

Reviewing Your Proposal's Reviews: A Learning Experience

**2007 Spring National SBIR Conference
North Carolina
May 2, 2007**

Presenter

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My Background

- 27 years of SBIR competition (including NSF pilot)
- Have presented at 50+ national SBIR meetings
- Have contributed to more than 1600 SBIR/STTR proposals since 1980
- Have studied more than 2000 proposal reviews
- Have learned (the hard way) the value of the **PROCESS** of putting together a competitive SBIR/STTR proposal

My Background (contd)

- Developed and managed the proposal process at Bend Research, where we won 175 of 350 SBIR's submitted, and 83% of Phase II's submitted
- Have a proposal hit rate of about 50% when substantively involved in the entire proposal process
- Received D's in Sportsmanship in grade school:
I hate losing....
- Received much better grades in fiction-writing... hence, SBIR's and STTR's.

Session Goal

- Present some of what I have learned from more than 2000 reviews about being **competitive** in the SBIR/STTR Programs—and discuss what **you** can learn from the reviews you receive.
- Boost your learning curve.

With Proposal Reviews, You See Something New All The Time

- Here's one I saw just last week that puts a new twist on things:

“The abstract is very clearly written, which makes it fairly easy to determine that there is little innovation or technical value in what's proposed.”

Reviews Help Us Understand the SBIR/STTR Playing Field

Lots of folks talk about THE SBIR Program or THE STTR Program... but there is no such thing.

*It is essential to understand the
similarities and differences.*

Key Differences to Keep in Mind

- Solicitation differences—wide diversity in topics/areas of interest as well as review criteria and projects funded
- Budget differences—and therefore **SCOPE** differences
- **Grant** agencies (mostly external, academic “peer” reviewers) vs. **contract** agencies (mostly in-house staff)
- Different pre-review/sorting/triage processes
- Various levels of genuine interest in commercial potential
- **Very different reviewers and review processes**

Example of Agency Differences In Terms of Reviews & Reviewers

- Grant reviews (459 lines of text on two proposals)
 - Primary reviewers—131 and 106 lines of text
 - Second reviewers—64 and 85 lines of text
 - Third reviewers—33 and 40 lines of text
- Contract reviews (65 lines of text on two proposals)
 - Primary reviewers—13 and 15 lines of text
 - Second reviewers—7 and 28 lines of text
 - Third reviewers—none

Learning from Reviews

Proposal reviewing is a very human process, and therefore an imperfect process.

Success is all about your credibility. (And the luck of the draw. And humidity and wind direction. And turbulence on flights to Washington. And bad coffee in the conference room. And....)

Examples of Reviewer Comments on the Same Proposal

- “This proposal is clearly written and has well-defined objectives.”
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- “The proposal is rife with jargon and unexplained technical babble: what, for instance, are ‘current optimal interpolation nowcasts’ or ‘circulation model predictions’? Also, the problem being addressed is poorly stated.”

Examples of Reviewer Comments on the Same Proposal

- “The proposal is extremely innovative. The work clearly moves beyond the state of the art. The idea is challenging but a breakthrough it certainly possible, and the applicant has a thorough knowledge of the area.”

- “This is a very weak proposal. It completely ignores the vast body of knowledge in the literature...and does not build upon the current state of the art. It lacks innovation, and is unlikely to result in success.”

Reviews and Reviewers Are Part of the SBIR/STTR Playing Field

- Proposal reviewers are like referees and umpires in other competitive arenas where outcomes rely on human judgment calls.
- You typically should avoid watching laws being made, sausage being made, or proposals being reviewed....
- You have to decide if you want to play.
- **If you do play, reviews can teach you a lot.**

Learning from Proposal Reviews

- Reviews teach you how to think about proposals and the stated review criteria.
- From studying reviews (others and your own) you can begin to learn how to anticipate typical reviewer reactions and expectations—especially as they differ among agencies.
- Learning from reviews is an imperfect science.

