

IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY

REVIEW PROCESS

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1.0 Background

Since 1996, the EMBS has been taking steps to improve the time a manuscript is under review. Rapid publication is one of the hallmarks of quality in scholarly publishing, but obviously it has to be consistent with EMBS's reputation for quality and integrity. These efforts will culminate with the introduction in 2001 of the Manuscript Central, a full electronic submission and review system. A set of procedures was devised to significantly shrink the submission-to-publication window from 2+ years to under one year, in keeping with the guidelines established by the IEEE Technical Activities Board (the body that facilitates the activities of the IEEE Societies). The new procedures are expected to become "standard operating procedure" on January 2001 for the Transactions of Neural Systems and Rehabilitation Engineering, on February 2001 for the Transactions in Biomedical Engineering, an on March 2001 for the Transactions in Information technologies, and in April 2001 for the EMBS Magazine. The manuscripts will be directly submitted to Manuscript Central, and all communication between all the parties involved in the review will be electronic.

1.1 Publication Mission

Publications play a major role in implementing the purpose of the IEEE as defined in its constitution and in its vision and mission. Throughout the world IEEE publications serve to advance the theory and practice of electrical and electronic engineering, and allied arts and sciences; to enhance the professional standing of the Institute's members; and to promote the constructive use of technology for the public welfare. (IEEE Policy and Procedures, 6.1, 1999)

As an organization of IEEE, the IEEE EMBS Society is responsible for assisting this mission. More specifically, the Society has established the goal of publishing original, high quality manuscripts pertaining to its fields of endeavor, as established in the Society's Field of Interest.

1.2 IEEE EMBS Field of Interest

The field of interest of the IEEE Engineering in Medicine and Biology Society is the application of the concepts and methods of the physical and engineering sciences in biology and medicine. This covers a very broad spectrum ranging from formalized mathematical theory through experimental science and technological development to practical clinical applications. It includes support of scientific, technological, and educational activities.

1.3 Publications of the IEEE EMBS Society

The IEEE EMBS Society fully sponsors publication of the following transactions:

- IEEE Transactions on Biomedical Engineering (publication begun 1953)
- IEEE Transactions on Information Technologies in Biomedicine (publication begun 1996)
- IEEE Transactions on Neural Systems and Rehabilitation Engineering (publication begun 1994).
- IEEE EMBS Magazine (publication begun 1982).

2.0 Amendments to This Guide

Amendments to this Guide will occur following amendments to procedures by the IEEE EMBS Society Publications Board, or in response to changes in policy by the Society's Board of Governors, or by the IEEE Publications Board or Board of Directors. The Guide will be reprinted at least annually, to record changes to IEEE or Society policy and/or procedures, affecting the Society's publications. Amendments in procedure may be recommended to the Society's Publications Board by emailing the Society's Publications Office at emb-publications@ieee.org (or by fax to 732 465 6435).

3.0 Publication of Original Material & Copyright

The Society publishes original material. An author(s) submitting material to the Society's publications is required to complete, and forward with the manuscript at submission, a Copyright Form confirming the originality of the manuscript and the fact that it has not been submitted for consideration elsewhere. The Society expects that all named authors are aware that they are listed as co-authors, and have had an opportunity to see the manuscript before submission. The signature(s) appearing on the copyright form attests to these conditions. Copyright of material appearing in IEEE publications is done for purposes of:

- enhancing the accessibility, distribution, and use of information;
- enabling the IEEE to control the use of its name;
- serving and protecting the interests of its authors and their employers.

Copyright policies are applied consistently throughout the Institute for all publications bearing the name and identity of IEEE. Copyright is held by the Institute itself, and not by any of its entities. In return for the transfer of authors' rights, the IEEE grants authors and their employers permission to make copies and otherwise reuse the material under terms established by the IEEE.

To assure that the Institute's and the Society's rules regarding submission of original material are followed, the Society has developed sanctions to discourage the fraudulent submission under copyright protection of material that has already been submitted

elsewhere (See the section on "Sanctions"). The IEEE may choose to exert additional sanctions against author(s) for double submission of manuscripts.

