

scribed. Graduate students who participated in the research should be identified by name. This requirement does not apply to non-academic organizations.

5. References Cited — Proposal Section D

Reference information is required. Each reference must include the names of all authors in the same sequence in which they appear in the publication, the article title, book or journal title, volume number, page numbers and year of publication. Proposers should be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal.

While there is no established page limitation, this section should include bibliographic citations only and should not be used to provide parenthetical information outside of the 15-page project description.

6. Biographical Sketches — Proposal Section E

Biographical sketches are limited to two pages each and are required for all senior project personnel. (See Appendix C for definition of Senior Personnel.) The following information must be provided:

a. Professional Preparation. A list of the individual's undergraduate and graduate education and postdoctoral training as indicated below:

Undergraduate Institution(s)	Major	Degree & Year
Graduate Institution(s)	Major	Degree & Year
Postdoctoral Institution(s)	Area	Inclusive Dates (years)

b. Appointments. A list, in reverse chronological order, of all the individual's academic/professional appointments beginning with the current appointment.

c. Publications. (i) A list of up to 5 publications most closely related to the proposed project. (ii) A list of up to 5 other significant publications, whether or not related to the proposed project. Each reference must include:

- ❖ the names of all authors (in the same sequence in which they appear in the publication);
- ❖ the article (or book or journal) title;
- ❖ volume number;
- ❖ page numbers;
- ❖ year of publication; and
- ❖ Web site address if available electronically

For unpublished manuscripts, list only those submitted or accepted for publication (along with most likely date of publication). Patents, copyrights and software systems developed may be substituted for publications. Additional lists of publications, invited lectures, etc., should not be included. Only the list of 10 will be used in the review of the proposal.

d. Synergistic Activities. A list of up to five examples that demonstrate the broader impact of the individual's professional and scholarly activities that focus on the integration and transfer of knowledge as well as its creation. Examples could include, among others: innovations in teaching and training (e.g., development of curricular materials and pedagogical methods); contributions to the science of learning; development and/or refinement of research tools; computation methodologies, and

algorithms for problem-solving; development of databases to support research and education; broadening the participation of groups underrepresented in science, mathematics, engineering and technology; and service on national boards and committees.

e. Collaborators & Other Affiliations.

(i) *Collaborators*. A list of all persons in alphabetical order (including, where possible, their current organizational affiliations) who are currently or who have been collaborators or co-authors with the individual on a project, book, article, report, abstract or paper during the 48 months preceding the submission of this proposal. Include collaborators on this proposal. If there are no collaborators, this should be so indicated.

(ii) *Graduate and Post Doctoral Advisors*. A list of the names of the individual's own graduate advisor(s) and principal postdoctoral sponsor(s), and their current organizational affiliations.

(iii) *Thesis Advisor and Postgraduate-Scholar Sponsor*. A list of all persons (including, where possible, their organizational affiliations), over the last five years with whom the individual has had an association as thesis advisor or postgraduate-scholar sponsor. The total number of graduate students advised and postdoctoral scholars sponsored should also be identified.

The information in part e of the biographical sketch is used to help identify potential conflicts or bias in the selection of reviewers.

For the personnel categories listed below, the proposal also may include information on exceptional qualifications that merit consideration in the evaluation of the proposal.

- a. Postdoctoral associates
- b. Other professionals
- c. Students (research assistants)

For *equipment proposals*, the following should be provided for each auxiliary user:

- a. Short biographical sketch
- b. List of up to five publications most closely related to the proposed acquisition.

7. Budget — Proposal Section F

The required format for the *Summary Proposal Budget* (NSF Form 1030) is shown in the Proposal Forms Kit. In addition to the material provided below, further instructions for completion of the budget (including areas that require justification) are contained on the back of the NSF Form 1030. Locally produced versions of the form may be used, but changes or substitutions should not be made in prescribed budget categories. Unless a particular program solicitation stipulates otherwise, each proposal must contain a budget for each year of support requested and a cumulative budget for the full term of requested NSF support. The proposal may request funds under any of the categories listed so long as the item and amount are considered necessary to perform the proposed work and are not precluded by specific program guidelines or applicable cost principles. In addition to the forms, the proposal may include up to three pages of budget justification for the entire period of support.