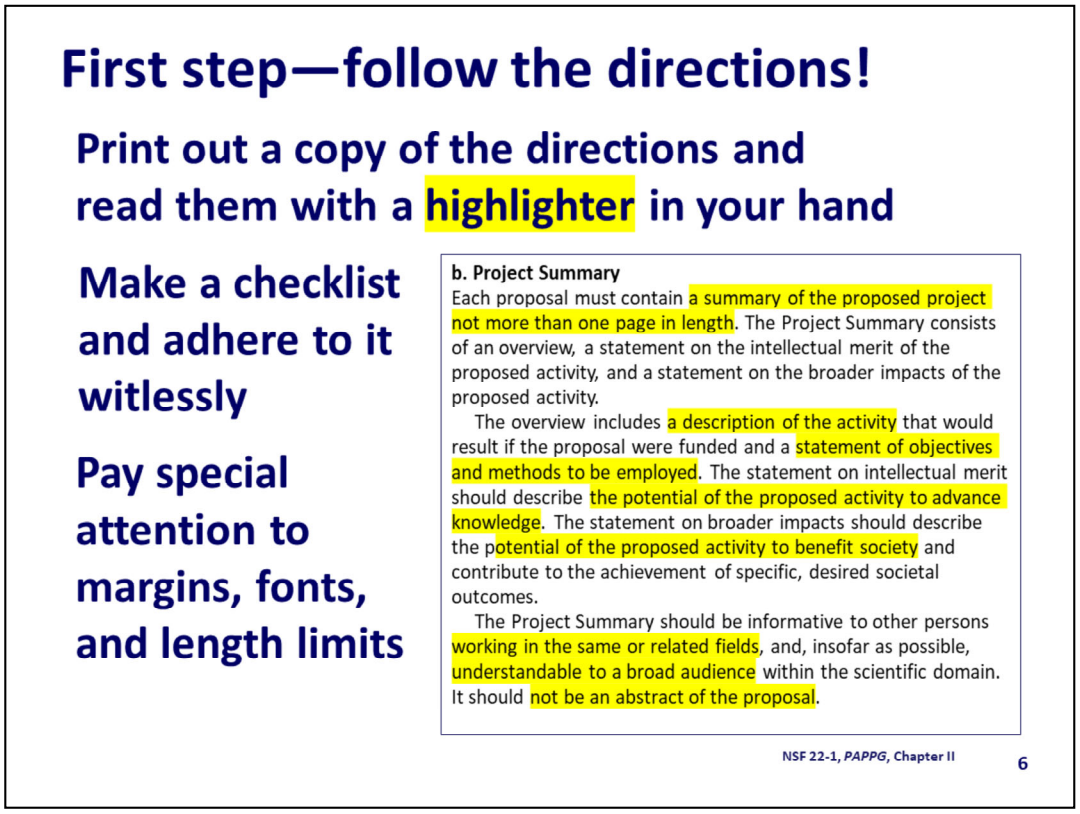
The project summary will probably be the first thing most reviewers read…

and it may be the *only* thing that some reviewers read!

5

A program officer will typically decide whether your proposal is responsive to the call and is worth formally reviewing based on his/her reading of the project summary.

