

CEROS Abstract & Full Proposal Preparation Workshop

Target Audience: Hawaii High Tech Community

Goal: Explain the CEROS abstract/full proposal evaluation process; provide general feedback on the 2009 abstract evaluations and guidance to help improve the quality of future submissions.

Agenda

Take Away Message
Key Issues
Background
Be Prepared
Endorsements
Full Proposal
Proposal Preparation
Abstract Evaluations
2009 Abstract Review Comments
Take Away Message

Take Away Message

- CEROS buys improvements that are described quantitatively and address DoD technical requirements
- CEROS funds projects with a potential for “life-after-CEROS funding”
- Methods exist to improve your chances of favorable evaluation – use them.

Key Issue 1: What's the Problem?

CEROS Projects are Requirements Driven

- Requirements = Expectations (Performance Specifications)
- Requirements and specifications come from potential transition sponsors and users
- Transition requires a sponsor to support testing & validation of technology before DoD buys

Key Issue 2: Quantitative Metrics

CEROS supports projects “by the numbers”

- Definitions of QUANTITATIVE:
 - expressible as a quantity or relating to or susceptible of measurement;
 - relating to the **measurement** of quantity; "quantitative studies"
 - A 'quantitative' attribute is one that exists in a range of magnitudes, and can therefore be measured. **Measurements** of any particular quantitative property are expressed as a specific quantity, referred to as a unit, multiplied by a number. ...
 - of a **measurement** based on some quantity or number rather than on some quality; of a form of analysis that determines the amount of some element ...

If you cannot describe what you are doing with numbers, it's not a project for CEROS.

Key Issue 3: Transition

CEROS issues 1 year contracts

- Your submission must demonstrate potential for “life” for your project after CEROS through:
 - A logical **technical plan** to develop Intellectual Property (IP)
 - A valid **business plan** to further develop or apply the IP from the project after CEROS support
 - A **target recipient**, command or institution (“customer”) that will react favorably to your definition of success for the IP
 - A **potential funding source** (“sponsor”) for the project for Day One post-CEROS

Background: Evaluation Criteria

Following evaluation criteria shall apply to Abstracts & Full Proposals:

- **Overall Scientific and Technical Merit:** The proposal shall describe:
 - a technical approach that is feasible, achievable, complete, and supported by a technical team that has the expertise and experience to accomplish the tasks.
 - tasks that are complete and in a logical sequence, with all deliverables clearly defined, such that a final product that achieves the goal can be expected as a result of award.
 - major technical risks and planned mitigation efforts are clearly defined and feasible.
 - the technical approach employed to meet or exceed each program metric, gono/go criteria, and provides ample justification as to why the approach is feasible.
 - potential contribution and relevance to the DARPA/CEROS mission to maintain and advance the technological superiority of the U.S. military.
- **Realism of Work Plan and Schedule.** The offerer's abilities to:
 - aggressively pursue performance metrics in the shortest timeframe;
 - accurately account for that timeframe; and,
 - understand, identify, and mitigate any potential risk in schedule.
- **Offerer's Capabilities and/or Related Experience.** The offerer's prior experience in similar efforts must clearly demonstrate an ability to deliver products that meet the technical performance within the budget and schedule. Similar efforts completed or ongoing by the offerer in this area are described, including identification of other Government sponsors.
- **Plans and Capability to Accomplish Technology Transition.** The potential and capability to transition the technology to the research, industrial, and operational military communities in such a way as to enhance U.S. defense.
- **Cost Realism:** Establish the estimated costs are realistic for the technical and management approach offered, as well as the offerer's practical understanding of the effort.

BACKGROUND: Abstract & Full Proposal Evaluation/Assessments Rankings

■ EXCEPTIONAL

- Comprehensive and complete in all areas
- Meets all significant objectives
- Offers a comprehensive program that exceeds the vision and is supportable by the proposed approach
- Has few weaknesses which are easily correctable.

■ ACCEPTABLE

- Meets most of the significant program objectives and is responsive to the program vision
- Offers a feasible technical solution
- Weaknesses are readily correctable
- Proposal is complete to the extent that an award could be made in present terms.

■ MARGINAL

- Minimally meets program vision and objectives (i.e., offers a program vision that is marginally supported by the proposed approach, and/or claims are not documented or substantiated)
- significant deficiencies exist.

