Guidance for Authorship of Scholarly and Technical Publications

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PURPOSE

This document establishes guidance to consider when determining authorship of a scholarly or technical publication.

APPLICABILITY

This directive is applicable to all NIST employees and Associates engaged in research activities at or for NIST, to the extent allowed by law and the terms of the Associate's agreement.

REFERENCES

- [NIST P 5200.00 Responsible Conduct of Research](#)

- [NIST O 5201.00 Responsible Conduct of Research Order](#)

GUIDANCE

Authorship of a scholarly or technical publication is recognized by NIST and by the larger scientific community as evidence of a substantial professional contribution to the publication. Often, this evidence is used in the evaluation of the performance of NIST staff and NIST Associates, either by NIST management or other entities such as visiting committees, potential employers, sponsors, and award-nomination committees. Thus, decisions concerning authorship are of great importance to the individuals concerned, and NIST expects these decisions to be guided by fairness to all parties.

Ideally, authorship of publications should be discussed by the individuals contributing to the research at the onset of the project. Lead authors should consider it their responsibility to ensure that such discussions take place, and that all contributors, as described below, are considered in authorship determinations. If there is disagreement among the contributors as to authorship of a publication at any time, from onset of the project to submission of the publication, that cannot be resolved, the parties will first meet with the lowest level of NIST line management that is not a co-author on the publication. If no agreement is reached at this meeting, the case will be taken to the next higher level of management, up to the OU Director. The Director may choose to appoint an individual to review the case and provide recommendations regarding authorship on the publication.

It is important that NIST publications properly recognize the work of all individuals who contributed to the work. This practice establishes an important public record and promotes increased cooperation and good will among coworkers. Recognition of contributions ranges from co-authorship to acknowledgement, *i.e.*, brief thanks. This document establishes guidelines to help determine when co-authorship or acknowledgement is warranted. Lead authors from NIST should apply the same guidelines for contributions from collaborators outside NIST. It is hoped that similar guidelines will be applied by non-NIST lead authors in consideration of their collaborators in NIST.

Criteria for Authorship

To be an author of a technical publication, an individual shall have made substantial contributions to the project being documented in one of the following areas:

1. Conception and evolution of the project plan (or experimental design).

2. Creative execution of at least one significant aspect of the project.

3. Creative write-up or documentation of the project results into acceptable form for the appropriate publication vehicle.

In addition, an author shall be able to defend and explain to outside experts in the field his/her contributions to the project, e.g., at a technical conference. A paper shall have a single author when no other individual meets the above requirements for authorship. It also follows that there is no limit to the number of co-authors. These guidelines specifically preclude the practice of automatically listing managers as co-authors.

Conventions for order of authorship have become established within some professional disciplines; such conventions should be followed. If no convention exists, the order should be discussed and agreed to by the lead author and co-authors.

Finally, an individual should not be listed as a co-author unless he or she has given consent and has had an opportunity to review the content.

Personal Acknowledgement

Formal acknowledgement in a technical publication shall be accorded to individuals who have made at least one contribution to the project. Such contributions can be of any type not meeting the requirements for authorship. Examples include routine programming support, laboratory equipment set-up, useful discussions, or extensive copy-editing of the publication.

Scenarios for Guidance:

The key phrase determining authorship candidacy is "*truly substantial and professional contribution*." To clarify the meaning of this phrase, a series of NIST-relevant scenarios follow.

(1) The use of a calibration or a reference material was essential to a technical publication. Should the person who generated and/or supervised the generation of the calibration or reference material be a co-author?

- Yes, only if the calibration or reference material was generated specifically for the project described in the publication and if the generation required a substantial, professional contribution.

- No, if the calibration or reference material is one that is generally sold to the public, even if the calibration is a "special calibration" as advertised by NIST.

(2) My colleague or supervisor edited a draft manuscript that I wrote. Should this editor be a co-author?

- Yes, only if the editing alters the technical content of the draft so much that it is a "truly substantial and professional contribution".

- No, usually. While editing is an often tedious and time-consuming activity, it is a routine collegial or supervisory task that does not in itself substantially contribute to the technical content of a technical publication.

(3) When an apparatus is designed (*i.e.*, not just assembled) by a ZT staff member, should the staff member be a co-author on publications describing the apparatus or the results obtained using the apparatus?

- Yes, in the first publication in which the apparatus is described. Job titles (*e.g.*, ZT) are irrelevant to co-authorship.

(4) Instrumentation or materials essential to my project were acquired for another purpose by an individual who was not otherwise involved in my project. Should this individual be a co-author?

- No. Stewardship, like administrative supervision, does not in itself contribute to intellectual content. However, the individual's contribution should be appropriately acknowledged within the report.

(5) The idea for a particular project was generated by another NIST employee. Does the generation of an idea qualify for co-authorship?

- Yes, if the idea was novel and the "other NIST employee" subsequently made substantial contributions to the refinement or implementation of the idea.

- No, if the idea was generated during a one-time consultation and the individual was not subsequently involved in the refinement or implementation of the idea.

(6) Funding for a particular project was obtained by another NIST employee. Should that person be a co-author of a progress report to the sponsor?