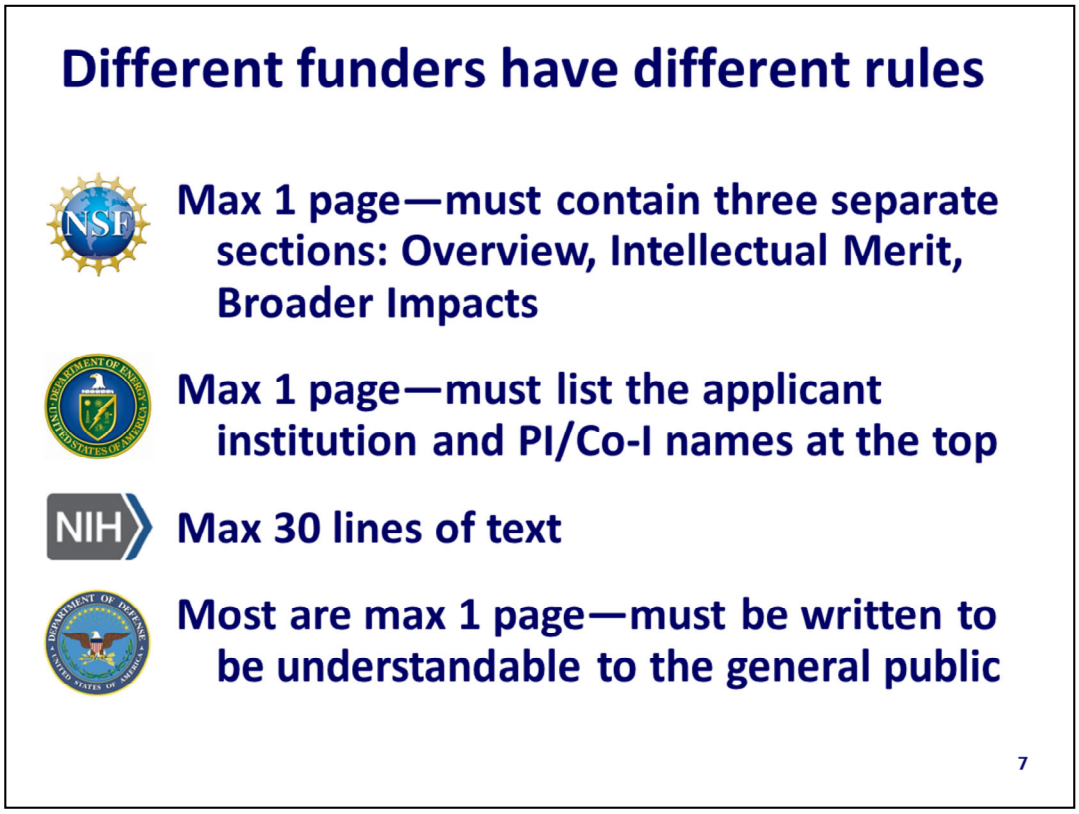
Funding agencies are increasingly using multi-person panels to review groups of proposals simultaneously; not everybody on the panel, who ultimately decides what gets funded, may read your proposal in detail. Many panelists will make a decision to fund or not fund based on the project summary.



A truly astonishing number of proposals are returned without review every funding cycle because of "technicalities." The science might be brilliant, but no reviewer ever even *sees* it because the proposer failed to comply with the most basic instructions on how to prepare and submit his or her proposal.

Make sure you know what the rules are. And don't just assume you know what they are, or that if you got away with doing it this way the last time you submitted a proposal, you can do it again without checking.

If you don't know what the rules are, look them up. If you're sure you know what the rules are, look them up anyway—you will learn humility. Most funding agencies release their proposal requirements every 12 to 18 months, and the rules may change with each new release.



Different agencies have different rules for project summaries, and individual program announcements may supersede the agency's general rules for proposal preparation.

The project summary may be separated from the rest of the proposal and read independently.

It may have to be submitted via a form interface that accommodates text only.

It is almost always character-, word-, or line-limited.

Eschew jargon. Write the project summary for a generalist. Emphasize the *meaning*, not the technical details.

Rule #1 of George Heilmeier's catechism for proposers:

"What are you trying to do? Articulate your objectives using absolutely no jargon."

G. Heilmeier, "Some reflections on innovation and invention," Founders Award Lecture, National Academy of Engineering, Washington DC. (Sept. 1992)

For the rest of the catechism (superb advice for proposers):

http://en.wikipedia.org/wiki/George_H._Heilmeier or

http://people.physics.illinois.edu/Celia/Heilmeier.pdf

Quiz Question #1

How important is the project summary to the success of your proposal?