■ UNACCEPTABLE

- Fails to meet significant characteristics of the vision and/or objectives stated in the Solicitation
- has weaknesses and/or deficiencies that are significant and of such magnitude that they cannot be corrected without extensive discussion/major revision of the proposal.

BACKGROUND: Abstract Format (1 of 2)

■ PROBLEM.

- State the DoD or other national defense agency operational problem.
- Explain why it's hard to solve the problem. Identify specific agency requirement for the technology, if any.

■ STATE OF THE ART.

- What is the present technology dealing with the problem today (the state of the art)?
- How is the problem solved now?
- What are the key barriers to solving the problem today?

■ NEW APPROACH.

- What is truly new in your approach?
- How will your approach allow you to overcome the current technical barriers?
- What is unique or innovative about your approach?
- Describe your technical objectives.
- Describe the specific technical advances and innovation that will be demonstrated by the work.

■ IMPACT.

- If successful, what is the probable impact of your work on present military capability?
- Where estimable, use quantitative metrics (i.e., improvements in speed, weight, manpower requirements, sensor or weapon resolution/precision/accuracy, safety parameters, false alarm rates, etc.) and relate these performance metrics to current state-of-the-art.

BACKGROUND: Abstract Format (2 of 2)

■ SUCCESS CRITERIA

- How will progress and success be measured relative to the metrics listed in 'Impact' section above?
- Estimate, without elaboration, the beginning and ending Technology Readiness Levels (TRL); discussion of TRL levels will be required for a full proposal, if invited. Criteria for assessing TRLs can be found on www.ceros.org.

■ WORK PRODUCTS

- What is the product of this effort (e.g., software, prototype, physical or numerical models, narrative reports, etc.)? Briefly describe the expected results and planned deliverables. Identify patents or other intellectual property that may result from the work.

■ WORK PLAN

- Major work tasks, technical approach, and methods to be used. Include a project schedule as a Gantt chart, and major developmental milestones.
- Project Organization, showing and explaining the relationship between prime, subcontractors, and consultants.
- Key Individuals (including subcontractors) who will perform the work. Include special capabilities of the work team, special techniques, and/or unique facilities to be used.

■ TRANSITION PLAN

- Briefly outline transition plans, including obtaining funds for follow-on development, prototype construction, or testing. The plans will require elaboration in a full proposal, if invited.

■ ESTIMATED COST

- How much will the one-year effort cost? Figures to the nearest \$100K are sufficient for the Abstract. Identify other funding sources, either your own or external contributions.
- Describe how they will be used and/or leveraged with CEROS funding. No profit or fee shall be allowed.

Be Prepared

Assuming you have an idea:

- Start Early: Begin with the End in Mind
- Talk to CEROS
- Find and Talk to potential supporters
 - Transition Sponsors (i.e., acquisition community)
 - Users (customers)
- Find and Study formal military Requirements
 - technical and operational specifications
- Craft and Circulate a “straw-man” for review by all potential stakeholders, including CEROS

Endorsements

- For the abstract phase: an E-mail endorsement from an official E-mail address to CEROS is sufficient.
- Final Proposal Endorsements may require more details.
- An Endorsement typically comes in one of the following forms:

We like the idea so much that we will...

1. ... *help fund it.* (provide details)
2. ... *do "X" if the CEROS project succeeds.* (define metrics for "success", and specify "X" in terms of funding, actions and schedule)
3. ... *provide support for Testing and Evaluation.* (ships, aircraft, personnel, infrastructure, facilities ... Specify)
4. ... *be interested in the outcome.*

- Endorsement Forms 1, 2 and 3 usually indicate a firm commitment
 - CEROS will follow up with the potential transition sponsor
- Form 4 Endorsements don't mean much

Full Proposal

Three Parts

- **Project Summary**
 - 3 page maximum
 - Specific format and content
- **Technical Proposal**
 - 25 page maximum
 - 5 sections
- **Cost Proposal**
 - Task-based
 - Specific content and level of detail

CEROS awards fixed-price contracts with no allowance for profit or fee

Proposal Preparation

The Project Summary

- Cover Page + up to 2 additional pages that specifically, plainly and concisely address the Heilmeyer Questions :
 - What are you trying to do? What is the problem you are trying to solve, and why is it hard? Articulate your objectives using absolutely no jargon.
 - How is it done now, and what are the limitations of current practice? Why is this a technology problem?
 - What is truly new in your approach which will remove current limitations and improve performance? How much will performance improve?
 - If successful, what difference will your project make? Who cares?
 - How long will it take, and what are the measurable milestones? What are the performance metrics? How will you measure progress and success?
 - How will this transition to the end user (usually DoD)?
 - How much will it cost?