4.0 Timely Publication

As mentioned in the introduction, the IEEE has established as a strategic goal the publication of manuscripts within six months of submission. The IEEE Technical Activities Board, in support of this goal, has established a guideline for publication in less than one year from date of submission. The IEEE EMBS Society has been addressing means of speeding the time from submission to publication for manuscripts submitted to its transactions. Following is a step-by-step description of that process.

At the time of publication of a manuscript, two dates are listed along with the manuscript: the formal date of submission of the manuscript (the date the manuscript is received by Manuscript Central; and, the date of final approval of the manuscript for publication (the A status date only).

5.0 Peer Review Process and Calendar

5.1 Manuscript Submission

All of the transactions of the IEEE EMBS Society publish, in each issue, Information for Authors that guide the submission process.

5.1.1 New Submissions

Starting March 1, 2001, manuscripts will ONLY be accepted in electronic format through a new system called Manuscript Central. Please go to the Manuscript Central website at

<http://embs-ieee.manuscriptcentral.com/>

In the EMBS website

<http://www.embs.org>

there are instructions to create an account and electronically submit manuscripts, to login in as a reviewer or as Associate Editor.

Below we present the flowchart for manuscript review with the duration for each review step in days. Notice that these time intervals will be monitored by computer and the person in charge at each step will be notified automatically by email when the deadline has expired. This flowchart with time intervals will be made available to the full EMBS community. Associate Editors very often perform these duties for more than one periodical, and may even serve as Associate Editor for more than one IEEE publication at the same time. IEEE publications have differences in manuscript management and peer review processes and schedules. The transactions published by the IEEE EMBS Society

will function according to the following, standard timeline, and every effort will be made to keep all parties to the peer review to this schedule.

We request comments from the authors, reviewers and associate editors regarding the duration of each step in the flowchart. These comments should be sent to the EMBS Publications Office. The current flowchart should be interpreted as the ultimate goal, and we cannot expect that we will achieve these goals instantly from the present 1+ year. In his/her yearly editorial, the Editor in Chief will present statistics regarding progress and timelines with electronic manuscript review.

The duration of the steps in this flowchart are goals. For actual durations, check the statistics page on the TBME website

5.1.2 Manuscript Submission and Tracking

Upon submitting the manuscript to Manuscript Central, the manuscript is issued a Manuscript Tracking Number, and the author(s) and their contact information, the title of the manuscript, and other pertinent information necessary to track the manuscript through the peer review process is then available in the Database. The Publications Office staff reviews the submitted materials to determine that the manuscript meets submission requirements:

- Manuscript formatted double-spaced, single-column and of no more than 30 pages;
- Names of ALL authors (including identification of the Corresponding Author), their complete contact information, affiliation;
- An Engineering TIPS (Technical Interest Profile) identifier, which will allow in the future automated selection of the next available Associate Editor to manage the peer review of the manuscript;
- An abstract of no more than 200 words for a regular paper, and no more than 50 words for correspondence, that states the scope of the paper and summarizes the author's conclusions so that the abstract itself may be useful in information retrieval.

This concludes step zero and the manuscript is considered under review.

5.2 Peer Review Schedule

Step 1. New Manuscript Received (1 day)

After the manuscript has been received and qualified as to appropriate submission criteria, an email is automatically issued to the Editor in Chief to acknowledge receipt of a new manuscript. In due time we expect to automate this procedure with the TIPS and work load of each Associate Editor and attribute directly an Associate Editor to each manuscript.

Step 2. Selection of Associate Editor (up to 14 days)

The Editor in Chief assigns the manuscript to an Associate Editor according to TIPS and assures that no AE receives more than three manuscripts per month. The Associate Editor is directly contacted via email from Manuscript Central with the tracking number of the manuscript such that the AE can have access to the abstract and paper, and download the manuscript if he/she so wishes. Manuscript Central acknowledges receipt of the manuscript via correspondence with the "Corresponding" Author, and advises the author of the name and contact information of the Associate Editor assigned to manage the manuscript. Here the Corresponding Author is the author him/herself, or the author designated by all authors of the paper to act as interface for the paper with the Associate Editor and the transactions.

