**Outline for NSF MRI Acquisition Proposal Based on Solicitation** [**NSF 18-513**](https://www.nsf.gov/pubs/2018/nsf18513/nsf18513.htm)

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***Formatting instructions: 8.5” x 11” paper format; 1" margins on all sides;*** *Arial, 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, or Computer Modern family of fonts at a font size of 11 points or larger. Headings in blue are required. Sub-headings in black are BRDO suggestions. All the content listed is required, unless otherwise indicated.*

**1. Title: MRI: Acquisition of \_\_\_\_\_\_\_\_\_\_ or MRI Consortium: Acquisition of \_\_\_\_\_\_\_\_\_\_**(Title must be in this format)

**2. Project Summary** (maximum length, 4600 total characters including spaces for 3 boxes (FastLane), or 1 page). Should be understandable to a broad audience within the scientific domain.

**a. Overview**

**b. Intellectual Merit**

**c. Broader Impacts**

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**3**. **Project Description** (sections a-e, 15 pages maximum, including all figures and charts).

**a**. **Information about the Proposal**

***a.1.******Instrument Location and Type*** (2 lines, or more if field location).

* Indicate in a single separate line the physical location of the proposed instrument as follows:

Instrument Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(For field locations, note extra requirements in solicitation)

* On a single separate line, provide a concise description of the instrument being acquired/developed (broad type of instrument).

*(a.2. does not apply to acquisition proposals)*

**b. Research Activities to be Enabled** (suggested length for this entire section: ~9 pages).

***b.1. Research activities and projects***

Describe the research activities and projects that will be enabled with the desired instrumentation, and any funding sources that may support those activities and projects.

*The degree to which the planned uses of the proposed instrumentation constitute exciting, ground-breaking, or transformative research is a significant factor in the merit review evaluation of MRI proposals.*

***b.2. Research training activities and projects***

Describe the research training activities and projects that will be enabled with the desired instrumentation, and any funding sources that may support those activities and projects (*keep in mind section d below*).

***b.3. Personnel/Users***

In narrative or tabular form, describe the personnel by research area, number, and type (e.g., senior personnel, postdoctoral fellows, graduate students, undergraduate students). Include only those who will most actively use the instrumentation for research and research training on a regular basis. Other more minor users of the instrument, when applicable, should be described in a more condensed format.

***b.4. Results from Prior NSF MRI Support*** (5 pages max).

To be completed if the PI or any of the co-PIs have participated as PIs or co-PIs in NSF awards with a start date within the past five-year period.

You only need to report on one award per PI/co-PI; prioritize MRI or other instrumentation or otherwise-relevant awards. If describing past MRI award, this section should include information on the operations and maintenance, downtime and usage history of the previously funded instrument.

The following information *must* be provided for each award:

(a) the NSF award number, amount and period of support;

(b) the title of the project;

(c) a summary of the results of the completed work, including accomplishments, supported by the award. The results must be separately described under two distinct headings, Intellectual Merit and Broader Impacts;

(d) publications resulting from the NSF award, with citations. Full citations can either be spelled out here, or in the "references cited" section (4);

(e) evidence of research products and their availability, including, but not limited to: data, publications, samples, physical collections, software, and models, as described in any Data Management Plan; and

(f) if the proposal is for renewed support, a description of the relation of the completed work to the proposed work.

**c.** **Description of the Research Instrument and Needs** (Suggested length: 2 pages).

***c.1. Technical description***

Provide a description of the requested instrumentation, including manufacturer and model number where appropriate.

***c.2. Need for the equipment***

This section should clearly explain how the planned research drives the equipment request.

***c.3. Comparable instrumentation*** *(if applicable)*

The existence and availability of comparable instrumentation at organizations in close geographical proximity, or otherwise accessible through collaborations or cyberinfrastructure should be discussed and justification for requested instrument made clear.

***c.4. Justification for integrated instrument*** *(if applicable)*

Explain how the acquisition meets the MRI guidance for a well-integrated single instrument in which separating or removing an element or component of such an integrated instrument would preclude the intended experiments from occurring or succeeding.

If applicable: ***Supplemental document on importance of instrument in large collaboration***

Proposals involving large collaborations should describe the importance and priority of the requested instrument in the overall efforts being undertaken by the collaboration. A supplemental document (see R.9.e) confirming the priority is encouraged.

**d**. **Broader Impacts (Including Impact on Research and Training Infrastructure)** (suggested 1 page).

***d.1. Impact on Research***

Describe how the instrument will serve to attract researchers and make a substantial improvement in our capabilities to conduct leading-edge research.

***d.2. Impact on training*** (if appropriate)

- Describe how the instrument will improve the quality of student education, research and research training.

- If requesting direct student support for operations or maintenance efforts, justify that involvement in terms of both project needs and the training of the next generation of instrumentalists (reviewers will be asked to evaluate the appropriateness of this type of involvement).