Learning from Proposal Reviews

- Problems highlighted by or praise offered (it does happen) by reviewers reflect your relative success in **getting ready to write** your proposal.
- If you have done the needed **homework** and have taken steps to **anticipate and disarm reviewer criticisms** (such as multiple outside reviews), your government reviews likely will be positive.

Learning from Proposal Reviews

- Reviews are especially useful when you WIN—as they provide guidance on how to perfect your Phase I approach as you prepare for Phase II.
- Reviews on losing proposals don't always tell the whole story, but are nonetheless valuable.
- It is important to understand how to view and use your reviews on winning and losing proposals—especially as you proceed with your Phase I work or decide to re-submit a proposal.

A Structure/Context for Reviewing Reviews

- Experience and hundreds of favorable, unfavorable, and apathetic reviews have guided the creation of a proposal template and process that I try to get clients to follow—*and reviews continue to reinforce the need to follow the process.*

Components of the Template

- Get the reviewers engaged, keeping audience in mind—and identify and substantiate (with citations, etc.) the significance/need
- Cover the state of the art's benefits/drawbacks
- Describe technical challenges and the nature of your *innovative* solution/opportunity; establish credibility and eligibility (strong preliminary data, unique expertise, key collaborators, appropriate industrial partners, access to facilities, PI status)

Components of the Template (contd)

- Present what you will attempt to PROVE (Objectives/Aims) in Phase I or how your Phase II prototype/demonstration work will get you where you need to be for Phase III commercialization—including milestones and *measurable goals*. Identify the key technical and economic questions that must be addressed to prove feasibility or to attract Phase III commercial partners/investors.

Components of the Template (contd)

- Describe IN DETAIL in the work plan how you will meet your goals. Cover **what** you will do, **how** you will do it, **why** you will do it that way, **where** you will do it, **with whom** you will do it, **what** you expect for results, **what** your contingency plans are for when you don't get those results, and **how** the work ties together the Objectives/Aims, key questions, measurable goals, and budget.

Components of the Template (contd)

- Offer your VISION for how Phase I success will set up Phase II and how Phase II will set up Phase III. *What will the world look like when you are wildly successful?*
- How will you finance the Phase III? What will it take? Do you have team members with commercial track records? Do you know who your potential customers are? Do you know how to sell to them?

How Do We Use The Template?

- Prepare a short version of the proposal based on bullets that match up with the template. *Test the story on others to get ready for reviewers.*
- Prepare a several-page “white paper” version (a pre-proposal) and test it.
- **Test ideas early and often.** We find readers who don't like our ideas. We mimic the reality of actual reviews. *We use outside reviewers.*

Why Do We Do All This?

To avoid these types of comments:

- “The scope of this work is far too ambitious for a Phase I timeline and budget.”
- “More quantitative data should be targeted in the Phase I work.”
- “This is not new technology. There are outfits doing this every day—it’s old hat. We don’t need more of it.”
- “The lack of preliminary data is a major problem.”
- “This has been done by DARPA. No need to do it again.”

Why Do We Do All This?

To avoid these types of comments:

- “The budget and the proposed work don’t match up.”
- “They claim he’s the best in the field. I’ve never heard of him.”
- “The facilities they are borrowing at the university are excellent. Unfortunately, this is one of the only strengths of the application.”
- “Don’t do it.”

Reviewing the Reviews for Each Area

- Let's take a look at the kinds of reviews we want to avoid and the kinds of reviews we are shooting for in each of the key template areas.
- Note that essentially every review comment is related to the **credibility** (or lack of credibility) of the idea and/or the proposer.

Problem/Need/Significance

Avoid This:

- “There is no clear indication of the potential importance of the program--even if it were successfully carried out.
- “The study *purports* to address an important problem, but it falls short of accomplishing that.”
- “Regardless of what is *claimed* by the applicant, it is not clear how the proposed device will be any better than what we have available now—and nothing new is really needed, in my opinion.”