a) Not as important as the technical description

b) Not as important as the overall budget

c) Not as important as having a novel method

d) Not as important as having a well-qualified team

9

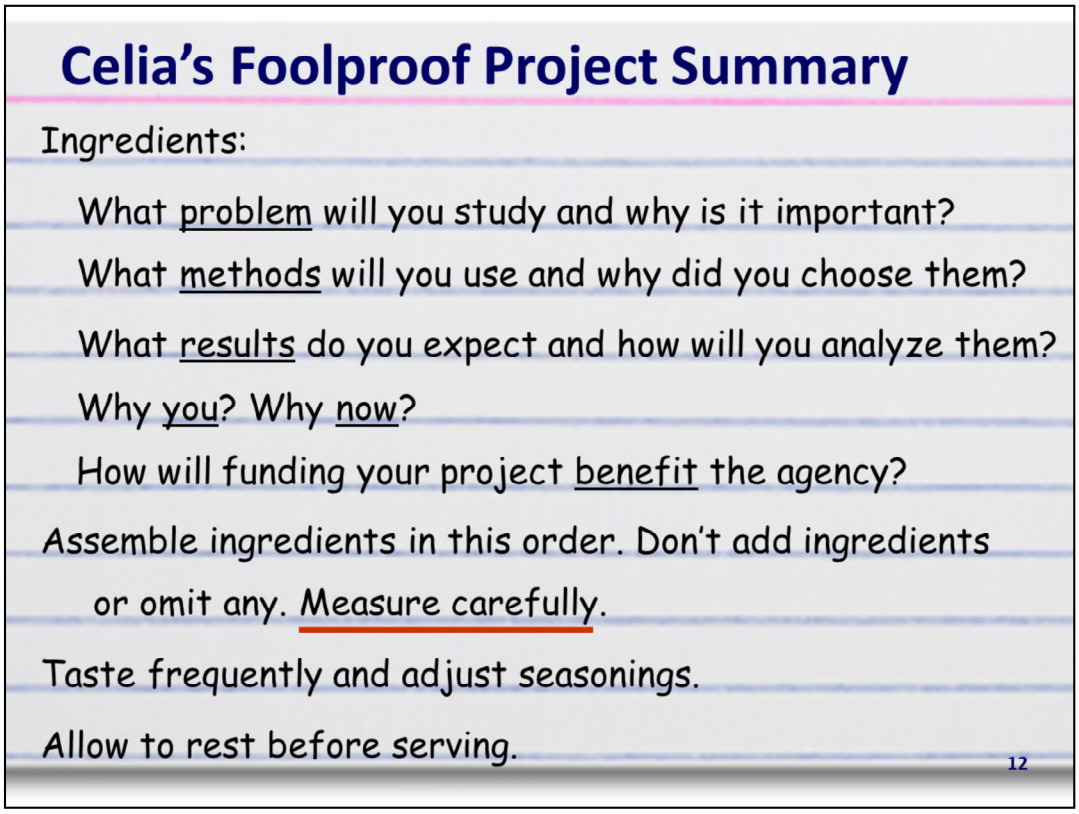
Answer: None of the above

An effective project summary is *critical*

You may be able to recover from a poorly conceived, badly written summary, but you'll have a big hole to climb out of

If your summary is not compliant with agency rules, your proposal may not get reviewed at all

10



Control the length of the summary by the length of the answers to the five questions. Don't omit any of the questions, and don't add superfluous information.

Short summary?—one-sentence answers
Longer summary?—several-sentence answers

"Measure carefully" in two dimensions:

1. Be sure your summary complies with length limits, font sizes and types, and margins.
2. Make your summary as specific and *quantitative* as possible.

Don't expect to whip up a good summary** at the last minute. Write it, put it aside for a day or two, and look at it again with fresh eyes. Get advice from senior people in your department, and from people who are not experts in your narrow slice of science. *Listen* to what they tell you.

**or anything else

Don't write a partial summary

Describe the *entire* project:

- goals and objectives
- methods, data analysis, metrics
- qualifications of the team
- unique resources
- benefit to the funder
- significance to science and society

Omissions and ambiguities in the project summary

- raise immediate questions in reviewers' minds
- about the whole project

13

Don't assume all reviewers will be an expert in your narrow field—some will, but some won't, and they may all have equal votes

Advice from NIH:

"This section should be informative to other persons working in the same or related fields and insofar as possible understandable to a scientifically or technically literate reader."

14

Get rid of irrelevancies; eliminate introductory fluff*

Project summaries are always constrained by word or page limits; make every word *count*

