
INCOSE IS PAPER REVIEW CRITERIA

This document serves as a rubric for paper authors to prepare papers that add value to INCOSE IS and considers the review criteria. Two categories for papers are considered: Academic/Research and Practical/Applied papers. There are two sections that cover the rubrics for each category.

1. Academic/Research Papers

Academic/Research papers advance systems engineering knowledge through new or extended theory, methods, models, tools, or findings, whether established through empirical work (data, experiments, structured observation) or through rigorous conceptual argumentation. A paper does not need to report an experiment to qualify as research; a well-argued conceptual contribution is equally valid under this track.

Authors should consider the following criteria when preparing their papers.

Technical Merit

Guide to assess how sound/robust is the content in the paper. You may use the following questions as a guide in your writing process for the technical merit of the work presented in this paper:

- Are the assumptions reasonable?
- Is the research need clearly articulated?
- Is this a conceptual paper (e.g., does it advance an argument, framework, or theory rather than report new empirical work)?
 - ☐ Yes: are the assumptions, arguments, and rationale well documented and supported by sound logic?
 - ☐ No: are the authors providing sound samples, measures, methods, observations, procedures, and/or statistical analyses?
 - ☐ Are research procedures (e.g., statistical, data analysis, validation, etc.) used correctly and appropriately, where applicable?
- Are the major assumptions of the techniques or arguments reasonably well met and justified (i.e., no major violations)?
- How appropriate is this submission for INCOSE IS?

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Submission has serious errors in its approach (e.g., invalid logic, unsupported assumptions, or clearly erroneous data) that invalidate its conclusions, and/or the submission is not appropriate for INCOSE IS.

2 Poor - For empirical papers: methodology is unclear, or data may have major errors (though this may be unclear). For conceptual papers: the argument's assumptions or logic are questionable or insufficiently justified.

3 Acceptable - Only minor flaws in method/data (empirical) or in argumentation/rationale (conceptual).

4 Good - Seems technically sound, whether judged as an empirical study or a conceptual argument.

5 Excellent - Exceptionally thorough and rigorous, whether in methodology and results (empirical) or in logical construction and support (conceptual).

Originality

Paper must explicitly state new insights into attaining solutions to SE challenges. You may use the following questions as a guide in your writing process for the originality of the work presented in this paper:

- Are there any new insights for existing theory, methods, processes, tools, and/or practice?
- Do the author(s) make a case for why their insights go beyond diligently applying rules for following processes and using tools, and provide arguments on how their work can be leveraged to attain solutions to SE challenges?
- Will attendees of INCOSE IS and readers of the proceedings learn something that they didn't already know from this submission?

SCORING GRADES

Rubric to assess this criterion:

1 Not at all Original - This particular work has already been sufficiently addressed by the community.

2 Low Originality - This work presents a small incremental improvement over existing published work.

3 Minor Improvement - The same problem has been examined before, but this presentation presents a new approach or data that has not yet been presented.

4 Major Improvement - This work represents a significant expansion of a previously investigated topic and offers a potential path towards attaining solutions to an SE challenge.

5 New/Novel Approach - This work presents a promising and/or potential new approach to addressing SE challenges; examples include a dramatically different methodology, tool, or approach; or presents (valid) data dramatically challenging current assumptions and/or provides a very promising approach at attaining solutions to SE challenges.

Relevance

Use the following questions as a guide to make sure your submission is relevant to INCOSE IS. Note: the second question below should generally be reflected in this same relevance score (e.g., as a borderline or low relevance rating) rather than scored separately.

- Is the work presented in this paper related to the disciplinary areas identified in the SEBoK, INCOSE Handbook, FuSE, TechOps, INCOSE initiatives, and/or of interest to SE?
- Is this submission, regardless of its quality, better suited to other events or publication channels?

