Computer Science related scientific journal article writing practices

(based on my personal experiences)

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Short overview of the process

FROM THE FIRST THOUGHT TO THE SHEETS OF PAPER

Before writing #1

- Conceptionalization of the idea
  - Start with a five line discussion
  - Create flowcharts, then present and discuss the idea for your research team
  - Identify your possible contributions to science
  - Compare your idea to the state of the art – might involve literature review tasks for months
- Choose the target journal corresponding to the idea (detailed later)
- Select the way you are going to present your work:
  - Theoretical approach:
    - Formal description
    - Formal proof
  - Experimental
    - Measurement methodology
    - Proof of concept implementation
    - Case study – only as a last resort, considered a bad approach in most journals.

Before writing #2

- Partial publication in conferences
  - Offers independent feedback from the beginning
  - Ensures that you have the background for your idea when needed for the article
  - Content ideas:
    - Partial proof with smaller amount of measurements
    - Concentrate only on smaller separable parts of the idea
    - Provide the overview of the idea and place it in the context of the state of the art
    - Offer a taxonomy as a problem statement
      - Hard to do well: you should have several tens or even hundreds of articles reviewed and classified

Choosing the right journal

- Review the state of the art
  - Where did the state of the art articles got published? Which journal(s) has/ have the most articles from your scoop of the state of the art?
- Based on their classification
  - SciMago, Core journal ranking (for links see below)
- Narrowing down the potential journals
  - Identifying the relevant field
    - Check the journal's scope on its webpage your article should fit in
    - The level of practicality (some journals specialize on theoretical articles while others require more practical results) – to decide, check the already published articles in the journal
    - How many well known authors [published articles/are members of the editorial board] in the particular journal? How many taxonomies cite the journal? How many highly cited (>100 independent citations) articles appeared in it?
  - Ranking
    - Thomson Reuters IF - http://admin-apps.webofknowledge.com/JCR/JCR
    - Core journal ranking – http://www.core.edu.au/
    - Norwegian journal ranking – http://dbh.nsd.uib.no/kanaler/?search=advanced
    - SciMago - http://www.scimagojr.com/
    - EigenFactor – http://www.eigenfactor.org/
  - Based on the similarity of past published content

Article writing #1

- Always ensure that your article meets the length, formatting and language requirements of the target journal (follow the structure and presentation approaches found in previous articles)
- Structuring your idea:
  - Background
  - State of the art overview
  - Problem statement
  - Solution
  - Conditions on applicability
  - Proof for the solution (experimental articles prove their solution with measurements)
  - Evaluation
  - Future work
- Practical article writing tips in details
  - Short, CS focused:
    - Ivan Stojmenovic: “Editor’s Note: How to Write Research Articles in Computing and Engineering Disciplines”, IEEE Transactions on Parallel and Distributed Systems, Vol 21, No 2, pp. 145-147
  - Long, for all kinds of research articles:
    - Adrian Wallwork: “English for Writing Research Papers”, Springer, ISBN: 978-1-4419-7921-6

Article Writing #2

- Text to speech
  - You can find the unnaturally long sentences or improper punctuation
  - You can discover how your article from a third party point of view
- Reread the text after not touching it for 1-2 weeks
  - You can discover the problematic, hard to understand parts on your own
  - Corrections on train of thought, improving/revising the too complex parts
  - Overcomplicated sentences hamper the reader's understanding on your idea
- Iterative improvements before submission
  - Find independent reviewers for your work
    - They should be willing to review your article several times before submission
    - They should be offering you suggestions to improve
    - Ideally they should not be one of your co authors
  - After all reviews are in create a new version (this is a good opportunity for the deferred rereading mentioned earlier)
  - Simplify! Simplify! Simplify!
  - Iterate for at least 3 times

Submission and the official review

- Submission
  - If you have not done so, transform your article according to the formatting guidelines of your target journal
- Wait for the review (2+ months)
- Result of the review
  - Accept/Minor revision
    - Success your article is about to be published!
  - Major revision.
    - Why did you receive a major?
      - Because the article is almost out of scope and the reviewers checked it from other perspective. If so, you should choose another journal and submit there.
      - You have improperly presented your results – find someone who has a new perspective on reviewing and involve him/her in the iterative improvement process
  - Reject
    - You should go for another journal if you think your article is scientifically sound

Article writing #3

- Reflecting on the reviews:
  - Identify tasks to be done with your coauthors
  - Detail your idea to better match the recommendations from the reviewers
    - Refine how the readers will perceive your idea
    - Provide new measurements, proofs
  - Start new text improvement iterations (see the slide titled "Article writing #2") – by now you have a deadline so make sure your own reviewers are prompt
  - Prepare the detailed description of your improvements on the article (response to the reviewers)
    - You should present what actions did you take for every critique you have received – you can pinpoint the exact location in the article where the correction was applied
- Resubmission
  - Keep good faith, your reviews will come earlier this time.