Problem/Need/Significance

Avoid This:

- “The applicant proposes to develop a low-cost, highly accurate breathalyzer. We already have a full range of breathalyzers available at a range of costs and performance levels.”
- “This is a very well written application that sets forth clearly the motivation and market opportunities for devices that capture medical data for outpatients. Unfortunately, the specific technology that is proposed is trivial by current standards.”

Problem/Need/Significance

Avoid This:

- “Proposal does not appear to fully meet the need requirements put forth in the call.”
- “Apparently, there is a sizable group of patients (100,000/yr) who do not have suitable autologous blood vessels for transplantation. No citations were provided to validate this claim, however.”
- “The endorsement of need from NAVAIR is weak, merely addressing ‘unfunded USW warfare requirements.’ There are many of those.”

Problem/Need/Significance

The Goal:

- “Obesity and inactivity are major public health concerns that can and should be addressed simultaneously. One of the key challenges in this area is accurately quantifying the energy expenditure of an activity for an individual. The proposed work would aim to develop a system that can accomplish this difficult task. This project is focused on a highly significant need with great commercial potential.”
- “The proposal focuses on a major military need and this is important work. It should be funded.”

Assess State of the Art (Accurately)

Avoid This:

- “The author does not seem to be aware that several technologies have been field-tested successfully for this application. Nor is he aware of the broader experience of the researchers who have conducted the prior work.”
- “I am concerned that the applicants chose the IDEEA system as the ‘gold standard’ against which to compare their technology. Of the two IDEEA articles to appear in the refereed archival literature, neither is relevant to this work—and neither was cited in this proposal.”

Assess State of the Art (Accurately)

Avoid This:

- “It appears the PI has not participated in recent conferences on geoacoustic inversion.”
- “My biggest concern is that the applicants don’t seem to understand how what they are proposing to do is any different from what is currently being done. There are no citations to indicate even an attempt at a literature study.
- “The proposal ignores the relevant literature. This knowledge base has to be the starting point for a proposal such as this.”
- “The PI does not understand our current operations.”

Assess State of the Art (Accurately)

The Goal:

- “The company has proposed an excellent approach to Phase I with a demonstrated knowledge of the subject matter. They have a vast amount of knowledge about all phases of mercury treatment.”
- “The applicant has demonstrated a thorough knowledge of the subject matter and of what others are doing in this area. They have proven that they are at the forefront.”
- “It is obvious that the PI understands the concept and operational issues, and that he is current on the state of the art and its shortcomings. ”

Solution/Opportunity/Innovation and Credibility—Avoid This:

- “Weaknesses in the proposal include concerns about aspects of the technical approach. Of particular concern is the fact that the proposed approach seems **primitive** compared with other available techniques.”
- “Based on the data and information presented, it is **unclear** whether the method has much chance for success.”
- “The review panel was **confused** about the employment status and eligibility of the proposed SBIR principal investigator, given his full-time position at the university.”

Solution/Opportunity/Innovation and Credibility—Avoid This:

- “Computer \$2500, pipette set \$2500, and microscope \$15,000 **should already be there** if the PI has been involved in the stem cell research as claimed.”
- “The proposer relies heavily upon the use of university-owned space and analytical equipment for the proposed work, but provides **no evidence** that such facilities are available--nor at what cost.”
- “According to the consultant’s vita, she has been an assistant professor two years beyond the limit and has no publications after 2003, which is very strange.”

Solution/Opportunity/Innovation and Credibility—Avoid This:

- “The fact that CH2M-Hill and Xcel Energy are agreeing to cost-share on this project is surely an indication of potential commercial interest, and their participation cannot be ignored. The fact that their letters contain identical language causes one to question their level of genuine engagement at this point.”
- The research team is well-qualified. A concern is that none of their letters of commitment are signed.”

