Author guidelines for the IBM Systems Journal

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Effective communication of technical work is the primary goal of the technical journal. This essay provides information about the* IBM Systems Journal *and offers guidelines for prospective authors. The* Systems Journal *and its audience are described, and the processing of papers is discussed, along with suggestions for content and structure. To further aid the writer in preparing clear, complete papers of high quality, we include a bibliography of technical writing references.

The *IBM Systems Journal* is a quarterly, refereed technical publication intended primarily for professionals in the field of computing systems and software. The current circulation is about 65 000, with two-thirds of the readers of the *Journal* outside of IBM and about one-fourth outside the United States. The *Systems Journal* features papers by authors working in systems or software areas of data processing and applied research. Contributions are welcome from all divisions and subsidiaries of IBM and from Business Partners, IBM customers, computer users, researchers, and others whose work involves computers. Typically one-third of the authors in any year are from outside of IBM. The objectives of the *Systems Journal* are to:

- Inform and educate readers on systems and systems solutions
- Provide a bridge between computer science and computer applications
- Document technical advances in areas of interest to IBM and its customers
- Encourage the use of advanced data processing technology
- Provide a forum for authors
- Encourage further research and development

What follows is a brief discussion of the usual content of a paper, the criteria for evaluating papers, how an author prepares a *Systems Journal* paper, how the editorial staff handles the paper, and the recommended structure of a paper. An appendix offers specific suggestions for preparing a paper for submission.

Content

Papers published in the *Systems Journal* deal with such topics as computer systems and subsystems, operating systems, performance evaluation, systems analysis and management, simulation techniques, programming methods and languages, and applications. To determine whether a proposed topic is suitable for the *Systems Journal*, a prospective author is encouraged to examine the tables of contents of several issues. This will provide an awareness of topics that have re-

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cently been featured and establish a feeling for the range of material considered to be of interest to the *Journal*'s audience. Prospective authors are also encouraged to inquire about new topics by contacting the editor or associate editors directly (see the inside front cover of a recent *Journal* or refer to the last item in the Appendix for address information). The editors invite papers on topics of special interest and frequently will solicit papers for a specific subject or theme. An increased emphasis on thematic issues in recent years provides more opportunities for authors who are specialists in areas being considered for discussion.

Papers and tutorials. A paper may describe original work, discuss a new technique or application, present a survey of recent work in a given field, or provide tutorial information. Theoretical discussions and proposals are avoided; information presented in the *Systems Journal* is intended to be of practical use to the reader. The presentation should emphasize concepts and underlying principles, not details of implementation, and enough background information should be provided to orient the reader who is not a specialist in the subject under discussion. The focus should be on new technology or science, rather than products. It is important that authors understand and describe the value of their specific work within the broader framework to which it pertains. Tutorials demonstrating breadth of knowledge in relevant areas are encouraged by the editorial staff.

Whatever the topic or treatment, the paper should be a contribution to the technical literature on computer systems and data processing, having both current and lasting interest. Options and alternative designs considered during development of a system or methodology should be discussed, with evidence to support final choices. The work should be shown in perspective by means of references to publications describing related work of others, both within IBM and outside the company. Papers discussing products should not be product descriptions, but should provide a broad understanding of the topic under discussion and distinguish among different machines or programs.

A paper submitted to the *Systems Journal* should not have been published elsewhere, nor should it be submitted to another publication or to a conference concurrently. Internal publication in IBM technical reports, and presentation at conferences with very limited attendance, are not generally considered prior publication. Authors should be aware that copyright laws apply when previously published material is used in whole or in part in a submitted manuscript. When in doubt of prior publication or copyright, please consult with the editors.

Information presented in the Systems Journal is intended to be of practical use to the reader.