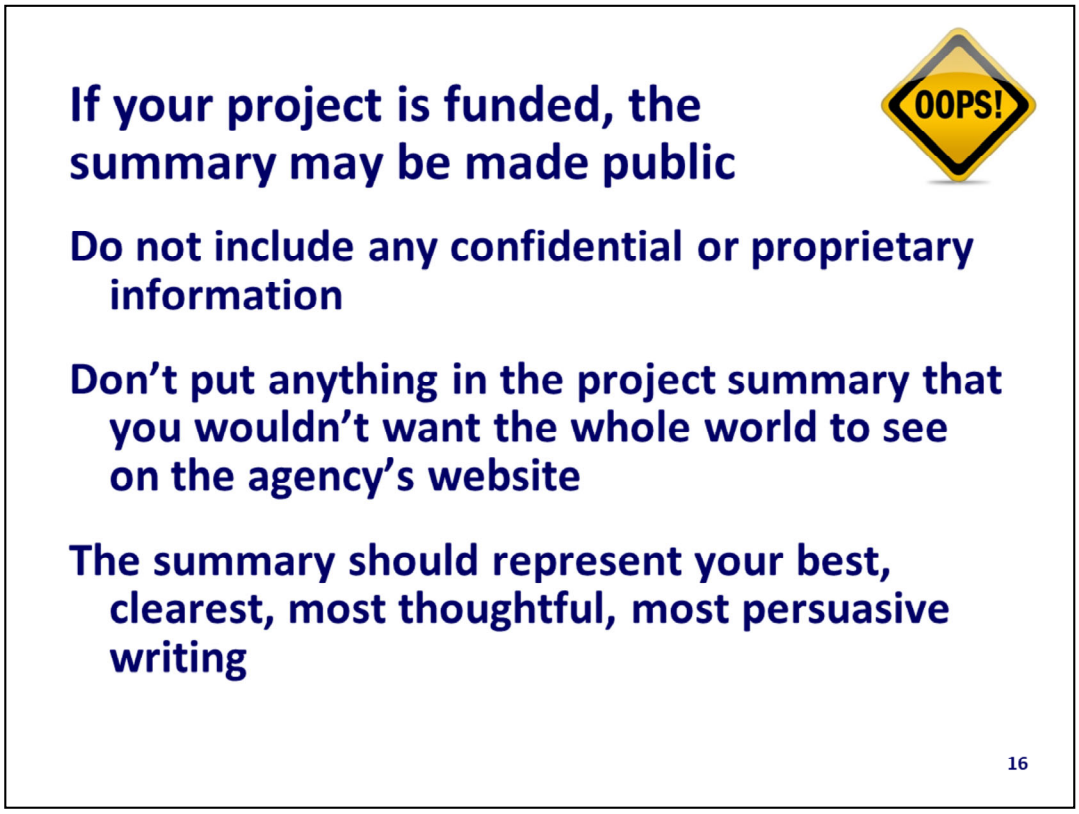
Don't waste precious space on any idea that is not directly relevant to your project, no matter how "interesting" it might be

Delete, rephrase, clarify, quantify

***In fact, eliminate all fluff; reviewers appreciate conciseness**

15

For more information on eliminating fluff in scientific writing, see http://people.physics.illinois.edu/Celia/Lectures/Fluff.pdf.



For most proposals, you may include confidential or proprietary information in the technical narrative if it is essential to understand and evaluate the project being proposed. If you include confidential information, the cover page must be so marked, and the confidential text on each page must be set off from the rest of the narrative and identified as such. The government will then redact the confidential information before sending the proposal out for external review.

Note that only the project description may contain confidential or proprietary information—the project summary must not.

To recap…

- **Follow the rules—witlessly**
- **Use the five-ingredient recipe**
- **Aim for the three C's: *clear, concise, compelling***
- **Write for a generalist—emphasize *meaning;* don't get bogged down in technical details**
- **Leave out proprietary information**
- **Plan for time to revise and polish—your summary must be *perfect!***

cmelliot@illinois.edu

Sources of good advice and further reading/watching:

"Getting Funded," *Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty* (Burroughs Wellcome Fund and the Howard Hughes Medical Institute), 2nd ed. (2006), pp. 153-174. Downloadable free-of-charge from http://www.hhmi.org/resources/labmanagement/downloads/moves2_ch9.pdf.

NIH Grant Review Process YouTube Videos

http://public.csr.nih.gov/aboutcsr/contactcsr/pages/contactorvisitcsrpages/nih-grant-review-process-youtube-videos.aspx

"NIH Peer Review Revealed" provides a fly-on-the-wall perspective of an NIH review panel meeting.

"NIH Tips for Applicants" and "Top 10 NIH Peer Review Q&As" offer practical advice for both novices and veterans.

Annotated video transcripts are available for all NIH videos.

NIH *Center for Scientific Review* "Answers for Applicants"
http://public.csr.nih.gov/FAQs/ApplicantsFAQs