Solution/Opportunity/Innovation and Credibility—Avoid This:

- “This proposal is very well written and the team of investigators is highly qualified to carry out the experiments. The technology is relevant. However, this SBIR proposal is lacking in significance and innovation. Satisfying FDA requirements for materials biocompatibility is highly important but does not constitute innovation.”

Solution/Opportunity/Innovation and Credibility—The Goal:

“The proposed project is exciting and very important and innovative, and the challenges of the proposed approach are daunting in some instances. The review panel therefore recommends doubling the requested budget.”

- “This proposal addresses a new diagnostic method for an extremely important and costly disease of dairy cattle. The approach is innovative and is based on a method previously developed by the PI for use with human blood.

Solution/Opportunity/Innovation and Credibility—The Goal:

- “The applicant’s facility and resources are ideally suited to pursuing the innovative research proposed. All equipment is in place and procedures for its calibration and use are formalized.”
- “The applicant presents a clear discussion on gaining access to required equipment from the local federal laboratory and includes a letter of support from the lab guaranteeing that access.”

Solution/Opportunity/Innovation and Credibility—The Goal:

- “At the risk of repeating myself, I think that: 1) the proposed process is simple enough to actually work, 2) it should be inexpensive to implement, 3) it will be much safer for workers, and 4) it should be applicable to a wide range of contaminated materials and environments.”
- “The investigative team is very well qualified, and that strength spans all necessary areas of the proposed work. This is a key strength of the application.”

Objectives/Aims/Measurable Goals/Key Questions—Avoid This:

- “There are no real objective endpoints, so it is difficult to determine what the success criteria would be.”
- “The issues identified by the questions highlighted as Phase I feasibility challenges indicate that the applicant is not adequately knowledgeable in this technical area.”
- “The major weakness of this Phase I proposal is that its objectives leave several feasibility questions unanswered until Phase II.”
- “Objectives don’t address the needed field-support effort.”

Objectives/Aims/Measurable Goals/Key Questions—The Goal:

- “The objectives are clearly stated and the proposers appear to have the resources and expertise to do the job. The important Phase I questions are being asked.”
- “If the cost/benefit issues identified in the feasibility questions and being pursued as the primary goal can actually be achieved, this technology could definitely lead to a broadly marketable product or process.”
- “The biggest problem with mercury control currently is high cost. The proposed objective focused on decreasing cost and increasing yield is on target.”

Detailed Research Plan

Avoid This:

- “The methods whereby the tasks are to be completed are not adequately set forth in general and are *especially meager* where specific formulation details are concerned. Of greatest importance, no clear idea is given as to how the research will systematically study solubility.”
- “The work plan suffers from a lack of details and specific assessment criteria for success, as well as an inadequate description of the statistical analyses of the data and qualified personnel available for that work.

Detailed Research Plan

Avoid This:

- “Likewise, no specific methods are given by which the proposed characterization is to be accomplished.”
- “One can take issue at the suggestion that 3-month/37° storage is reasonably predictive of two years’ stability at 25°.”
- “The anticipated results set forth in the work plan are certainly not realistic in any realm of reality that I am aware of.”
- “The work plan is quite weak. The task descriptions are minimal, the schedule appears very arbitrary, and there is no attempt to tie the planned work to the budget.”

Detailed Research Plan

Avoid This:

- “Dr. Smith is an orthopedic surgeon who has had graduate education in mechanical engineering. There does not appear to be anything in his resume that particularly suits him to the tasks assigned him in the work plan.”
- “The consulting surgeon certainly has an impressive resume, but there is no indication in the work plan tasks that he is going to contribute anything to the project.”
- “This proposal lacks a detailed experimental design. There is no evaluation plan included in the work plan.”

Detailed Research Plan

Avoid This:

- “To evaluate the method and tasks proposed in the work plan, it is necessary to understand how it would work. Partial information on the technique is given throughout the proposal...but it is still *unclear* exactly how the detection device is actually designed to function or how its design and construction would be carried out in the work plan.”
- “Thus, even the successful completion of the proposed tasks would not answer the feasibility question. There is no clear connection between what is being described in the work plan and what the stated objectives are.”