***d.3. Impact on broadening participation***

Proposals should also address whether and, if so, how the instrumentation will broaden the participation in science and engineering research by women, underrepresented minorities, and persons with disabilities.

For proposals requesting over $1M: ***d.4. Impact upon the Research Community***

- Address the potential impact of the instrument on the research community of interest and at the regional or national level (if appropriate).

- For large multi-user instruments that provide service beyond a single institution, describe concrete plans for enabling access by external users (including those from non-Ph.D. and/or minority-serving institutions) through physical or virtual access.

- Describe the uniqueness of the requested instrumentation.

**e.** **Management Plan** (suggested length: up to 2 pages for acquisition)

Given the relatively high maintenance costs of major research instrumentation, investigators seeking support *must* provide detailed business and management plans. These should include:

***e.1. Space or facility***

- A description of the space or the facility in which the instrument will be placed.

- For instruments to be located at an organization other than, or away from, the submitting organization: describe the rationale for performance of all or part of the project at the specified location(s) and provide, if appropriate, a (one-page maximum) supplementary document providing the host organization's commitment to house the instrument (R.9.g.).

***e.2. Operations and maintenance***

- A description of how and by whom the requested instrumentation will be operated and maintained over the expected lifetime of the instrument. If expertise is not currently available, describe how it will be obtained.

- The anticipated costs and the technical expertise needed to maintain and operate the instrument. (Inclusion of a letter documenting the performing organization's commitment to ensuring successful operations and maintenance over the expected lifetime of the instrument is required as a supplemental document – R.9.b).

***e.3. Instrument usage***

- Describe plans for procedures for allocating the instrument time among users.

- Describe plans for attracting and supporting new users.

- Provide information on anticipated usage and downtime if appropriate.

**f*.* Intellectual Merit***(*required section. Suggested length: 1 paragraph)

-Summarize the new knowledge that will be enabled by this instrument and describe how it will constitute exciting, ground-breaking, or transformative research. *Note: This paragraph should not duplicate what is in the project summary.*

***\*\*\* MAKE SURE YOU DO NOT EXCEED THE 15 PAGE MAXIMUM FOR SECTION 3 \*\*\****

**4.** **References Cited**

Include the names of all authors, the article and journal title, book title, volume number, page numbers, and year of publication. If the document is available electronically, the website address also should be provided.

**5. Biographical Sketches**

Include NSF-style two-page biographical sketches for:

- PI and any Co-PI(s) (i.e., those personnel listed on the cover sheet)

- any other designated senior personnel

- the person most responsible for the management of the instrument; If that person does not fall under above described categories, then this bio should be included as a supplementary document.

These are the only biographical sketches that are allowed. (Other individuals, minor users or developers may be described in the project description but should not include a biographical sketch.) *BRDO can provide a compliant NSF biosketch template upon request.*

**6. Budget and Budget Justification**

*Follow the solicitation and PAPPG guidelines. Pay particular attention to section B. Budgetary Information of the solicitation which includes specific requirements for cost share, budgetary limitations, allowable costs and cost allocations. Consult with your research administrator for help.*

**7. Current and Pending Support**

Provide a listing for only the PI and Co-PIs (i.e. those listed on the cover sheet), as well as designated senior personnel. *Your research administrator can help you with this.*

**8. Facilities, Equipment, and Other Resources**

- Describe the resources available to perform the effort proposed. Proposers should include an aggregated description of the internal and external resources (both physical and personnel), relevant to the proposal, that the organization and its collaborators will provide to the project, should it be funded. The description should be narrative in nature and must not include any quantifiable financial information.

- Provide a listing of similar and/or related instrumentation at or near the performing organization as “Other Resources.”

- *When applicable describe unfunded collaborations and other non-monetary institutional support.*

**9. Special Information & Supplementary Documents**

***9.0. Table of contents for the supplementary documents***

List supplementary documents that are included in the following order of appearance.

**REQUIRED**

***R.9.a. Statement from SPO on non-PhD, PhD or non-degree granting status***. Each organization receiving funds should provide a statement following the prescribed format as outlined in the solicitationon institutional letterhead from each sponsored research office.

**REQUIRED**

***R.9.b. Letter of institutional commitment*** (2 page maximum):Include a letter documenting the commitment(s) for operations and maintenance of the instrument (during the award period and longer term). This letter must also list the MRI awards made to the institution during the previous five years and briefly describe the status of the instrumentation obtained from each award. *BRDO will provide a template that includes info on past MRI awards.*

**REQUIRED**

***R.9.c. Cost-sharing letter*** (1 page max):A letter documenting the organization's commitment for required cost-sharing must be included.