- Yes, because the sponsor expects a single point of contact for a project. Note that progress reports that contain proprietary information not intended for public dissemination are not considered as "technical publications" under the scope of this document.

(7) Funding for a particular project was obtained by another NIST employee but he/she did not otherwise contribute to the project. Should this individual be a co-author of a technical publication on the project?

- No.

(8) What special considerations apply to co-authorship of reports of external collaborations such as CIPM Key Comparisons and Pilot Studies or multi-institutional studies having pre-specified protocols?

- Because external institutions are not bound by NIST policy, it is essential that the NIST representative to the collaboration raise and resolve issues of co-authorship before the research is conducted, i.e., when the protocols are established. If NIST management determines that it is in NIST's best interests to participate, NIST will comply with the study's authorship policy.

- NIST contributions to external collaborations vary greatly. Common scenarios and desired outcomes are:

  A. NIST does not coordinate the study but actively participates in developing the protocol, evaluating the results, and drafting the report, as well as reporting values and approving the draft for publication. *Outcome:* The NIST staff who actively participated in the study should be co-authors if individuals from the other participating institutions with similar contributions to the study are co-authors.

  B. NIST coordinates the study. This involves considerably more technical effort (including material characterization, study design, data analysis, and writing) than is required from other participants. *Outcome:* All NIST contributors meeting the Criteria for Authorship should be included as co-authors, provided the NIST guidelines comply with the external body's authorship policy.

  C. NIST reports results and reviews the draft report. *Outcome:* The NIST staff that provided the reported values should be co-authors if individuals from the other participating institutions who similarly contributed are co-authors.

- Whenever NIST-specific efforts (e.g., development of an analytical method, a data analysis tool, or a well-characterized transfer standard) are of sufficient interest or value to the community, the NIST contributors should prepare a separate technical publication that describes the NIST-specific results.

(9) I disagree with the content or conclusions of a draft publication. Can I refuse to be an author?

- Yes.

(10) If I did 10% of the work on a project should I be a co-author?

- Maybe. In general, "substantial" contributions should be recognized by co-authorship and "minor" contributions should be recognized by an acknowledgement. However, the definitions of "substantial" and "minor" depend upon how many contributors are

involved and the specific nature of their contributions. A 10% contribution, as estimated by time expended, is a reasonable boundary between "substantial" and "minor" contributions to a collaboration involving a few individuals. When four or more individuals are involved, 10% may be too stringent a criterion. Under any circumstances, a contribution essential to the technical publication should be recognized by co-authorship, regardless of the time expended. For example, a 1988 measurement of the universal gas constant R involved five people and an effort of approximately eight-person years. One co-author was expert in mass measurements. He spent less than one month on the project (approximately 1%); however, during that time he designed and executed a novel weighing procedure that was essential to the project's success and subsequent publications. His contribution was thus "substantial" even though his experience enabled him to complete his contribution within a relatively short period of time.

(11) A statistician participates in the design of experiments to be performed on a newly created device in another OU. The statistician suggests what analysis to perform on the results, and verifies that they have been done correctly.

- Yes. By contributing to the efficiency of the experiment, and to the validation of results, the statistician should be co-author on the paper describing the experiment.

(12) A computer specialist participates in the design and development of a modeling system for an application in material science with colleagues in another NIST lab. The computer specialist knows nothing about the application area. Nevertheless, the software system is complex and of novel design, allowing new types of simulations to be performed.

- Yes. The expertise of the computer specialist was critical to the success of the system. The system is described in a technical paper. The computer specialist should be a co-author.

(13) A visualization expert helps a physicist visualize a massive data set resulting from a complex simulation. The visualization expert works extensively with the physicist to understand the features that the physicist is looking for. Several iterations are required, but ultimately the visualization expert suggests a new way to visualize the data that exposes features the physicist did not expect. These features form a major part of the paper, and the graphics generated by the visualization expert

- Yes

(14) Software previously written by a staff member is needed by others to complete a study.

- Yes. If in order to be used in the new context, additional, non-trivial features had to be added to the software. If the staff member spent time to understand the problem, what was needed by the customers, and did the work to enhance the software package.

- No. If the staff member had several conversations with the researchers, and advised them on how to use various features of the software, only vaguely understood the application, and other researchers exercised the software independently.

(15) A summer student writes scripts to run a collection of test cases on software written by the project leader, and then does the runs. The programming was routine and done at the direction of the project leader. The results of the runs are subject of a technical paper.

- No. The summer student should be given an acknowledgement.

(16) A reader, such as a Division reader, headquarters staff, or ERB reader, spends extra time making many corrections to the grammar and wording on a paper before it is submitted to ERB. The reader rewrites a few paragraphs for better clarity, and suggests a reorganization of some sections.

- No. The reader deserves an acknowledgement for improving the paper.

The scenarios presented above are fairly straightforward; this may not always be the case. It is recommended that individuals leading a project use good judgment in considering authorship for minor contributors, in order to promote good will and ensure foster collaborations.

DIRECTIVE OWNER

600 – Associate Director for Laboratory Programs

APPENDICES

A. Revision History

Appendix A

REVISION HISTORY

Revision	Date	Responsible Person	Description of Change
Initial	4/11/2018	Rich Cavanagh	
Rev. .01	4/11/2018	Dan Cipra	Formatting changes only