SCORING GRADES

Rubric to assess this criterion:

1 Not at all Relevant - The topic falls outside systems engineering and does not belong at INCOSE IS.

2 Low Relevance - The connection to systems engineering or INCOSE IS's disciplinary areas is weak or tangential.

3 Borderline Relevance - The submission touches on systems engineering but is only loosely connected to INCOSE IS's disciplinary areas, or may be a better fit for another venue or publication channel.

4 Relevant - The submission is clearly connected to INCOSE IS's disciplinary areas and would be of interest to its attendees.

5 Very Relevant - The submission addresses a disciplinary area central to INCOSE IS and would be highly welcomed by attendees and the broader INCOSE community.

Contribution

This criterion evaluates the significance and impact of the paper's contribution (e.g., why it matters) as distinct from Originality, which evaluates whether the underlying idea is new. You may use the following questions as a guide in your evaluation process for the contribution of the work presented in this paper:

- Do the author(s) make a compelling case for how their paper contributes to INCOSE's Vision 2035, INCOSE's strategic initiatives, the goals or purposes of working groups, or other needs of SE?
- Does the paper contribute to SE research, and/or to INCOSE's body of knowledge?
- Can the paper's findings inform SE practice?
- Does the paper test, validate, falsify, propose something new, or extend SE knowledge in a meaningful way?
- Are contributions clearly defined?

SCORING GRADES

Rubric to assess this criterion:

1 Little to no contribution of value - This particular work has already been sufficiently addressed by the community.

2 Some minor contributions - This work presents a small incremental improvement over existing published work.

3 Minor Improvement - The same problem has been examined before, but this presentation presents a new approach or data that has not yet been presented.

4 Major Improvement - This work represents a significant expansion of a previously investigated topic.

5 New/Novel - This is a new topic in this area; a dramatically different methodology, tool, or approach; or presents (valid) data dramatically challenging current assumptions.

Background/Context

Guide to determine whether sufficient background information and context to support the reported work is included. You may use the following questions as a guide in your evaluation process to determine the quality, relevance, and scope of the background presented in this paper:

Does the background include need-to-know content only and avoid nice-to-know content?

- Does the background ignore key knowledge to help readers understand the need for this work?
- Does the background ignore key knowledge to help readers value this work?
- Does the background ignore work that has addressed a similar issue?

Note: Keep in mind that, while we strive for rigor, the scope and burden of proof is not equal to that of a journal publication.

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Background provided does not support the work in the paper.

2 Poor - Background provided does not provide relevant support for the work in the paper.

3 Acceptable - Background is either too lengthy or insufficient for the reader to follow.

4 Good - Background provides adequate background for the readers to follow.

5 Excellent - Background provides great background for the readers to follow.

Readability

Paper is written in a style that is accessible to a general SE audience as much as possible. You may use the following questions as a guide in your evaluation process to determine the readability of this paper:

- How easy is it to understand the submission?
- Are writing style, use of language, grammar, and spelling appropriate for an SE context? (Note: English is the official language for INCOSE IS)
- Is there an over-use (or under-use in some cases) of equations, figures, tables, or improper font sizes?
- Is the submission length inappropriate (too short, too long)?

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - I had a really hard time understanding the paper (please comment on the reason in the “Feedback for Chair” section).

2 Poor - I was able to make a little bit of sense of the paper (please comment on the reason in the “Feedback for Chair” section).

3 Acceptable - Paper is acceptable, but could be shortened, or rewritten to improve readability (please provide a comment in the “Feedback to Chair” section).

4 Good - Paper is overall well-written with a few minor revisions needed and the length is appropriate.

5 Excellent - Paper is well-written and easy to follow. The length is appropriate.

Formatting

The paper follows the format specified for submissions to INCOSE IS. You may use the following questions as a guide in your evaluation process to determine the formatting of this paper:

- Are the margins correct?
- Are headers, sections, bullets, and numbering correct?
- Are font, spacing, figures, tables, and equations formatted as specified?
- Is the length between 3,000 and 7,000 words?

Note: If you would like to attach an edited version of the paper, please make sure that you remove any identifiable information about you and upload a PDF file. Please upload it in the ‘Author Comments’ section below.

