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Raising the Quality of Conference Papers (in Systems Engineering)

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Agenda



- Background
- Survey
- Case study
- Lessons learned
- Topics for future research
- Discussion

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Systems Engineering

- Expertise in providing
 - what the customer wants,
 - when the customer wants it,
 - within schedule and budget
- Systems Engineers
 - people who have the expertise
 - Academics
 - Practitioners

Conference papers

- Demand
 - Major source of information in postgraduate research
- Supply
 - publish or perish
 - publish and travel

Peer-review process

- Reviewers
 - decide to accept or reject papers
 - **set the quality level of the papers**
- Raising the quality of published papers requires quality reviewers
 - What are the current requirements/qualifications for peer reviewers?
 - What should the requirements for peer reviewers be?

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Survey of conferences?

- 7 email requests sent
- Do you have any data on
 - 1. **Qualifications for reviewers of papers**
 - main point
 - 2. **Reasons for rejections of submitted papers**
 - secondary point
 - 3. Percentages of rejections/acceptances
 - 4. Evaluation criteria for papers
- **0 responses, 0 bounces**

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Conferences 2002

- Author
 - submitted 5 papers to system engineering conference
 - submitted 1 (duplicate) paper to software engineering conference
- Reviewer for systems engineering conference
 - reviewed 44 out of 198 submissions
 - areas of interest and some knowledge
 - did not review own papers

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Assessment possibilities

- Accepted
 - for presentation and publication in proceedings
 - with or without suggested modifications
- Reserve paper
 - publication in proceedings
 - poster session
 - with or without suggested modifications
- Rejected

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Author's perspective

- Almost 30 years experience as practitioner
 - 1970 - 1997
- Doctor of Science in 1997
 - systems engineering/engineering management
- Active in research as academic
 - 1999 -
- Author
 - Book
 - “*Applying Total Quality Management to Systems Engineering*”, 1995
 - Conference papers
 - published >35 since 1995



Reviewers

- Comment on paper
 - suggestions for improvement to author
 - tell something about the reviewer's expertise
- Score against criteria
 - high scores get accepted
 - medium scores become reserve papers
 - low scores get rejected

Submitted Papers

- (49) Kasser J.E., Cook S.C., Pilgrim A., Gamaliel Y. and Dat B.T.T. “The CREAP Project: A Case Study of a System Engineering Educational Project”
- (50) Kasser J.E. “Does Object-Oriented System Engineering Eliminate the Need for Requirements?”*
- (51) Kasser J.E. “A Prototype Tool for Improving the Wording of Requirements”
- (54) Kasser J.E. “Synergizing Workplace Research and Postgraduate Degrees”
- (84) Kasser J.E. and Cook S.C. “The Communications Requirements Evaluation & Assessment Prototype (CREAP)”

* Duplicate submission

(49) CREAP: The Case Study

- After reading the paper, **I still do not know what CREAP is supposed to do.** The **description** of the element of CREAP is **poor and not comprehensible. This effort is too ambitious (in my opinion) for 20 weeks, even for mature grad students.**
- This paper is much more about a software project and its good and bad points, **not much ties to SE.**
- Good case study of the SE process, **however the paper is hard to follow**, as the author has several tense changes. It would read more effectively if the grammar were cleaned up.

(49) Accept or Reject?

- Reserve paper
 - accepted for proceedings and poster session



(51) “A Prototype Tool for Improving the Wording of Requirements”

- **The concept is not entirely new;** both industrial and academic tools that validate reqts exist and are readily available. The paper should at least reference some of these and demonstrate that its approach is significantly novel and improved.
- **This paper in its current form is of some value.** This concept is good but still is subject to the use of the words being interpreted by the beholder.
- What did you do once the poorly worded requirements were identified? It would be cool to suggest a better wording like a grammar checker. Good start.

(51) Accept or Reject?

- Accepted for presentation and publication in the proceedings



(54) “Synergizing Workplace Research and Postgraduate Degrees”

- **Paper has limited value to Systems Engineering**, but is a good argument for optimizing the knowledge base. I liked the idea of using industry or professional organization based research resulting in advanced degrees for the practitioners.
- **Makings of a landmark paper.**
- This is not a professional paper but a proposal. The concept is not based on data but on opinion. The author should pursue his recommendations.

(54) Accept or Reject?