Step 3. Reviewer Contacts (up to 14 days)

The Associate Editor reviews the manuscript for novelty, quality and appropriateness. If the AE feels that the manuscript has pitfalls he/she should contact the EiC and together they should reject the manuscript. If the manuscript is judged appropriate, reviewers are selected. The reviewers can be selected from the reviewer database available in Manuscript Central or by personal contacts. In the case that the reviewer is not in the database, the AE will have to enter the pertinent information in the database, focusing on name and e-mail contact. This reviewer can then login and complete his/her MC personal information to allow the electronic review system to proceed. Manuscript Central contacts automatically the reviewer through email with the title, and abstract of the manuscript. However, we recommend that the Associate Editor also contact the reviewers to obtain their agreement to complete the review within four (4) weeks from receipt of the manuscript. This new procedure for gaining agreement from reviewers assures that personal contact is established between the Associate Editor and the reviewers and that the reviewers agree to the four weeks review period. Once the reviewer accepts or declines to review the manuscript by responding to the MC request, the AE will be automatically advised by Manuscript Central. In order to minimize delays, we suggest that four reviewers be initially contacted.

Step 4. Reviewer Accepts the review (up to 6 days)

The Associate Editor will be informed by Manuscript Central when the 6 days period for reviewer acceptance has elapsed. When a reviewer accepts the review, the system automatically sends the manuscript tracking number such that the reviewer will have access to the full paper (for download or for review in the computer). A link to the review guidelines will also be emailed to the reviewer.

Step 5. Paper Revision (up to 30 days)

The Reviewer completes the review and electronically enters the review in the forms available in Manuscript Central. At sixty-one days, Manuscript Central will begin to send reminders to the reviewer, with a copy to the Associate Editor. Manuscript Central will

also email the AE to inform him that the review was completed by that particular reviewer. If the reviewer appends marked up portions of the manuscript, courier delivery may be required (or an e-mail attachment may be sent to the AE)

Step 6. Associate Editor Decision (up to 7 days)

The Associate Editor, based on the reviews of the manuscript, determines whether or not, and under what circumstances, the manuscript can be published. The AE must make sure that the reviewer remains anonymous, i.e. he/she must check if the information stored in MC does not carry any information about the reviewer such as author tags in Microsoft software.

There are two courses of action: If the paper requires a major or minor revision, the associate editor contacts directly the corresponding author and copies the EiC with the decision. If the paper is accepted or rejected, the AE forwards the decision to the EiC, who then contacts the authors with this final decision.

An Associate Editor may decide:

- R to reject the paper.
- A to accept the paper with no changes.
- MiR to accept the paper with minor but required changes which the Associate Editor can adjudicate directly. The author will return the amended manuscript to Manuscript Central, where it will be re-logged and then forward to the Associate Editor.
- MaR to accept the paper with major, required revisions that will require a second full review cycle by the original and/or additional reviewers. The author will return the amended manuscript to Manuscript Central which will then forward the manuscript to the Associate Editor and reviewers.
- WD manuscript is considered withdrawn (this will affect manuscripts requiring amendment (MiR or MaR)) which have not been returned to Manuscript Central at the end of the 30 or 45 days amendment period, respectively, and the author(s) has not set a new return date, or has not responded to two reminders from the EMBS Publications Office. This status may also be self-selected by the author at any time during the process.

Due to the fact that MaR adds practically 75 days to the review cycle, AE should ponder carefully when to attribute a MaR instead of a Reject. Anyway, a manuscript cannot receive two major reviews. At most, a manuscript can have a MaR and a MiR. Another aspect is the normal .downgrading. of a paper to a communication article. If the paper does not meet the criteria for publication under the category it is submitted, it should be Rejected.

Step 7. Editor in Chief Decision (7 days)

The EiC makes the final decision of acceptance or rejection of a manuscript upon the information received from the AE. The reviews and the AE opinion is in the database, so it will be invoked in the letter to the authors. For rejected papers no further action is required.

Step 8. Accepted paper.

In the final letter to the author the EiC requests a formatted version of the accepted manuscript (paper version) that should be mailed to the EiC office with a signature acknowledging the (press) length of the paper and agreement to pay mandatory overlength page charges.