Other material in the Systems Journal. Nontechnical essays of general interest (such as this "Author guidelines for the *IBM Systems Journal*") and surveys of literature on selected topics are sometimes included in issues. The editors invite inquiries about submitting such material for publication. Short items are occasionally published as technical notes to document some related aspect or the progress of work described in recently published papers. Succinct discussions of work of interest to readers are included in technical forums. The *Systems Journal* also publishes reviews of books that the editor believes will be of interest to our readers.

Criteria for evaluating papers

Outlined below are the major criteria used in evaluating papers submitted to the *Systems Journal.*

Value. Is the paper an authentic contribution to knowledge? If not a report of original work, is it of significant educational value? Does the paper describe an innovative idea, approach, technology, or application that has been implemented? If an overview or a tutorial, does it present a fresh perspective or a new synthesis of knowledge? Has the information been published elsewhere?

Clarity. Does the paper follow the topic as outlined in the introduction? Is the paper easy to read? Is the main thought easy to understand? Are technical terms defined adequately? Is the use of jargon avoided? Is the writing style appro-

priate for the audience? Are figures and tables pertinent to the text and adequately described?

Organization. Does the paper state what it is going to do, then do it, then summarize? Are the abstract, introduction, and conclusion adequate? Is the topic covered thoroughly and in logical sequence? Is irrelevant information omitted? Are alternatives for obtaining the result considered? Is evidence given to support points made? Is the discussion placed in perspective? Has the author demonstrated awareness of related work by others (the usual practice is to cite references in the paper)?

Paper preparation

Read. It is essential that a paper be written for the specific audience the author intends to reach. The first step in preparing to write for the *Systems Journal*, therefore, should be to review recent issues to get an idea of the relevance of the proposed topic for *Systems Journal* readers, as well as the most appropriate style of presentation. And, of course, the author should be familiar with other literature relating to the topic of the paper.

Plan. An early step should be to plan the general makeup of the paper. Papers are sometimes written as a collaborative effort involving the work of several authors. When collaboration takes place, it is a good idea to plan the writing and revising stages of authorship carefully. It will also be helpful to decide in advance which author should assume primary responsibility for communicating necessary discussion to the other authors during the review process. For practical purposes, it is also best if one author serves as principal contact for the paper as the editorial process moves forward, once the paper is accepted for publication.

Outline. Before beginning to write, it is well to outline the proposed presentation. The outline need not be detailed, but it should list the main topics and subtopics to be covered. It is useful for the author to submit a detailed outline or abstract (preferably both) of the proposed paper before beginning to write, as the editors often can provide guidance that may save extensive rewriting later on. The editorial staff is prepared to advise authors in planning and writing their papers.

Write clearly. The writing should be a clear, crisp, logically organized and focused exposition of the topic. The subject addressed should be stated explicitly in the introduction. In a paper that describes original work, the author should make plain what is novel about the approach, or how the technique differs from what is already known or published. The author should identify experimental work or work based on existing products so the reader can reproduce the results or comprehend the value. It is important that the author supply enough information so the reader can readily follow and understand the discussion, but not so much that main points become obscured by superfluous detail. It is also important for the author to substantiate statements made in the paper. Many books and articles have been published to help authors write effectively. A few of them are listed in the General References section at the end of this essay.

The writing should be a clear, crisp, logically organized and focused exposition.

The author should use standard written English; colloquial language and jargon should be avoided throughout the paper. Abbreviations and acronyms should be used sparingly and should be defined when first used. Mathematical notation can be used where it might increase the reader's comprehension, but the ability to grasp the subject should not require an understanding of high-level mathematics. Mathematical expressions should not be used in place of exposition. Detailed, complex, or specialized material, if needed to qualify the main text, is best placed in one or more appendices. Avoid the frequent use of lengthy bulleted or numbered lists.

Authors often neglect matters of detail that later cause problems or delays in the editorial process once their paper is accepted. When writing a paper, it is well to remember that trademarked items, such as Personal System/2* (PS/2*) or UNIX** operating system, must be identified when first used in a paper and ownership properly

attributed. Any company names that are cited in the paper should be stated accurately and completely on first occurrence as well.