After acceptance (hurray!)

- Last, minor corrections
  - It is not always possible to do any further modifications without the editor's consent
- Proofing at the publisher
  - You will only have review rights here
- Signing the copyright transfer forms (if necessary)
  - Check what are the conditions to publish your article on your own webpage. Publish everything you are allowed to (this increases your chances on independent citations)
- Your article appears online on the publisher's website
  - It can be bougth – if the journal is not open-access
  - You will receive a DOI with which others can cite your article
- Assignment to an issue
  - Your article is finally published
    - All the publication details are available
    - You finalize its listing in your publication list
  - The publisher starts to post it to subscribers
- Follow your citations – they might come handy for future work or career development

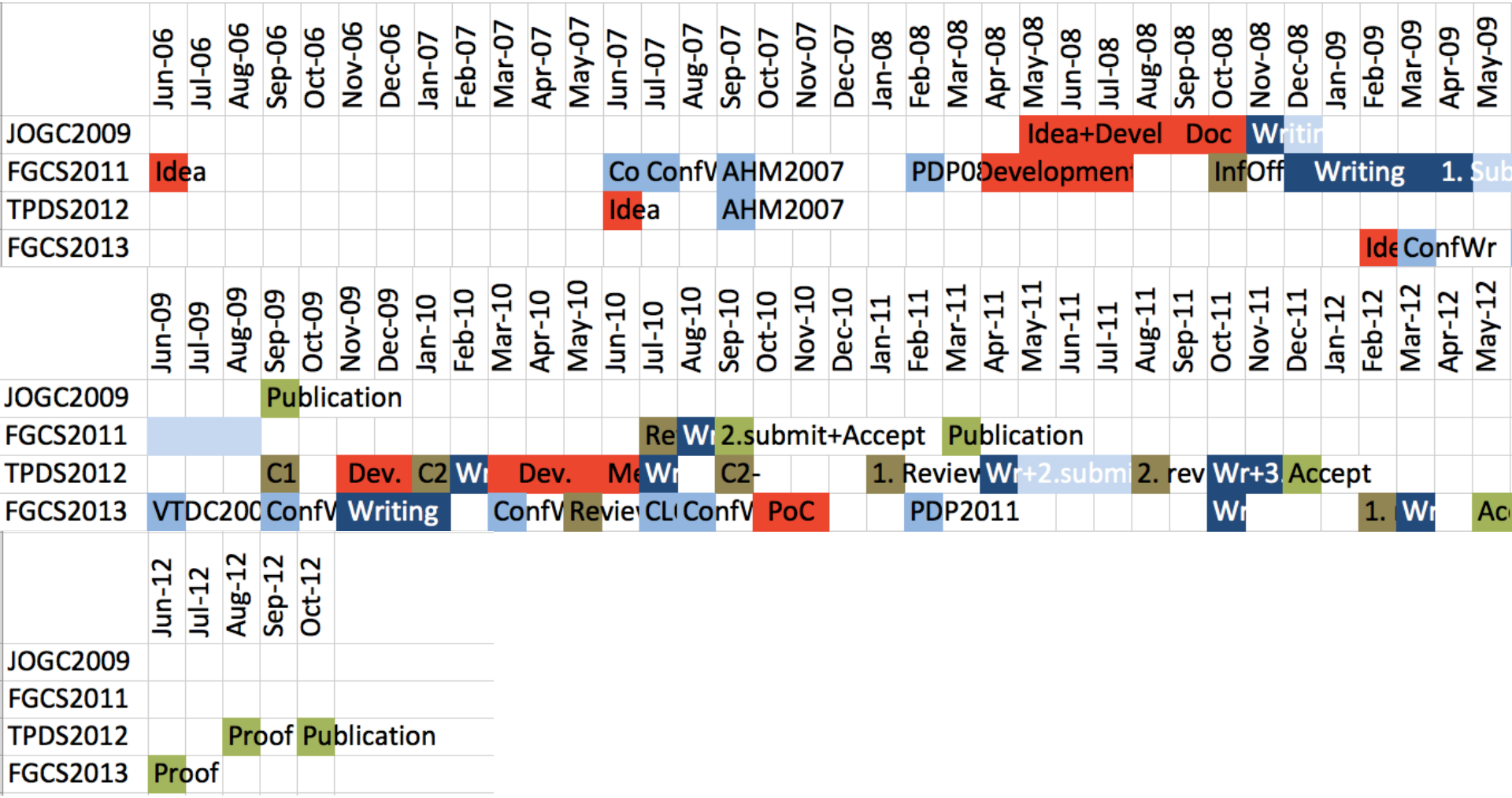
Timescale and interactions between my articles