Proposal Preparation

The Technical Proposal (1 of 3)

■ TECHNICAL OBJECTIVES AND RATIONALE OF THE PROJECT

- technical problem, technical issues & DoD maritime technical need addressed by the project
- project's technical innovation and its potential to advance state-of-the-art maritime technology.
- current state of the art to provide a context within which the proposed effort can be evaluated.
- Related or similar research by others
- advantages or advancement of the proposed effort in relation to similar or precursory work.

■ APPROACH TO THE TECHNICAL PROBLEM

- process to be used to resolve the technical and management issues inherent to the project
- justify the methods as state-of-the-art
- technical arguments that establish the project's innovation and its methods
- advanced processes, innovative techniques, or special facilities involved in the effort
- how the project will address and mitigate the technical and temporal risks

Proposal Preparation

The Technical Proposal (2 of 3)

■ EXPECTED RESULTS FROM THE PROJECT

- project's intended product and deliverables
- expected benefits to government
- potential commercial products, patents or other intellectual property anticipated from the effort.
- benefits anticipated from enhanced commercial or technical capabilities resulting from the project.

■ TRANSITION PLAN

- For transferring the newly developed technology or processes into the operational military structure
- ID Potential transition partners with as much detail as possible (organization, contact names and addresses).
- Prior contacts, agreements, endorsements, and commitments should be described; commitments may include co-funding of the current proposal, contribution of in-kind services, technical direction and guidance, and expectations for future funding of follow-on projects.

Proposal Preparation

The Technical Proposal (3 of 3)

■ PERSONNEL and MANAGEMENT

- qualifications and capabilities of the proposed work team, relevant accomplishments of the key personnel, and related prior, current or pending support for the lead organization for similar or related technical work.
- status of current CEROS-supported projects and the results from relevant previous work
- project schedule (ideally as a task-defined Gantt chart), work assignments (by named key individuals), and significant technical milestones.

Proposal Preparation

The Cost Proposal

- Breakdown of basic cost elements by work task:
 - **Materials and Services:** raw materials, parts, components, assemblies, and services to be produced or performed by others. For all items proposed, identify the item and show the source, quantity, and price.
 - **Direct Labor:** Provide a breakdown of labor hours, rates, and costs by appropriate category, and furnish basis for estimates.
 - **Indirect Costs:** Indicate how indirect costs have been computed and applied, including cost breakdowns. Indicate the rates used and provide an appropriate explanation.
 - **Other Costs:** List all other costs not otherwise included in the categories described above (e.g., special tooling, travel, computer and consultant services), and provide basis for pricing.
 - **Royalties:** if applicable.
 - **Facilities Capital Cost of Money:** if applicable.
- Letters of agreement or intent from collaborators who may play key roles in executing the proposed effort.
- Basic “skeleton” for your CEROS Contract

Proposal Preparation

Potential Sources of Help

- Hawaii Business & Entrepreneur Acceleration Mentors:
www.hibeam.org
- Hawaii Technology Development Corp: www.htdc.org
- Service Corp of Retired Executives (SCORE):
www.hawaiiscore.org
- Hawaii Technology Development Venture (HTDV):
www.hitdv.com

Abstract Evaluations

What I Look For

- What will be produced from this effort?
- What is the operational problem?
- What is the technical problem?
- What is the product supposed to do?
- What is your “Secret Sauce”?
- How will you surmount the technical hard parts?
- How will you prove it works and measures up?
- How much will it cost?
- Who are the intended customer, end-user, and/or potential sponsor?
- What is the plan for transition?