If part of a submitted manuscript (including a figure or table) has appeared in any previous publication, the author should inform the editors and arrange to obtain any needed permission from owners of the copyright if the manuscript is approved for publication.

Illustrate. Diagrams, graphs, and tables that help clarify the text should be included where appropriate to aid the reader in gaining insight into the concepts discussed, or to summarize pertinent data. The use of lists of programming code should be avoided, unless a partial list is needed to illustrate an algorithm or methodology.

Review. After the first draft is finished, it should be read carefully for content and flow, as well as for typographical errors. It is a good idea for an author to circulate copies of the paper among colleagues for reactions and suggestions. Papers submitted for publication are evaluated in terms of value to the reader, originality, clarity and organization of the presentation, and supporting evidence and documentation. The previous section discussed these criteria, which the author might find useful to review before submitting the paper for publication.

Format. Papers are best created with a word processing program or a host-based editor for electronic transmittal to the staff of the *Systems Journal*. Files should be prepared so that printed output will be double-spaced as a single column with reasonably wide margins. The length of a typical paper is approximately 30 pages of double-spaced material; acceptable papers may be shorter or longer, depending on the subject treated. The structure of the paper normally should not have more than three levels of subheadings. More specific information on the recommended format for papers can be found in the Appendix.

The cited references and notes should be numbered sequentially as they are identified in the text, not ordered alphabetically as is sometimes the custom. Additional references may also be included in a general references section. All illustrations (e.g., figures) and tables are redrawn professionally to *Systems Journal* specifications, so authors need submit only neatly prepared sketches with clear labels. In general, the number of figures in a paper should not be greater than one for every two to three pages of text. A biographical sketch for each author should also be included at the end.

This essay illustrates the general style and format used in the *Systems Journal.*

Processing

Papers submitted to the *Systems Journal* should have all clearances required for publication. Editorial processing of a paper can begin before these clearances have been obtained, but uncleared material cannot be processed further than internal reviewing. Signatures obtained for approval purposes are sent to the associate editor assigned to the paper. In addition, non-IBM authors complete a transfer-of-copyright agreement, available from the *Journal.*

Reviewing and refereeing. When a paper is received, it is reviewed by the editorial staff to make sure the topic and treatment are appropriate for readers of the *Journal*. It is then evaluated by three or more independent referees, who, in the judgment of the editors, are professional peers of the author. The editors usually select both IBM and non-IBM experts as referees. To ensure the objectivity and integrity of the refereeing process, the referees remain anonymous to the author. They advise the editors on the technical merit of the work and the quality of the presentation.[1-3] Often they suggest ways in which the presentation can be strengthened. The referees' comments and suggestions are forwarded to the author, who is asked to consider them on their merits and, if necessary, to revise the paper accordingly. This revision cycle is often an invaluable aspect of the process that results in the high quality of papers seen in the *Systems Journal.*

If recommended for publication by the referees, and after any revisions have been made, the paper is edited for publication. Once the editing is complete, the paper enters the printing production process. At this stage, the text is typeset, and figures are sent for professional rendering. The typeset text and figures are sent to the author for inspection and any necessary corrections that need to be made before final printing.