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Paper does not follow the formatting guide at all.

2 Poor - Paper does not follow most of the formatting guidelines.

3 Acceptable - Major formatting errors, however, it is clear that the author is trying to follow the formatting guide.

4 Good - Some minor formatting errors, but overall, conforms to the formatting guide.

5 Excellent - Paper conforms to the formatting guide.

2. Practical/Applied Papers

Practical/Applied papers report the application of existing or emerging systems engineering knowledge, methods, or tools to a real problem, project, or organization, including case studies, implementation experience, and lessons learned. These papers are evaluated on the validity of the practice described, the clarity of the context in which it was applied, and the transferability of the lessons to other practitioners, not on whether the underlying method itself is new.

Authors should consider the following criteria when preparing their papers.

Technical Merit

Guide to assess how sound/robust the content in the paper is. You may use the following questions as a guide in your evaluation process for the technical merit of the work presented in this paper:

- Are the assumptions reasonable?
- Is the need/value of the approach utilized clearly articulated?
- Are the observations from the practice valid?
- Are the samples, measures, methods, observations, procedures, and/or statistical analyses sound?
- Are the major assumptions of the techniques reasonably well met and justified (i.e., no major violations)?
- How appropriate is this submission for INCOSE IS?

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Submission has serious errors in approach that invalidate the results, contains clearly erroneous data, and/or the submission is not appropriate for INCOSE IS.

2 Poor - Methodology is unclear, data may have major errors (but unclear), questionable assumptions.

3 Acceptable - Only minor flaws in method/data.

4 Good - Seems technically sound.

5 Excellent - Exceptionally thorough/accurate in methodology and results.

Originality

For practitioner papers, originality does not require a new theory or method; it may instead lie in applying established SE knowledge to a new domain, context, or problem, or in combining existing methods in a way not previously documented. You may use the following questions as a guide in your evaluation process for the originality of the work presented in this paper:

- Is this application, context, or combination of methods new or underdocumented in the SE literature/community?
- Do the author(s) make a case for why their experience goes beyond routinely applying established rules, processes, or tools (i.e., what did they learn or adapt that others attempting the same thing would not already know?)
- Will attendees of INCOSE IS and readers of the proceedings learn something that they didn't already know from this submission?

SCORING GRADES

Rubric to assess this criterion:

1 Not at all Original - This particular application or experience has already been sufficiently documented by the community.

2 Low Originality - This work presents a small incremental variation on already-documented applications.

3 Minor Improvement - The same type of application has been reported before, but this submission presents a new context, combination, or data not yet documented.

4 Major Improvement - This work represents a significant, underdocumented application or adaptation of SE practice, with a clear potential for others to learn from it.

5 New/Novel Approach - This work presents a new or previously undocumented application context, combination of methods, or set of lessons learned; it offers practitioners a genuinely new example to draw on, even if the underlying methods themselves are well established.

Relevance

Use the following questions as a guide to make sure your submission is relevant to INCOSE IS. Note: the second question below should generally be reflected in this same relevance score (e.g., as a borderline or low relevance rating) rather than scored separately.

- Is the work presented in this paper related to the disciplinary areas identified in the SEBoK, INCOSE Handbook, FuSE, TechOps, INCOSE and working group initiatives, and/or of interest to SE?
- Is this submission, regardless of its quality, better suited to other events or publication channels?

SCORING GRADES

Rubric to assess this criterion:

1 Not at all Relevant - The topic falls outside systems engineering and does not belong at INCOSE IS.

2 Low Relevance - The connection to systems engineering or INCOSE IS's disciplinary areas is weak or tangential.

3 Borderline Relevance - The submission touches on systems engineering but is only loosely connected to INCOSE IS's disciplinary areas, or may be a better fit for another venue or publication channel.

4 Relevant - The submission is clearly connected to INCOSE IS's disciplinary areas and would be of interest to its attendees.