- Reserve paper
 - accepted for proceedings and poster session

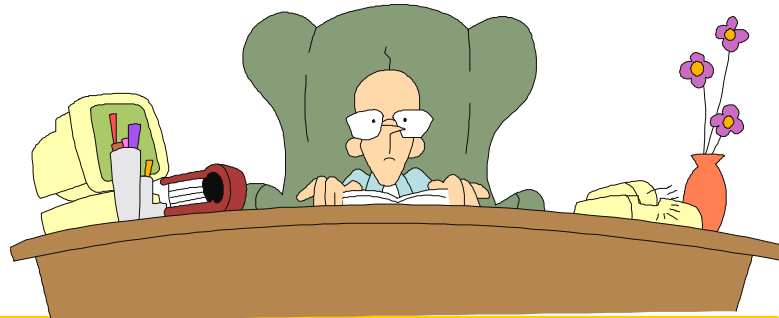


(54) “The Communications Requirements Evaluation & Assessment Prototype (CREAP)”

- **An interesting, thought-provoking and well-written paper.**
- Although interesting, this is currently a **limited case study** and **I was not convinced the idea was proven.**
- This paper **provides a useful insight** into how one might approach
- **Excellent paper**...suggest some diagrams to help the reader visualize the example problem.

(54) Accept or Reject?

- Accepted for presentation and publication in the proceedings



(50) “Does Object-Oriented System Engineering Eliminate the Need for Requirements?”

- This paper addresses a point of view that I have not encountered that 'requirements' can be eliminated. As such, **it addresses a ‘new’ issue which should be discussed.**
- **Good relevant topic and good content.**
- **This is a** distressingly software-centric view of systems engineering **possibly written by someone with no practical experience in Systems Engineering.**

(50) Accept or Reject?

- Accepted for presentation and publication in the proceedings



(50) submitted to software conference

- Having read the paper I was unsure whether the author is proposing that requirements can be replaced by modelling the future system using object-oriented approaches, or whether objects are an effective abstraction for a requirement. **If it is the former, I have serious problems with the author's arguments.** If it is the latter, it was done 10 years ago - see the DOORS requirements management software tool as an example. In either case **I do not think that the paper is acceptable for publication**
- Requirements are far from being a tool. We may use whatever tool we want to model, analyse and document requirements, but we still need to elicit them and that cannot be replaced by simply using UML or other notations.

(50) Accept or Reject?

- Rejected by software engineering conference



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Conference Acceptance Rates

- Systems Engineering (tentative)
 - Overall acceptance rate was above 70%
 - 138 papers accepted for presentation out of 198 submissions
 - no data for Reserve papers yet
- Software Engineering
 - Overall acceptance rate was under 25%,
 - 42 papers accepted out of 173 submissions

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Types of papers reviewed for systems engineering conference

- **Case studies reinforcing theories**
 - useful for teaching
- **Innovations and insights**
 - increases body of knowledge
- **Rediscovery of knowledge**
 - generally by practitioners
- **Lectures written down**
 - generally by practitioners

As a reviewer

| <i>RESULT</i> | <i>NUMBER</i> |
|--------------------|---------------|
| <i>Accepted</i> | 2 |
| <i>Rejected</i> | 18 |
| <i>Salvageable</i> | 24 |
| <i>TOTAL</i> | 44 |

Consensus

- **20 out of 26 that I accepted were published**
- **10 out of 18 that I rejected were not published***
- 5 that I accepted (with suggested modifications) were not published*
- 8 that I rejected were published

* Not published = Rejected **or** Poster papers **or** (not registered for conference)

Lessons learned

- If at first you don't succeed, try try try...
- Sample is too small for any meaningful data
- **There don't seem to be any requirements for peer reviewers**
 - Verified for systems engineering conference
 - volunteers accepted, credentials not examined
- Systems engineers may be able to write, but many don't seem to be able (or have the time) to read

Criteria for papers?

- Understandable
 - grammar, style, content is clear and concise
- Interesting to readers
 - with what level of expertise?
 - Beginner, intermediate, expert
- Makes a contribution to body of knowledge
 - innovation or insight
 - reinforces or refutes theories
- Fits in the theme of conference
 - may be an excellent paper but can be rejected for not fitting the theme

Reviewer's requirements/qualifications

- Knowledge of state of the art
 - Systems engineering is very broad
- Knowledge of previous publications
 - in systems engineering and allied disciplines
- Ability to sort papers into categories
 - beginner (undergraduate)
 - intermediate (postgraduate Master's level)
 - advanced (postgraduate -state of the art)

Further research?

- Identify which conferences proceedings are worth reviewing during research
- Mechanism for setting qualifications for reviewers
- The review process, is it optimal?
 - E.g. is the DETYA peer review requirement
 - appropriate
 - sufficient
- What is the impact on Professional Doctorates?

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Discussion?



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