Strategies for Planning, Developing, and Writing Large Team Grants

Part 2: Writing a Successful Narrative, Red Team Reviews & Writing for Reviewers

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Last week: Part 1

http://vs.odu.edu/kvs/interface/?cid=201520_OfficeOfResearchVS_92519
Timeline on Current ERC solicitation 15-589

• July 24, 2015 – solicitation posted
• August 31, 2015 – information webinar
• September 25, 2015 – letter of intent due
• July – Oct 22, 2015 – Teleconference with ERC PD
  – E-mail < 10-sentence summary
  – Schedule 45-min conference call, send 10 slides for discussion addressing the proposed vision, strategic plan, research thrusts, workforce development (education), innovation ecosystem, infrastructure, and 3-plane chart.
• October 23, 2015 – Preliminary proposal (9-page document, 1-page 3-plane strategic planning chart, letter of commitment from Dean of Engineering – lead university)
• June 16, 2016 – Full proposal by invitation only (25-page document) Four awards will be made
## ERCs

<table>
<thead>
<tr>
<th>Generation</th>
<th>Years</th>
<th>Number of Centers</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 1*</td>
<td>1985 - 1990</td>
<td>18</td>
<td>Focus education on manufacturing and commercial design</td>
</tr>
<tr>
<td>GEN-2**</td>
<td>1994 - 2006</td>
<td>22</td>
<td>Focused on manufacturing efficiency (Competitiveness)</td>
</tr>
<tr>
<td>GEN-3***</td>
<td>2008 -</td>
<td>19</td>
<td>Address the decreased student interest in science and engineering and increasingly global economy (Innovation)</td>
</tr>
</tbody>
</table>

Current ERC’s focus in four areas:

- Advanced Manufacturing
- Biotech and Health
- Energy / Infrastructure
- Microelectronics and IT

* Single institution
** Multi-university, pre-college, domestic programs
*** Multi-institution, international partners

Part 2: OUTLINE

- Writing the vision, goals, objectives, rationale, and outcomes
- Starter templates and the challenge of integrating multiple authors
- Writing a successful project management plan
- Evaluation resources
- Preparing letters of support and collaboration
- Critiquing the proposal and planning for a “red team” review
Writing a Successful Narrative

- Very prescriptive structure (US DoEd) or greater flexibility (NSF) - use RFP
- Key persuasive elements: research vision, goals, objectives, rationale, outcomes & impact
- Logically tiered framework - macrovision to microperformance details
- Give reviewers the structure, order, detail, scale & perspective to easily judge the value of your research
VISION

- Provides a global, unifying, thematic overview
- Significance and value-added benefits to the funding agency mission, or the research field itself
- E.g., Significant transformation that will occur over the grant period
- Must fit within the described research boundaries of the agency RFP


GOALS & OBJECTIVES

- Goals serve as major organizing framework for achieving research vision
- E.g., research milestones, major accomplishments and how intersect over the performance period
- Research Objectives as critical operational subsets used to achieve each goal
- Provide clarity for reviewers - define the framework that allows distinctions to be made in a logical sequence.
RATIONALE

- What motivates the research?
- Why is the research idea/framework a good one?
- Why is the research important & significant?
- Why will your research approach be productive?
- Why does your expertise (or your group’s) make you uniquely qualified to advance the proposed plan?
- Why your institutional research infrastructure will enable your research
- Why your research plan is appropriate, effective, efficient
OUTCOMES & IMPACT

- Emphasis on research metrics at federal agencies
- Increase your proposal’s competitiveness by defining & integrating key performance metrics into the research
- This is particularly important for research center level grants or institutional transformation grants
- External evaluator may be required
- Must be clear & memorable to reviewers
Writing the Project Summary

Mission Statement

The mission of Acme Office Furniture Store is to successfully supply businesses of all sizes with their office furniture needs. The company’s customer-oriented mission is stated in our Corporate Promise:

- Provide superior customer service through knowledgeable, friendly, and helpful staff.
- Supply customers with office furniture that meets their needs at low prices.
- Offer replacements, repairs, and refunds for any dissatisfied customer.
- Adhere to the core principles of the company, and continue to grow the business.

