

Worksheet for “Writing a Good Systems Paper”

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Most of this worksheet is based on Levin & Redell’s “An Evaluation of the Ninth SOSP Submissions, *or*, How (and How Not) to Write a Good Systems Paper”, ACM SIGOPS Operating Systems Review, Vol. 17, No. 3 (July, 1983), pages 35-40. A few questions have been added.

Note that *there are no right answers* to most of these questions, but *thinking* about them will help you understand how to structure and present your work.

This worksheet has space to write in answers to the questions, but you are not really expected to fill out every slot for every paper. The answers to some questions would be a paragraph long, anyway.

1 Common Problems

Let me start by listing a few common problems. The mistakes that I most frequently make are:

1. I tell an *integrated* story, in which it is difficult to figure out which parts are the new contribution (my papers sometimes read more like a textbook than a new research contribution).
2. I try to tell everybody everything I know, all at once.
3. Because my papers evolve organically, over time, information is often repeated, and sometimes contradictory.
4. Likewise, terms are sometimes used without being defined.
5. My biggest problem is that I am really lousy at *editing* my own work. I never want to delete anything, but in truth, a paper should be about *one* idea, and everything that doesn't support that idea (no matter how clever or interesting) should be deleted.

2 Reading a Paper: Basic Information

Most of the information in this section is the basics, and applies more to reading a paper than writing one.

2.1	Title?	
2.2	Authors?	
2.3	Institution(s)?	
2.4	What conference or journal did the work appear in?	
2.5	Who funded the work?	

The next two questions are critical to the criteria used to evaluate the paper:

2.6	What <i>class</i> of paper is this? real system implementation & measurement paper, "idea" paper, simulation paper, or theoretical?	
2.7	Does the paper make <i>testable</i> claims?	

3 Original Ideas

3.1	Are the ideas in the paper new?	
3.2	How do you know?	
3.3	Can you state the new idea concisely?	
3.4	What exactly is the problem being solved?	
3.5	Are the ideas significant enough to justify a paper?	
3.6	Is the work described significantly different from existing related work?	
3.7	Is all related work referenced, and have you actually read the cited material?	
3.8	Are comparisons with previous work clear and explicit?	
3.9	Does the work comprise a significant extension, validation, or repudiation of earlier but unproven ideas?	
3.10	What is the oldest paper you referenced?	
3.11	The newest?	
3.12	Have you referenced similar work at another institution?	
3.13	Have you referenced technical reports, unpublished memoranda, personal communications?	

4 Reality

4.1	Does the paper describe something that has actually been implemented?	
4.2	If the system has been implemented, how has it been used, and what has this usage shown about the practical importance of the ideas?	
4.3	If the system hasn't been implemented, do the ideas justify publication now?	

5 Lessons

5.1	What have you learned from the work?	
5.2	What should the reader learn from the paper?	
5.3	How generally applicable are these lessons?	

6 Choices

6.1	What were the alternatives considered at various points, and why were the choices made the way they were?	
6.2	Did the choices turn out to be right, and, if so, was it for the reasons that motivated them in the first place?	
6.3	If not, what lessons have you learned from the experience?	
6.4	How often have you found yourself saying “this works, but for the wrong reason”?	

7 Context

7.1	What are the assumptions on which the work is based?	
7.2	Are they realistic?	
7.3	If a formal model is presented, does it give new information and insights?	

8 Focus

8.1	Does the introductory material contain excess baggage not needed for your main development?	
8.2	Do you include just enough material from previously published works to enable your reader to follow your thread of argument?	
8.3	Does your paper have the right “momentum”? Does it establish a direction clearly, and get there at the right speed?	

9 Presentation

9.1	Are the ideas organized and presented in a clear and logical way?	
9.2	Are terms defined before they are used?	
9.3	Are forward references kept to a minimum?	
9.4	Have alternate organizations been considered?	
9.5	Was an abstract written first? Does it communicate the important ideas of the paper?	
9.6	Is the paper finished?	

10 Writing Style

10.1	Is the writing clear and concise?	
10.2	Are words spelled and used correctly?	
10.3	Are the sentences complete and grammatically correct?	
10.4	Are ambiguity, slang, and cuteness avoided?	

11 Data

11.1	Are graphs and tables and their text large enough to be legible?	
11.2	Are key features of graphs highlighted or marked?	
11.3	Are the axes labeled?	
11.4	Do data points have errors bars? If not, why not? Is the meaning of the error bars specified (standard deviation, 90% confidence interval, etc.)?	
11.5	If the data warrants it, has a line or curve been fitted? What statistical tests have been performed to confirm that the fit is good?	
11.6	Are similar systems tested and <i>fair</i> comparisons made?	
11.7	Does the reader have enough information that she could, conceivably, reproduce and confirm your work?	
11.8	Does the data support the conclusions?	

12 “Indiscipline”, by King Crimson

I do remember one thing.
It took hours and hours but...
by the time I was done with it,
I was so involved, I didn't know what to think.
I carried it around with me for days and days...
playing little games
like not looking at it for a whole day
and then... looking at it
to see if I still liked it.
I did.

I repeat myself when under stress.
I repeat myself when under stress.
I repeat myself when under stress.

I repeat myself when under stress.
I repeat...
The more I look at it,
the more I like it.
I do think it's good.
The fact is...
no matter how closely I study it,
no matter how I take it apart,
no matter how I break it down,
It remains consistent.
I wish you were here to see it.

I like it!