Step 9. Minor Revision (MiR) of the Manuscript (30 days)

The author is informed by the AE of the revisions and has 30 days to complete the review and resubmit electronically the manuscript to Manuscript Central with explanations of the modifications in the comment to editor panel. If the paper is not returned in 30 days, it will be considered a new submission. The review then continues from step 6 above, i.e. the AE will perform the minor review without sending the manuscript back to the reviewers. The possible result of this review is acceptance of the manuscript, and the AE communicates the decision to the EiC for action.

Step 10. Major Revision (MaR) of the Manuscript (45 days)

Due to the more extensive nature of revisions required, we give 45 days for the author to complete a major revision. After completion, the author resubmits the manuscript to Manuscript Central and explains the modifications in the comment to editor panel. If the paper is not returned in 45 days, it will be considered a new submission. The review will continue from step 2 above. The only difference is that the manuscript can have only three reviews thereafter: A, MiR, R.

Step 11. Preparation of Final Version (30 days)

Author(s) has 30 days to provide the final manuscript in proper format to the Publications Office. The first reminder, requesting a revised final submission will be sent at 30 plus one day.

Step 12. Assembly of the Issue and Publication (120 days)

The Editor-in-Chief Office assembles the table of contents of the transactions. Recall that the EiC Office works on issues three months in advance of their actual publication. So, in May, the staff will be working on the August issue. The publication date of a finalized manuscript is affected by the backlog. While there is some backlog at this point, owing to protracted peer reviews, this backlog will eventually be cleared out and the queue should be practically nonexistent. IEEE's Transactions/Journals Department produces the final

transactions issue, which then goes to press and mails two weeks prior to the cover date of the transactions.

Following the above steps, a manuscript with a decision of A should reach the production step within approximately 60 days; a manuscript that is MiR should reach production in about 90 days, and a manuscript that is MaR may require twice that long to reach production.

6.0 Quality Publication

6.1 Novelty, Quality and Appropriateness

The three most important scores a manuscript will receive are:

- Novelty: Does the manuscript disclose new science, or contain fresh new approaches to established science?
- Quality of technical content: Is the manuscript methodologically correct? Does it present the information well? Is the data analysis adequate? Is the writing appropriate? Is the manuscript "complete," not requiring propping up by other work to permit understanding of the disclosure.
- Appropriateness: Is the manuscript a good "fit" for the publication, appealing to the publication's "audience?"

These criteria must be affirmative for the manuscript to be accepted.

6.2 Disclosure

The transactions are published in English. The manner of disclosure of the author's findings must be sufficiently literate in English to convey the author's ideas. While current trends in academic writing show a preference for "active voice" (making the author an active player, rather than a passive observer, in the science), such considerations are not necessary to the selection of a manuscript for publication. However, manuscripts that are loosely written and repetitious, and that restate established scientific principles, instead of merely providing the appropriate reference to such science, will require reworking. It will be up to the reviewers and the Associate Editor to determine whether this is an easy fix (accomplished in one more round of reviews), or a major undertaking (in which case the author probably should be advised to withdraw the manuscript and resubmit it after major revamping has occurred).

6.3 Appropriate Publication Length

A manuscript needs to be long enough to meet the burden of disclosure; but every effort must be exercised to eliminate "waste" of space. The Society has established seven (7) pages as the "standard" length of a final manuscript in all its publications. It is recognized that some manuscripts may not be able to meet the burden of disclosure in only seven pages; however, the authors will be required to meet the expense of publishing every

page over seven. Quite often, disclosure can occur quite nicely in less than seven pages, in which case the Associate Editor, with advice from the reviewers, should require the author to alter the manuscript to a suggested, appropriate length by providing clues for material to be edited out of the manuscript.

7.0 Summary of Review Status

7.1 Status of A

This manuscript requires no additional reviews, although there may be some small fixes-- typos, etc.--which the Associate Editor indicates must be corrected. In this case the status of .Pending Accept. will be given in Manuscript Central. This manuscript will, essentially, be published "as is," with no additional action by the reviewers or Associate Editor.

7.2 Status of MiR

This manuscript, although meeting the criteria of novelty and appropriateness, requires a few fixes, usually of the technical variety (more than typos or grammatical corrections), which are considered to be quite minor, but which the Associate Editor has determined he/she should review one last time prior to approving the manuscript for publication.