Detailed Research Plan

Avoid This:

- “It is not clear where the criterion EE for locomotor tasks is gathered in the work plan.”
- “They offer no discussion of how the data will be offloaded from their sensors, either in the experiment or in any practical application.”
- “Although the technology is quite interesting...the proposal concentrates too much on background and theoretical information. Not enough details are given in the actual work plan, schedule, and budget.”
- “The use of dogs is not justified.”

Detailed Research Plan

The Goal:

- “Put simply, their Phase I work plan touches all of the bases needed to demonstrate the feasibility of the proposed process--from both an economic and a technical standpoint.”
- “This is the best SBIR proposal I have seen. The problem being addressed is significant, the investigators and facilities are excellent, and most importantly, the applicant provides a very thorough work plan. There is no question about how they will attempt to carry out this work, nor about how they will measure their results.”

Vision and Commercialization Plan

Avoid This:

- “Although the applicant states that she has ‘substantial experience’ in commercializing high-technology products, absolutely no evidence is provided. All discussion of previous experience involves R&D efforts only. Likewise, no other team member has anything more compelling to offer.”
- “Team qualifications should include not only the ability to perform the research but also the ability to commercialize the results. Such is not the case here.”
- “Minimal chance of commercial success. Lower chance of field success.”

Vision and Commercialization Plan

Avoid This:

- “There is no indication of intellectual property or future IP from an application or an ownership point of view.”
- “There was no market projection information or “ball park” figure on manufacturing cost, or any plan to address the issue.”
- “The consultant’s resume and publications do not provide much assurance that the market assessment is in experienced hands. Her reported research is minimal and is not focused on market issues involving corn or the Midwest, which is the focus of the work.”

Vision and Commercialization Plan

The Goal:

- “The company has a strong position in commercializing new mercury-treatment solutions to the nation’s major utilities. They have a plan for obtaining Phase III financing which appears sound. The company’s plan to secure a proprietary position should guarantee their competitive position.”

Vision and Commercialization Plan

The Goal:

- “The partnership with Sanford Chemists, Inc., provides key expertise for the overall project, and the participation and independent verification of Sanford and their parent company and their stated interest in being Phase III partners lends substantial credibility to the project.”
- “The applicant has recently demonstrated a rising success rate in commercializing SBIR-funded projects, with 38% of their revenues being commercial. They now have a credible team in place for taking these projects beyond the Phase I and Phase II government funding.”

Phase II Issues

Avoid This:

- “Unfortunately, although unqualified success is claimed, the data from the Phase I work does not support their new concept. A Phase II project is not recommended.”
- “The Phase I application was funded with the initial application—which meant that the applicant did not have to address the reviewer concerns to get funded. Nevertheless, we fully anticipated that those concerns would be addressed during the Phase I work—and they were not.”

Phase II Issues

Avoid This:

- “Although this team is extremely technically qualified, their overall effort would be strengthened with inclusion of some military consultation and team membership. There is mention of establishing contacts with military laboratories that use CWNA, but no details are given. It is essential that military utility and application be considered throughout development.”
- “Although the applicant has won two Phase I’s and two Phase II’s, the firm cites no experience in advancing an SBIR project beyond prototype development.”

Phase II Issues

Avoid This:

- “In the Phase I results summary, the applicant claims that the new coating process was shown to be reproducible and controllable. Unfortunately, the data shown do not support that claim.”
- “The stated objective of the Phase II proposal has moved away from the original stated Phase II goal in the Phase I proposal, and is no longer innovative, in my view.”
- “The three Phase II Aims are poorly described and are lacking in detail, without clear-cut criteria for success.”

