

# NSF MRI Program Proposal Narrative and Budget

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QEM Network

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# NSF-MRI Program Goals

- Support the acquisition or development of major state-of-the-art instrumentation for **research**, **research** training, and integrated **research**/education activities;
- Improve access to and increase use of **research** and **research** training instrumentation by scientists, engineers, graduate and undergraduate students;
- Enable academic departments or cross-departmental units to create well-equipped learning environments that integrate **research** with education;
- Foster the development of the next generation of instrumentation for **research** and **research** training;
- Promote partnerships between academic **researchers** and private sector instrument developers.

# Proposal Step 1

- Get Organized
  - ◆ Create a plan to acquire an instrument
    - ★ Intellectual Merit
      - Research
      - Research Training
      - Integrated Research/Education
    - ★ Broader Impacts
      - Faculty recruitment
      - Student recruitment
      - Interdisciplinary use
      - New courses
      - Diversity-Broadening Participation

# Get Organized Step 2

- ◆ Create an organization chart
  - ★ Who's in charge?
    - Faculty
    - Department
    - School or College
- ◆ Define Responsibilities
  - ★ Installation
    - Who does this?
    - Where will it be done?
    - When will it be done?

# Get Organized Step 3 IA

- ◆ Define Responsibilities
  - ★ Operations and Maintenance?
    - Technician? Facilities Manager?
      - How and by whom will the instrument be operated?
    - Special computer needs?
      - What expertise is needed to maintain and operate the instrument?
    - Special room?
      - Describe the facility

# Get Organized Step 3 IA

- ◆ Define Responsibilities
  - ★ Instrument status?
    - Who has access?
      - Regular Basis, Occasionally
      - Students, Faculty, .....
    - Describe procedures for allocating time on the new instrument.

# Get Organized Step 3 IA

- Instrument Supplies
  - Who pays?
- Specify the university commitments to:
  - Housing the instrument.
  - Instrument maintenance and operations.
  - Evaluation of instrument effectiveness.

# Get Organized Step 3 ID

- For instrument development
  - ◆ Detail the design and construction phases.
  - ◆ Include plans for making instrument design readily available to other researchers.
  - ◆ Describe the schedule of the project activities, broken into tasks.
  - ◆ Estimate the cost of each activity.

# Get Organized Step 3 ID

- What technical expertise is needed for each activity?
- Describe parts, materials and costs for the construction phase.
- Specify timelines and deliverables for each activity.
- List risks associated with each activity and methods for reanalyzing and modifying the project plan if necessary.

# Get Organized Step 3 ID

- Describe the organization of the project staff and methods of assessing performance.
- For each member of the team include a description of the responsibilities.
- Explain why a given position is necessary for the completion of the design and construction of the new instrument.

# Get Organized Step 4

- Evaluation of Instrument Effectiveness
  - ◆ Who will keep the records?
    - ★ Students, faculty, on-campus and outside users served
    - ★ Publications, presentations, new hires
    - ★ Access to new research areas
    - ★ Research areas served
    - ★ Usage and down time
    - ★ Broader impacts
  - ◆ Who will spread the “good news”?
    - ★ Listserve, web-page, DVD, CD, seminars, workshops...

# Budget Step 5

- NSF Min= \$100,000
  - ◆ Less than \$100,000 from non-Ph. D. granting
  - ◆ Less than \$100,000 from mathematical science or social, behavioral, and economic science from any eligible institution
- NSF Max= \$2,000,000 **with one exception**
- Proposals accepted for \$2,000,000 to \$4,000,000 if for **acquisition of a single instrument.**
- Eligible Costs (Acquisition)
  - ◆ Purchase
  - ◆ Installation
  - ◆ Operation and Maintenance
    - ★ **Fringe benefits and indirect costs for O&M personnel**
  - ◆ Calibration, Commissioning

# Budget Step 5A

- Acquisition Budget: 3-year maximum
- Development Budget: 5-year maximum
- Direct and Indirect Personnel Costs
  - ◆ WILL NOT SUPPORT costs associated with research projects for those USING the developed instrument including researchers' salaries and student stipends.
- Parts, materials, commissioning costs

# Budget Categories

- Ph.D. granting organizations produce more than 20 Ph.D.s in the previous two academic years  
[www.nsf.gov/od/lpa/news/publicat/nsf04009/start.htm](http://www.nsf.gov/od/lpa/news/publicat/nsf04009/start.htm)
- Non-Ph.D. granting organizations are two- and four- year colleges and produced 20 or fewer Ph.D.s in the previous two academic years.
- Non-degree granting organizations such as museums.

# Cost Sharing Step 6

- 30% for Ph. D. granting organizations and non-degree organizations
- None for non-Ph. D. organizations

# Cost Sharing IA

- Cost of the instrument
- Installation, commissioning and calibration
- Operation and maintenance costs
  - ◆ operating supplies
  - ◆ personnel support, if the personnel are involved in operating and maintaining the instrument.

# Cost Sharing ID

- Parts and materials needed for the construction of the instrument and commissioning
- Costs, as well as the direct and indirect costs associated with support of personnel engaged strictly in the instrument development effort

# Cost Sharing No-Nos

- Support for research to be conducted using the instrument after development
- operation and maintenance,
- Publication costs
- Conference travel

# Narrative Step 7

- NSF will return without review proposals that do not conform to the margins, font and font size limitations in the NSF Grant Proposal Guide ([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg) ).
- Arial<sub>10</sub>, Courier New, or Palatino Linotype at a font size of 10 points or larger
- Times New Roman at a font size of 11 points or larger
- Computer Modern family of fonts at a font size of 11 points or larger
- In all cases, font size must be 10 points or larger, and margins on all sides must 1 inch or greater.