7.3 Status of MaR

This manuscript, although meeting the criteria of novelty and appropriateness, is seriously flawed as to disclosure (either technical, or literary, or both), and requires a major rework by the author. Manuscripts accorded a status of MaR will require a second round of reviews by the original reviewers (and possibly an additional reviewer).

No manuscript will be accorded the status of MaR more than once. That is, no manuscript will receive more than two full rounds of peer review. If the manuscript cannot be upgraded to a status of A or MiR by the Associate Editor at the end of the second round, it must be rejected.

7.4 Status of R

This manuscript has been rejected for one or more reasons. Manuscripts that fall into this category fail to meet the criteria of novelty and appropriateness; may be poorly written or targeted for a different audience; or require such significant editing that the edit cannot reasonably occur in the six weeks the author is allotted prior to the next review round.

7.5 Status of WD

An author may, at any point of the peer review, choose to withdraw a manuscript from consideration. Authors who do not return their materials to the Publications Office on schedule and do not respond to attempts to contact them regarding the material may have their manuscripts withdrawn as a matter of process.

8.0 Communication

8.1 Short communication papers disclosing new ideas and preliminary results and manuscripts commenting critically and substantively on papers published in the TRANSACTIONS are also encouraged. Such items are peer reviewed according to the same criteria and timeline as full manuscripts. Communications may not exceed seven double-spaced pages at time of submission, and must meet the same criteria for submission as a manuscript.

8.2 Notifying the Authors. In the event that a communication is accepted for publication, the authors of the original manuscript being critiqued will receive a copy of the communication, and be permitted to rebut it. Such rebuttal will be peer reviewed by the original reviewers of the communication. In the event that the communication and rebuttal are recommended for publication, the Associate Editor shall so notify the Editor-in-Chief of the transactions. The Editor-in-Chief will review both the correspondence and the rebuttal and make the final decision regarding publication of both items.

8.3 Point of Publication. In the event the decision is to publish the communication and the rebuttal, the author of the communication will receive a copy of the rebuttal. However, at this point, the author of the communication will be permitted no further comment until after both the communication and the rebuttal have been published, together, in the transactions.

8.4 Automatic Change in Status. The correspondence author, on reviewing the rebuttal, may choose to request that his/her communication be withdrawn. In the event the communication is withdrawn, the rebuttal shall also automatically be withdrawn, and neither will be published in the transactions.

9.0 Sanctions

Authors are expected to submit ORIGINAL manuscripts that have not been submitted to any other publication for consideration. On submission of the manuscript, the author must sign a Copyright Form which is the author's oath that the manuscript he/she has submitted meets these criteria. Unfortunately, it seems that lately there are more instances of submissions of material that is not original, and may even be plagiarized, and that has been submitted to other publications, despite the signed "oath" that no other submissions have been undertaken. When such instances arise, and it has been established that the author(s) acted knowingly, the Society will apply sanctions.

In some cases, because the peer community for a certain portion of biomedical engineering is small, it has occurred that the same individual may be called on by both publications to review the duplicate papers. In such instances, plagiarism and/or duplicate submission are easily established. In other cases, the misdeed is not caught, and in one rare instance, the same manuscript was published in two different publications (although not of the same Society). Reviewers and AEs must be vigilant and report suspicions.

Sanctions regarding plagiarism shall be adjudicated by IEEE when discovered and documented. Such behavior not only constitutes a publishing misdeed, but may be actionable by IEEE under the rules of Member Conduct. When it occurs that an entire manuscript or large parts (more than 25%) of a manuscript exactly mirrors a second manuscript, this must be reported immediately to the transactions Editor-in-Chief.

When approved, the EMBS Society is prepared to exert the following sanctions regarding duplicate submissions. When duplicate submissions (the same manuscript submitted to two different publications for consideration) are discovered and found to be deliberate:

1. the manuscript submitted to the Society's transactions will be immediately rejected;
2. all authors [that is, any single, paired, or group of the authors to the duplicate manuscript] of that manuscript will be prevented from submitting new manuscripts to any of the Society's publications for one calendar year; and,
3. any manuscripts under review by any of the authors of the duplicate submission will have their manuscripts returned to them immediately, regardless of the stage of peer review.

Note that this sanction will not harm innocent co-authors on manuscripts other than the duplicate submission.