5 Very Relevant - The submission addresses a disciplinary area central to INCOSE IS and would be highly welcomed by attendees and the broader INCOSE community.

Contribution

This criterion evaluates the significance and impact of the paper's contribution to SE practice, why it matters to practitioners, as distinct from Originality, which evaluates whether the application or experience is new or underdocumented. You may use the following questions as a guide in your evaluation process for the contribution of the work presented in this paper:

- Do the author(s) make a compelling case for how their paper contributes to INCOSE's Vision 2035 or other needs of SE?
- Does the paper inform or improve SE practice, and can its findings be applied by other practitioners facing similar problems?
- Are contributions clearly defined?

SCORING GRADES

Rubric to assess this criterion:

1 Little to no contribution of value - This particular application or experience has already been sufficiently documented by the community.

2 Some minor contributions - This work presents a small incremental addition to already-documented practice.

3 Minor Improvement - The same problem/context has been examined before, but this submission presents a new approach, data, or experience that has not yet been documented.

4 Major Improvement - This work represents a significant, underdocumented contribution to SE practice with clear value to other practitioners.

5 New/Novel - This work documents a genuinely new practice context or set of lessons learned, with high value and transferability to the broader SE practitioner community.

Background/Context

Guide to determine if your paper presents enough background information and context to justify the need for this work. You may use the following questions as a guide in your evaluation process to determine the quality, relevance, and scope of the background presented in this paper:

Does the background include *need-to-know content only and avoid nice-to-know* content?

- Does the background provide enough context to understand the context of application?
- Does the background clearly describe the organizational, operational, or domain context (e.g., industry, project scale, constraints) needed to judge how the experience might transfer to other settings?

Note: Keep in mind that, while we strive for rigor, the scope and burden of proof is not equal to that of a journal publication.

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Background provided does not support the work in the paper.

2 Poor - Background provided does not provide relevant support for the work in the paper.

3 Acceptable - Background is either too lengthy or insufficient for the reader to follow.

4 Good - Background provides adequate background for the readers to follow.

5 Excellent - Background provides great background for the readers to follow.

Readability

Paper is written in a style that is accessible to a general SE audience. You may use the following questions as a guide in your evaluation process to determine the readability of this paper:

- How easy is it to understand the submission?
- Are writing style, use of language, grammar, and spelling appropriate for a SE context? (Note: English is the official language for INCOSE IS)
- Is there an over-use (or under-use in some cases) of equations, figures, tables, or improper font sizes?
- Is the submission length inappropriate (too short, too long)?

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - I had a really hard time understanding the paper (please comment on the reason in the “Feedback for Chair” section).

2 Poor - I was able to make a little bit of sense of the paper (please comment on the reason in the “Feedback for Chair” section).

3 Acceptable - Paper is acceptable, but could be shortened or rewritten to improve readability (please provide a comment in the “Feedback to Chair” section).

4 Good - Paper is well-written overall with a few minor revisions needed and the length is appropriate.

5 Excellent - Paper is well-written and easy to follow. The length is appropriate.

Formatting

The paper follows the format specified for submissions to INCOSE IS. You may use the following questions as a guide in your evaluation process to determine the formatting of this paper:

- Are the margins correct?
- Are headers, sections, bullets, and numbering correct?
- Are font, spacing, figures, tables, and equations formatted as specified?
- Is the length between 3,000 and 5,000 words?

Note: If you would like to attach an edited version of the paper, please make sure that you remove any identifiable information about you and upload a PDF file. Please upload it in the ‘Author Comments’ section below.

SCORING GRADES

Rubric to assess this criterion:

1 Unacceptable - Paper does not follow the formatting guide at all.

2 Poor - Paper does not follow most of the formatting guidelines.

3 Acceptable - Major formatting errors; however, it is clear that the author is trying to follow the formatting guide.

4 Good - Some minor formatting errors, but overall, it conforms to the formatting guide.

5 Excellent - Paper conforms to the formatting guide.