Figure 1 Author activities in the editorial and production process for a paper

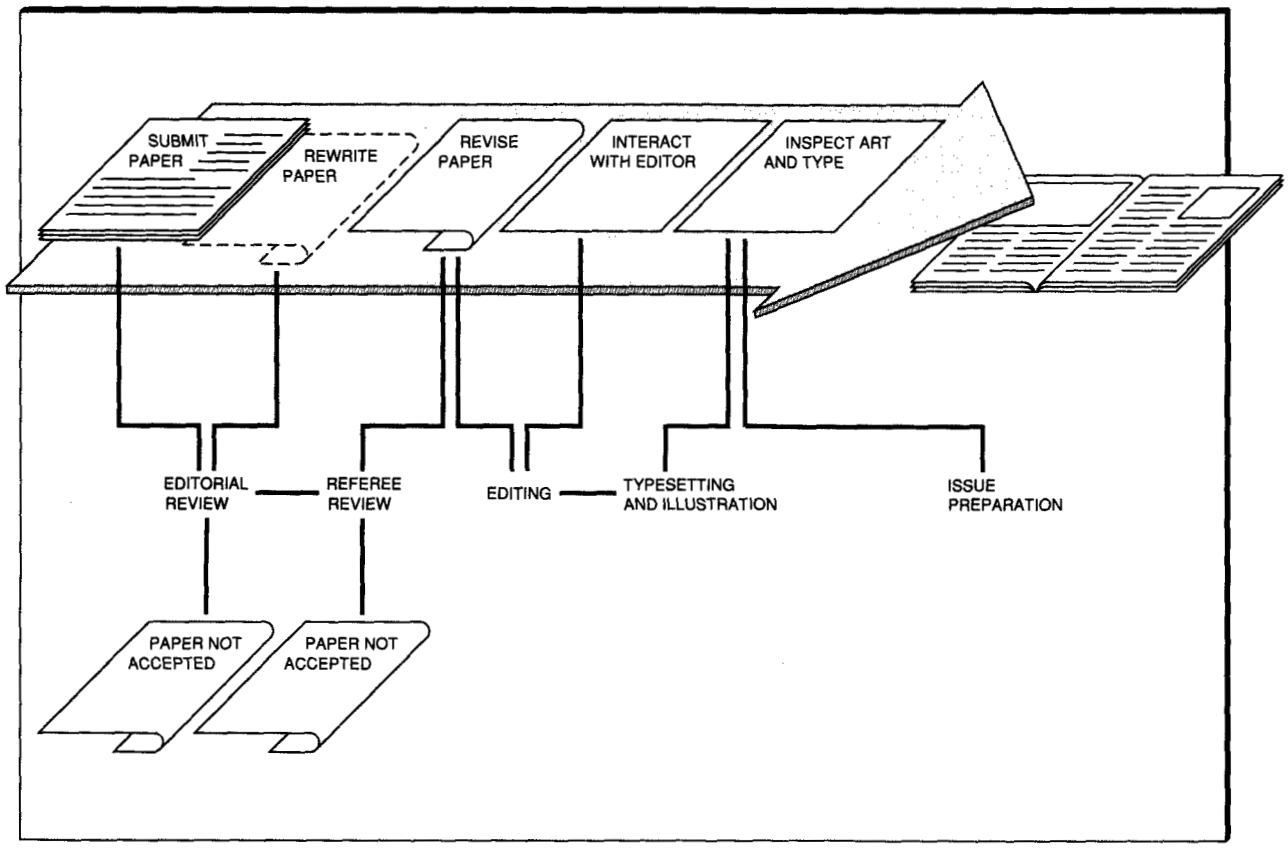

Figure 1 illustrates author activities in the editorial and production process for a typical paper submitted to the *IBM Systems Journal*.

Processing time. On average, nine months are required for refereeing, revising, editing, typesetting, and printing—a cycle that is shorter than that of many technical journals. This production time starts once the paper is deemed acceptable for technical review by referees. When papers are contributed for thematic issues, this processing time may be slightly longer to address the more complex editorial concerns that may occur when discussing themes.

Authors receive a first-run copy of the *Journal* issue in which their papers are published. In addition, authors usually receive a generous number of the individual paper reprints for personal use. If more copies are desired, they are available from IBM at the regular price.

Paper structure

The basic structure of a typical paper is outlined in Table 1. When a paper is submitted, the title, author's name, and abstract should appear first. The title should be a concise description of the topic being treated.

Authors. The ordering of the list of authors is determined by the authors. Only authors of the paper should appear; contributors to the work who did not contribute to the actual writing of the paper should be mentioned in the acknowledgments. Team or group names should not be used.