Objective

Acme Office Furniture will continue to grow by opening two more stores in Bakersfield and Barstow, and by developing new office furniture products. As a result, Acme will continue to achieve its business objectives:

- Promote their online sales and increase sales growth over the next year.
- Increase product exposure and market awareness.
- Increase profitability every year for the next five years.

To achieve these objectives, Acme Office Furniture Store has grown from a small corner store to an active office furniture with an average increase in revenue of 5% each year. In 2012, Acme grossed $88,000,000 from the retail store, in addition to another $86,000,000 from e-commerce alone.

Acme provides a wide range of office furniture solutions, from a full line of ergonomically designed office chairs to their Standard and Executive lines of office desks, as well as side tables, artwork, and more. Overall, Acme Office Furniture Store will continue to meet the following office furniture needs:

- Desks
- Chairs
- Tables
- Filing cabinets
- Shelving

By meeting these needs, Acme Office Furniture Store will continue to be the leader in the office furniture industry.
Starter Templates

- Evolution of project narrative through multiple iterations
- May reduce # of drafts
- Jump start a proposal’s convergence on success
- Identify precise set of conditions for each text contribution - regardless of scale
- Send to each author before they begin drafting text
- Specific to the needs of individual contributors
Multiple Authors

- Final, seamless, integrated proposal... difficult to achieve
- Narrative must show benefit of funding one large multi-PI proposal ($$)
- Typical contributor “siloed” text
- Watch for vagueness or incompleteness of research vision
- Must articulate significance of the project
- “Synergy” - what does it mean?
Project Management Plan

- Critical in the overall competitiveness of the LTG
- Multi-year research strategic plan and milestone chart
- Demonstrates your capacity to perform
- Do not treat as an afterthought
- No boilerplate!
Current ERC Solicitation

• Infrastructure requirements
  – Workforce Development Program Director
    • member of ERC leadership team
    • faculty experienced in research-based pedagogical and experiential approaches to student development
    • leads planning, implementation, and refinement of workforce development in university and pre-college programs
  – Diversity Director
    • member of ERC leadership team
    • staff or faculty experienced in the development, implementation, and assessment of proven activities to create culture of inclusion
    • leads recruitment-to-graduation of underrepresented groups in engineering fields among ERC participants
  – Industrial Liaison Officer
    • staff member, not faculty, at lead university
    • develops and cultivates ERC's innovation ecosystem
    • markets ERC to industry/practitioners, gaining financial support
    • coordinates industry/practitioner interaction with faculty, students,
    • manages other partnerships for innovation and translational research program
Current ERC Solicitation

• Infrastructure requirements (cont)
  – Workforce Development Advisory Board (WDAB)
    • external experts in workforce development, broadening participation, and education
    • meet annually with Center and site visit team to provide guidance to ERC workforce development plan, activities, and advances
  – Scientific Advisory Board
    • external experts on fundamental and technological engineering research relevant to Center
    • selected by the ERC to provide feedback to the ERC Leadership team on research
    • meet annually with ERC and with site visit team to evaluate Center’s positioning with respect to state-of-the-art and guide advances in ERC research
    • not identified in proposal/review process
  – Industrial/Practitioner Advisory Board
    • Key mechanism for industrial/practitioner collaboration for the ERC
    • Provides input to the ERC Leadership team on project selection and termination
    • Conducts annual SWOT analysis of the ERC's operations and progress
    • Meets at least twice a year, including private meeting with NSF site visit team
Current ERC Solicitation

• Infrastructure requirements (cont)
  – Dean and Deans’ Council
    • coordinate ERC plans and policies with department/university leaders
    • oversee partnership between the ERC and contributing departments
    • assure departmental cooperation for faculty participation/rewards
    • assure cost share
    • assures cross-university partnership, agreements, and infrastructure
  – University Policy Board
    • Coordinate plans and policies with department and university leaders and committees
  – Management Systems
    • regular (e.g., annual/biennial) project selection, refinement, and sunsetting consistent with evolving ERC strategic research plan, with input from Advisory Boards, site visitors, NSF
    • resource allocation consistent with ERC vision and coordinated strategic plans
    • data reporting: information systems for inputs and outputs to reports
    • workflow coordination and communication
    • assessment/evaluation and feedback
Evaluation Resources