Phase II Issues

Avoid This:

- “This is a Phase II submission that follows a Phase I project which, while considered interesting with capable investigators, was also unclear and unfocused in its experimental design. Unfortunately, in the opinion of this reviewer, nothing has changed, and the Phase II proposal suffers from the same problems.”
- “While it is stated that all Phase I goals have been met or exceeded, it should be noted that the Phase I report as presented is preliminary at best. Indeed, certain points allude to incompleteness.”

Phase II Issues

Avoid This:

- “The plan for Phase II is something of a mystery, based on what’s presented for the Phase I results. There seems to be no connection between what was discovered in Phase I and what is to be investigated and demonstrated in Phase II.
- “For some reason, the investigators presented these data in the wrong section. They appear to be confused by their own results.”
- “There is no clear indication anywhere of how the PI will commercialize this technology or finance Phase III.”

Phase II Issues

The Goal:

- “The fact that the applicant has obtained a commitment from the top malaria researcher in the country (a Navy Captain) to collaborate speaks volumes about the potential for this Phase II project.”
- “All investigators are experienced, and the addition of consultants with manufacturing experience has improved the team for Phase II.”

Phase II Issues

The Goal:

- “The company is using this Phase II effort to firmly position itself at the head of the line for marketing a new mercury-treatment solution to the nation’s major utilities when the new EPA emissions regulations come to pass. The projected cost savings based on conservative Phase II results approach 75%. Their plan for obtaining Phase III financing appears sound. The company’s plan to secure a proprietary position should guarantee their competitiveness and a lucrative entrée into collaboration with one or both of their Phase III partners—each of which is a major player in this industry.”

Phase II Issues

The Goal:

- “The addition of consulting support from Dr. Westbrook is a great advantage for the applicant in this Phase II continuation, as Dr. Westbrook is the leading investigator on this subject. Her involvement should add significantly to the overall quality and probability of success for the project.”

Phase II Issues

The Goal:

- “The Phase II plan is thorough and complete. The approach is sound, and the concerns voiced in the Phase I reviews have been fully addressed here, including a more thorough evaluation of potential interferants. The additional investigation of the actual mechanism of Hg removal before investing in field trials during Phase II seems warranted. All analytical methods are appropriate, and task milestones are well thought out in terms of targets to set up commercialization.”

Reviews and Resubmissions

- Resubmissions are usually feasible with grant agencies and their typically broad areas of interest.
- Resubmissions to contract agencies may or may not work out, based on whether the specific topic is offered again.

Reviews and Resubmissions

- Some agencies (e.g., NIH, USDA) offer formal procedures for resubmissions; most don't.
- How you read, interpret, and respond to reviews in formal resubmissions is critical.
- The author of the previous proposal should not be trusted to interpret and respond to reviews unsupervised.

Example of Author Interpretation of Reviewer Critiques

Critique: “The team is weak. The idea is not new. The one-page work plan is wholly inadequate. There is no clear market awaiting the product. The proposed methods (what there were of them) are suspect. Panel enthusiasm is low. The budget is high.”

Author interpretation: “We need to beef up the work plan. I can do that this evening.”

Key Points

- Being competitive is all about your credibility in the eyes of the reviewers
- You need to understand as much as possible about your audience at each agency before you prepare to write the proposal
- Reviews reinforce the need for following a process that includes **getting ready to write** every section
- Outside reviews before submission are critical

Key Points

- Phase I **winner**s should not forget about the Phase I reviewer comments....
- Don't take Phase II's for granted; reviewers can be a lot tougher on Phase II's than they are on Phase I's; fewer than half are funded....
- Take the rose-colored glasses off before reading your proposal reviews

About Grow LLC

- Grow LLC's three founders provide national-caliber expertise that covers **the entire business lifecycle**.
- Grow LLC helps emerging companies transform into profitable, visionary businesses by providing services in three key areas:
 - **Access to Capital (with a focus on SBIR/STTR)**
 - **Acquisitions & Exits**
 - **Outsourced Business Services**

Enjoy the Conference!

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