Abstract. The abstract, which will be reprinted by various documentation services,[4] should provide enough information so that the reader can assess a level of interest in the full paper. It should serve as a brief overview of the contents. In one para-

Table 1 The structure of a typical *Systems Journal* paper

Authors	Order according to preference of the authors List only actual authors of the paper
Abstract	Briefly describe the work and its significance
Introduction	State the subject in its historical and scientific context Define technical concepts and terms Discuss key related work of others and use appropriate citations Outline the discussion presented in the body of the paper
Main body	Enlarge on the subject Treat underlying principles Discuss options with reasons Provide evidence to support final choices Candidly discuss failures as well as successful results Give performance data where possible Include appropriate diagrams and tables Offer recommendations for further work if pertinent
Concluding remarks	Summarize the work and its implications State the author's conclusions
Acknowledgments	Recognize contributions of others as appropriate
Appendices (optional)	Present detailed or complex data to support the main theme
Cited references and notes	List publications cited in the paper, using the correct format Use superscript numbers for citations, in the order of appearance Present notes not included in the main text
Biographical sketch	Give current affiliation, address (including e-mail), special work achievements, education

graph of 200 words or less, the abstract typically answers such questions as:

- What was done and how was it done? For example, if a problem was solved, state what it is and describe in what manner it was investigated.
- What is the author's unique approach or important contribution?
- What is the principal result or a typical application?

Introduction. The main body of the paper is preceded by an introduction, perhaps one or two pages long, which clearly states what is to be discussed in the paper, such as a problem being considered and the author's solution. For example, in a paper presenting the solution to a problem, the historical and scientific context of the problem should be established, usually with the aid of citations that refer to previous or related work of others. In addition, the introduction defines major technical concepts and terms used in the paper, and it briefly explains the resolution of the problem as it is presented in the main body of the paper. It is helpful if the author briefly explains how the main discussion is organized.

Main body. Following the introduction, the main discussion enlarges on the subject in terms of underlying principles and interrelationships with similar or related topics. It discusses design options that may have been considered in reaching a solution to the problem, providing a rationale for the options along with evidence (such as performance data) to support final choices. The author should candidly discuss failures as well as successful results. Diagrams and tables may be used as appropriate to support and illustrate main points and summarize results. Recommendations for further or related work can be included.

Concluding remarks. The main discussion is followed by the author's concluding remarks, which can be a summary of the work and its implications, a statement indicating what the author has concluded as a result of the work, or both, and perhaps some discussion of future work.

Acknowledgments. If the author wishes to acknowledge the help or support of others, the conclusion or summary can be followed by a section entitled Acknowledgments.

Appendices (optional). One or more appendices can be included after the acknowledgments or

body of the paper, if necessary, to present detailed or technical information that is relevant but not essential to the main discussion.

Cited references and notes. The cited references and footnote-type material are listed at the end of the paper. They are numbered serially in the order in which they are called out in the text. It is important that authors submit full and accurate literature citations. The use of a numbered note is illustrated in Reference 4 in this essay. Citations of articles in periodicals include the author's initials and last name, the title of the paper, the full name of the periodical with its volume and number if given, the beginning and ending page numbers, and the year of publication, with the month if given. Several examples of the correct format are shown under the sections Cited References and Note and General References at the end of this essay.

Book citations include the author's initials and last name, the title of the book, the editor's name if appropriate, the publisher's full name and location, the year of publication, and, if applicable, chapter and page numbers. Several examples of the correct format are shown under General References.

Occasionally, as an aid to readers who may want more information on the topic under discussion, an author provides a list of publications not specifically cited in the paper. Such publications are listed alphabetically by author, or by title if there is no author, under the heading General References, after the list of cited references.

Biographical sketch. A brief biography for each author is placed at the end of the paper. The biography gives an author's current affiliation and address (including an electronic address if desired) and highlights an author's current position and work interests. The author's educational background is also included.