- Agencies expect appropriate eval metrics be applied to research and educational grant programs
- **NSF**: Online Evaluation Resource Library
- **NSF**: Promoting Research & Innovation in Methodologies for Evaluation (PRIME) - STEM focus
- **CDC** Evaluation Working Group
- The Evaluation Center, Western Michigan University
- Evaluation Resources, Univ of Wisconsin-Extension
- **W.K. Kellogg** Foundation Evaluation Handbook
Letters of Support & Collaboration

- Support vs. Collaboration (value of project vs. specific contribution)
- NSF discourages letters of support
- Draft the letters as a starting point
- Address to the Program Officer or PI
- Should be detailed - more convincing
- Letter writer should specify contribution, expertise, prior collaboration with PI
- Community stakeholder - why outcomes of project important, support their mission
- Start early!
Current ERC Solicitation

• Institutional Commitment
  Cost sharing – sustains the ERC
  - amounts: RU/VH 20%; RU/H 15%; DRU and MastersL 10%; Bac/Diverse 5%.
  - provide full partnership in ERC vision, plans, activities in research, workforce development, and innovation to assure success

  RU/VH: Research Universities (very high research activity)
  RU/H: Research Universities (high research activity)
  DRU: Doctoral/Research Universities
  Master's L: Master's Colleges and Universities (larger programs)
  Bac/Diverse: Baccalaureate Colleges--Diverse Fields

• Innovation Partner Commitments
  - State and local government and/or university organizations, or venture capital (VC) firms that will:
    • Accelerate and facilitate innovation
    • Facilitate success for start-up firms
    • Provide guidance and training in entrepreneurship
The Red Team Review

- **#1** Effective writing emerges over time
- **#2** Every proposal needs a colleague’s full and frank review
- Government/Industrial term to review, assess, test, or vet plans, operations, concepts
- Red team gives an “outsider’s” perspective before the agency review
- Comprehensive, exhaustive review
- Find weaknesses, deficiencies, and ambiguities in the text
- Play devil’s advocate when necessary
- Challenge the vision and assumptions in the text
- How persuasive are the arguments?
Submitting an ERC Proposal

A lot of work
- Institutional Commitment
- PI leadership and dedication
- Good support team

Even the title must be well thought
- Short, informative and/or can be converted in a good acronym

It is comprised of many parts (or gears) to function and be funded
- Prior collaborative experience is a must for success
  - Research (PIs, international partners)
  - Education (pre-college partners)
  - Industry (companies, venture capital investors, entrepreneurs)

Planning, timely submission, and double-checking will prevent errors

Center for Biorenewable Chemicals (CBiRC), Iowa State University
Center for Integrated Access Networks (CIAN), University of Arizona
Center for Smart Lighting, Rensselaer Polytechnic Institute
Documents - Red Team Review

- Solicitation (RFP) from the sponsor
- Any documents referenced in the solicitation
- Close-to-final draft of the proposal
- Any supporting documents
- Prior proposals
- Prior reviews that have informed the proposal process
- Scoring matrix
- Red team produces a detailed report of all recommendations for improving the proposal
- Identify weaknesses and amplify strengths
## Red Team - SCORING

### Scoring Matrix for Completion by Each Red Team Member and Discussed as Team

**Example Scoring Factor:** Is the Research Vision Clearly Stated?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Score</th>
<th>Descriptor</th>
<th>List Strengths</th>
<th>List Weaknesses</th>
<th>Suggest Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Impact</td>
<td>1</td>
<td>Exceptional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Outstanding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Excellent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate Impact</td>
<td>4</td>
<td>Very Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Satisfactory</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Low Impact</td>
<td>7</td>
<td>Fair</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Marginal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Poor</td>
<td></td>
<td></td>
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THANK YOU