# Narrative 7A

- A font size of less than 10 points may be used for mathematical formulas or equations, figure, table or diagram captions and when using a Symbol font to insert Greek letters or special characters.
- **The text must still be readable**
- No more than 6 lines of text within a vertical space of 1 inch

# Narrative Step 8

- Project Summary (1 page)
  - ◆ Title
    - ★ Convey the primary purpose of the proposal, e.g., "MRI:Acquisition of \_\_\_\_\_" or "MRI:Development of \_\_\_\_\_," and should specify if the proposal is being submitted by a consortium "MRI Consortium: Acquisition of \_\_\_\_\_" or "MRI Consortium: Development of \_\_\_\_\_"
  - ◆ Describe instrumentation
    - ★ Include type of research/research training conducted
    - ★ Include any activity that would result
  - ◆ Separate Statements
    - ★ Intellectual Merit
    - ★ Broader Impacts

# Narrative Step 9

- Project Description (15 pages)
  - ◆ Includes all charts, figures....
  - ◆ Letters of support, commitment
    - ★ Acquisition:
      - One for long-term M&O commitment
      - One each for partners
      - NONE for support, RUI involvement
    - ★ Development:
      - Same as Acquisition
      - Private sector agreements
  - ◆ Instrument cost quotes are encouraged

# Narrative Step 10

- Research Activities –9 pages IA, 4 page ID
  - ◆ Research and research training activities to be conducted with the instrumentation.
  - ◆ Tabulate personnel using instrument for research or research training
- Research Instrumentation and Needs – 2 pages IA, 6 pages ID
  - ◆ Describe instrument technically
  - ◆ Scan quotes into supplementary documents
  - ◆ Compare to existing instrumentation

# Narrative Step 11

- Impact of Infrastructure Project – 2 pages IA
- Reviewers want to evaluate whether the plan includes appropriate technical expertise and infrastructure to allow effective instrument use and to facilitate multi-user accessibility.
  - ◆ Effect on research training
  - ◆ Effect on academic research infrastructure
  - ◆ Student involvement

# Narrative 11-IA

- Project and Management Plans-2 pages IA
  - ◆ Specify how and by whom the requested instrumentation will be operated over the period of three years.
  - ◆ Describe the technical expertise needed to maintain and operate the instrument with anticipated costs.
  - ◆ Describe the facility in which the instrument will be housed.
    - ★ If the instrument will become part of a laboratory that houses similar equipment, include information on usage and downtime.
  - ◆ Describe procedures for allocating the new instrument time, if appropriate, and describe plans for attracting new users.

# Narrative 11B-IA

- ◆ Specify the organizational commitments regarding housing and costs associated with instrument maintenance and operations.
- ◆ For mid-range instrumentation, investigators must provide detailed business and management plans, with information on space, technical staffing for operation, maintenance and training of users, access for external users, *and the long-term source of funding for operation and maintenance.*

# The Rest of the Story

- Biosketches
  - ◆ Don't send papers
  - ◆ 2 page each PI, Co-PI, major users
- Budget Justification
  - ◆ 3 page limit
- Current and Pending Support
  - ◆ Each PI, Co-PI, major users
- Certificate of Institutional Classification
- Suggested Reviewers (optional)
  - ◆ Also, those you **DON'T** want to review the proposal

# Review Criteria

- Intellectual Merit
- Broader Impacts
- Management plan
  - ◆ Integration of Research and Education
  - ◆ Integrating Diversity
  - ◆ Using the new research capability in teaching training or learning
  - ◆ Institutional infrastructure development

# RED FLAGS IA

- Computer networks as general-purpose equipment
- A list of assorted instruments or general lab equipment that do not share a common or specific research or research training focus
- Instrumentation requested exclusively for standard science and engineering courses
- Renovation or modernization of research facilities, fixed equipment, or facilities.
- A duplicate proposal submitted to another NSF instrumentation program.

# RED FLAG ID

- Individual pieces of equipment combined in a new system

# Successful Proposals

- Aggressive search for research funding
- Strong maintenance record for existing equipment and plans for requested equipment
- Involvement of under-represented groups
- Student involvement: co-authors on papers and presentations.

# Successful Proposals 2

- Innovative and important research
- Wide instrument use
- Demonstrated need for research problem solution
- Preliminary results/measurements
- Primary use is research
- Equipment, including bells and whistles, is essential

# Check List

1. Intellectual Merit and Broader Impacts explicitly and separately addressed in the project summary
2. Are font sizes and margins consistent with the Grant Proposal Guide  
([http://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=gpg](http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg))
3. Is the project summary compliant in terms of page limits?
4. Are Results from Prior Support provided, if applicable?
5. Is there a separate section for the management plan?
6. Is the performing organization adhering to the three proposal limit?
7. Are all items in the budget allowed?

# Check List 2

1. For instrument acquisition proposals, are there no more than three letters from users at other institutions?
2. Is there a letter from the subawardee sponsored research organization certifying that this proposal is included in the subawardee institution proposal count?
3. Is there a statement indicating the type of performing institution (PhD-granting, non PhD-granting, or non degree-granting)?
4. Is there a letter of commitment from the institution confirming availability of funds for cost-sharing, if applicable

# When In Doubt?

- General : Office of Integrative Activities
  - ◆ MRI Program Officer
  - ◆ (703) 292-8040
  - ◆ MRI @ nsf.gov