Conclusion

The *IBM Systems Journal*, a refereed technical publication for professionals involved in the development and use of computers and software, publishes original papers by authors on a wide range of systems and software topics. This essay has described the *Systems Journal* and its contents, it has reviewed the structure and preparation of a typical paper, and it has described how papers are evaluated and processed for publication.

Papers published in the *Systems Journal* are intended not only to inform readers, but to provide a bridge between computer science and applications, to demonstrate IBM's technical involvement and commitment, to encourage the development and use of advanced data processing technology, to provide a forum for authors, and to encourage further research and development.

Acknowledgments

This essay is a revision of an earlier one coauthored with M. J. Haims and G. C. Stierhoff, associate editors who have since retired, and is based on a document originally written by D. T. Sanders while he was an associate editor of the *IBM Systems Journal.*

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Appendix: Recommended format for papers

The following suggestions should be followed by authors seeking to have their papers considered for publication in the *Systems Journal*. They are offered in order to provide a common format for papers submitted to the *Journal* and are intended to make the document easily readable, to allow space for comments to be inserted during the review and editing processes, and to meld the document into the *Journal*'s production system. If these suggestions present a serious problem for any author's writing process or text preparation system, the editors will defer to the author's judgment on matters of format.

Printed text. The following description applies in general to the entire paper. Tables may be included in the text using single-spaced lines or treated as figures, discussed in the next section.

1. Single-column format
2. Double-spaced lines
3. A maximum of three heading levels
4. Acronyms, abbreviations, and product names spelled out when first used

5. Trademarks clearly identified when first used
6. Full legal company names used when first identified
7. Footnotes and references arranged as a single consecutively numbered group in the order of appearance in the text

Figures. All figures should be consecutively numbered. Explanatory text describing the figure should appear in the body of the paper, keeping the caption text to a minimum. Attribute source of any figure that appeared elsewhere.

1. Hand-drawn figures are acceptable. All artwork for the *Systems Journal* is redone professionally. Ensure that any text within a figure is legible and is properly placed with respect to the graphics. Clarity will avoid the necessity of later revision.
2. It is helpful if all illustrations and tables, with captions, are placed on separate pages at the end of the paper. These items are processed independently from the text.
3. Figure legends should be used to explain all abbreviations or acronyms not easily found in the paper.

Electronic submission. Machine-readable text is the preferred form of submission. However, only a formatted and printed version from the author will illustrate all font and appearance styles and is the form most apt to properly represent any accompanying illustrations.

1. IBM authors should submit their text using the internal IBM network (VNET), and others should mail a PC diskette containing ASCII-form text—such as that obtained by exporting or extracting from a word processing program. A formatted and printed, double-spaced "hard copy" version that includes figures and tables is also requested.
2. The current mailing address of the editor and associate editors is: *IBM Systems Journal*, Thomas J. Watson Research Center, P.O. Box 218, Yorktown Heights, NY 10598-0218. Users of the internal IBM network can obtain node and user identification addresses of the editors by accessing the on-line telephone directory. Electronic mail can be sent to the editor at sjedit@watson.ibm.com

Cited references and note

1. B. K. Forscher, "Rules for Referees," *Science* **150**, No. 3694, 319–321 (15 October, 1965).
2. B. D. Shriver, Editor-in-Chief's Message, "The Benefits of Quality Refereeing," *Computer* **23**, No. 4, 10–16 (April 1990).
3. A. J. Smith, "The Task of the Referee," *Computer* **23**, No. 4, 65–71 (April 1990).
4. Abstracts or reviews of *Systems Journal* papers are published regularly by a number of documentation services, including several in foreign countries. Publications in which these abstracts and reviews appear are listed on the inside back cover of each issue of the *Journal.*

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A. G. Davis, J. R. Friedman, and C. R. Seddon *IBM Systems Journal, Thomas J. Watson Research Center, P.O. Box 218, Yorktown Heights, New York 10598-0218.* Mr. Davis and Mr. Friedman are currently associate editors and Ms. Seddon is currently staff editor with the *IBM Systems Journal.*

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