*VCRO will provide this letter detailing ALL cost sharing commitments on behalf of ALL parties. VCRO will need documentation from the other parties confirming their commitments. Dave Trinkle from BRDO/VCRO can help with this process (*[*dtrinkle@berkeley.edu*](mailto:dtrinkle@berkeley.edu)*).*

When applicable: ***R.9.d.* *Statements from subawardee sponsored research offices, acknowledging that this proposal is included as part of their submission limit.*** Acquisition proposals that include subawards must include statements from subawardee sponsored research offices, acknowledging that this proposal is included as part of their submission limit. Otherwise, an organization may exceed its submission limit, with the result that the proposal, including the subaward, will be returned without review.

When applicable: ***R.9.e.* *Letter of institutional participation*** (1 page max): If a proposed effort involves a private sector partner, a large collaboration or an organization serving as a partner (as opposed to individual/s, or a large formalized collaboration (e.g., through a memorandum of understanding or other legal document), a letter confirming the participation must be included. Proposals involving large collaborations are encouraged to utilize this letter to document the priority of the requested instrument in the overall efforts being undertaken by the collaboration.

When applicable ***R.9.f*. *A list of all partner institutions*:** If the proposal involves organizations other than the submitting organization, list all partners.

When applicable: ***R.9.g.* *Hosts commitment to housing*** (1 page max):Proposals for an instrument to be located at an organization other than the submitting organization must provide a supplementary document stating the host organization's commitment to house the instrument.

**REQUIRED**

***R.9.h. Itemized vendor quotes.*** Required for all MRI proposals. (Although a proposal might reference and have a quote(s) for a specific make and model, the proposer is reminded that his/her organization's approved procurement processes must be utilized to establish the appropriate item(s) to be purchased.)

**ENCOURAGED**

***E.9.a. Statement of personal collaboration*** (template provided):For all proposals, statements from ***individuals***, on institutional letterhead, confirming substantive collaboration efforts and/or usage of the instrument may be submitted, but they ***must*** follow *only* the format indicated in the solicitation. This statement may not contain endorsements or expression of support of any sort; it merely confirms collaboration efforts. The project description itself should describe the nature and need for a collaboration, and/or describe the major users and their need for the instrument.

**REQUIRED**

***10. Data Management Plan*** (2 pages max). A plan for managing the data that will be generated by the instrument is required. DMP requirements relevant to specific NSF directorates, divisions, or programs are provided here: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. Generally, an NSF DMP will include:

1. The types of data, samples, physical collections, software, curriculum materials, and other materials to be produced.
2. The standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies).
3. Policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements.
4. Policies and provisions for re-use, re-distribution, and the production of derivatives.
5. Plans for archiving data, samples, and other research products, and for preservation of access to them.

When applicable: ***11. Postdoctoral Mentoring Plan*** (1 page max)

Only needed if postdoctoral researchers will be funded by the grant: Include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. *BRDO can help with this.*

**12. Single Copy Documents**

**REQUIRED**

***Collaborators & Other Affiliations (COA) Information.*** Information regarding collaborators and other affiliations must be separately provided for each individual identified as Senior Personnel. COA information specified in the PAPPG should be submitted using the instructions and spreadsheet template found on the [Collaborators and Other Affiliations Information](https://www.nsf.gov/bfa/dias/policy/coa.jsp) website. Please note that proposers using the COA template for more than 10 senior project personnel will encounter proposal print preview issues. *Your research administrator can help you with this.*

**ENCOURAGED**

***List of suggested reviewers*** (optional): A list of suggested reviewers (including affiliation) whom proposers believe are especially well qualified to review the proposal. *This is especially encouraged for multi/inter/trans-disciplinary proposals.* Proposers may also list persons they would prefer not to review the proposal, indicating why.

**Review Criteria**

All NSF proposals are evaluated through use of two merit review criteria: **intellectual merit** and **broader impacts**. The following *additional MRI solicitation-specific review criteria* also apply:

**All Proposals**

* The extent to which the proposed project will make a substantial improvement in the organization's capabilities to conduct leading-edge research, to provide research experiences for undergraduate students using leading-edge capabilities, and to broaden the participation in science and engineering research (especially as lead PIs) by women, underrepresented minorities, persons with disabilities and/or early-career investigators.

***Instrument Acquisition Proposal***

* The extent to which the instrument is used for multi-user, shared-use research and/or research training.
* Whether the management plan demonstrates sufficient commitment and technical expertise for effective scheduling and usage of the instrument.
* The organization's commitment to ensuring successful operations and maintenance over the expected lifetime of the instrument.
* Whether the research to be enabled is compelling and justifies the instrument request.
* Whether the budget request is appropriate and well justified.
* if student involvement is in the form of direct support for operations and maintenance of the instrument, reviewers will be asked to evaluate the involvement in terms of both instrument needs and the training of the next generation of instrumentalists.
* For instrument acquisition proposals of $1 million or above, the potential impact of the instrument on the research community of interest at the regional or national level, if appropriate.