Abstract Evaluations

What I Look For

- What's new, innovative and exciting about the project?
- Is the project appropriate for CEROS support?
- Is the abstract clear and focused?
- Are the technical arguments sound?
- Are performance criteria quantitative?
- Are the plans, schedules and costs realistic?
- Does the team have the domain knowledge and passion for the work?
- Did the abstract answer the mail?

Abstract Evaluations

Full Disclosure

- My grades for 09 Abstracts' "Merit"
 - 9 abstracts (\$3,680K) "acceptable"
 - 4 abstracts (\$2,256K) "exceptional"
 - 19% of total

2009 Abstract Reviews

Reviewers' Comments *(1 of 7)*

- Organization
 - Follow format Instructions
 - Answer the Heilmeyer Questions completely and factually
 - Explain relationships/qualifications of prime, subcontractors and consultants
 - Don't list management support companies as technical subcontractors
 - Don't do dumb things

2009 Abstract Reviews

Reviewers' Comments (2 of 7)

- Presentation
 - Write clearly in plain English
 - Avoid buzzwords, jargon and military-speak
 - Use a brief title that describes your project
 - Use declarative sentences and quantitative comparisons
 - Describe the durable work products
 - Avoid acronyms and define each one you use
 - Begin with the end in mind

"If you cannot – in the long run – tell everyone what you have been doing, your doing has been worthless" Erwin Schrodinger

2009 Abstract Reviews

Reviewers' Comments *(3 of 7)*

- **“Transition Plan section was uniformly bad”**
 - Identify the transition criteria and potential players
 - Goal: move technology to the research, industrial or operational military community to enhance U. S. defense capabilities
 - Learn the Ropes: understand USN/USMC procedure to evaluate and acquire technology
 - “Transition” of CEROS project to SBIR/ONR generally isn't

2009 Abstract Reviews

Reviewers' Comments *(4 of 7)*

- Transition Plans: Endorsements
 - Endorsements come from two types of acquisition organizations: funding sources and funding sinks
 - Support from an acquisition authority (funding source) is important
 - Endorsements from Funding Sinks are counterproductive
 - Endorsements from project participants are worthless
 - “Cash is the best indicator of intent” (J. Ablard)

2009 Abstract Reviews

Reviewers' Comments *(5 of 7)*

- Content Shortcomings *(1 of 2)*
 - Incomplete: missing information or sections (!)
 - Innovation, technical barriers and new approach inadequately described
 - Background (why) and application (so what) inadequately explained
 - Schedule, Work Plan or Budget missing, incomplete or generic
 - Gantt Chart \neq Work Plan
 - No Test Plan or Metrics
 - Failure to Prepare (“Task 1: Study military requirements”)

2009 Abstract Reviews

Reviewers' Comments *(6 of 7)*

- Content Shortcomings *(2 of 2)*
 - Inadequate description/discussion of existing commercial or military product or capability
 - No distinction between State of the Art (leading edge) and State of Practice (what USN/USMC does now)
 - Impact: no quantitative metrics, USN context or connection to a maritime problem
 - No context for proposed effort vis-à-vis SOTA
 - Mastery of the knowledge domain
 - A one-line Cost Estimate does not inspire confidence

2009 Abstract Reviews

Reviewers' Comments *(7 of 7)*

- Potential Showstoppers
 - Technically mundane
 - No requirement cited
 - Non-DoD target or problem
 - Multi-year project in 12 month schedule
 - Technical credibility of team not established
 - Unsubstantiated cost estimate
 - Poor overall organization or presentation
 - Failure to follow the format and answer the questions

2009 Abstract Reviews

Reviewers' Comments : Atta-persons

- Growing awareness and recognition of the importance of transition beyond the CEROS horizon
- Restrained (average) level of effort to historic average (ca. \$450K/project)
- Good use of effective illustrations
- Few – if any – late submissions

2009 Abstract Reviews

Personal Observations

- This is not your “old CEROS”
- CEROS (today) funds demonstrable improvements addressing DOD requirements
- Demonstrable = Measureable
- CEROS funds projects with prospects for funding after CEROS
- The best way to game the system is FTI (Follow the Instructions)

Take Away Message

- CEROS buys improvements that are described quantitatively and address DoD technical requirements
- CEROS funds projects with a potential for “life-after-CEROS funding”
- Methods exist to improve your chances of favorable evaluation – use them.