EXAMPLES

Journal articles that I co-authored

- EDGeS: Bridging EGEE to BOINC and XtremWeb
  - Authors: Urbach, Etienne; Kacsuk, Peter; Farkas, Zoltan; Fedak, Gilles; **Kecskemeti, Gabor**; Lodygensky, Oleg; Marosi, Attilat; Balaton, Zoltan; Caillat, Gabriel; Gombas, Gabor; Kornafeld, Adam; Kovacs, Jozsef; He, Haiwu; Lovas, Robert
  - Published in: Journal of Grid Computing 7(3), 2009
  - IF – **2010**: 1.5
  - I have written only one section based on a development work, details will not follow
- An Approach for Virtual Appliance Distribution for Service Deployment
  - Authors: **Gabor Kecskemeti**, Gabor Terstyanszky, Peter Kacsuk, Zsolt Nemeth
  - Published in: Future Generation Computer Systems 27(3), 2011
  - IF – 2011: 1.978
- Virtual Appliance Size Optimization with Active Fault Injection
  - Authors: **Gabor Kecskemeti**, Gabor Terstyanszky, Peter Kacsuk
  - Published in: IEEE Transactions on Parallel and Distributed Systems 23 (10), 2012
  - IF – 2011: 1.402
- An Interoperable and Self-adaptive Approach for SLA-based Service Virtualization in Heterogeneous Cloud Environments
  - Authors: Attila Kertesz, **Gabor Kecskemeti**, Ivona Brandic
  - Published in: Future Generation Computer Systems 2013

Overview



Details later

An Approach for Virtual Appliance Distribution for Service Deployment

- Idea: Summer 2006
- 1st paper: Sep 2007 (1 section)
- 1st infrastructure at the University of Westminster (UoW): Jun 2008
- Proof of concept implementation: Aug 2008
- Dissolution of the 1st infrastructure
- Selection of the journal: Dec 2008
- 1st submission: Apr 2009
- Review: Jul 2010
- Serious shortening: reduced to 2/3s of the original. Using experiences from the TPDS article (next slide)
- 2nd submission: Sep 2010
- Acceptance: Sep 2010
- Published: Mar 2011

Virtual Appliance Size Optimization with Active Fault Injection

- Idea: Jun 2007
- *1st paper*: Sep 2007 (1 paragrap)
- 1st Cloud of UoW: Sep 2009
- Journal selection: Oct 2009
- Proof of concept implementation: Nov-Dec 2009
- 2nd Cloud of UoW: Jan 2010
- Article's 1st internal review: Feb 2010
- Proprietary cloud development to support experiments: Mar-May 2010
- Final experiments (~550MB of traces on the optimalizálási process): Jun 2010
- *1st Submission*: Jul 2010
- 1a) version: small clarifications, notation update (unification among multiple papers)
- Dissolution of the 2nd UoW cloud: Sept 2010
- 1. review: Jan 2011
- *1b) version* – small corrections based on the revision: 2011. febr
- *2nd Submission*: Apr 2011
- 2nd review: Aug 2011
- *3rd Submission:* Nov 2011
- Accepted: Dec 2011
- *Published*: Oct 2012

An Interoperable and Self-adaptive Approach for SLA-based Service Virtualization in Heterogeneous Cloud Environments

- Idea: Feb 2009
- *1st paper*: Jun 2009 (conceptual foundations – Workshop)
- 1st journal submission
  - Conceptional extension, empirical validation
  - Feb 2010 (to a special issue, IEEE TSE, IF 4+) – got rejected
- *2nd paper*: Jul 2010 (detailed concept – Workshop)
- Proof of concept: Oct 2010
- *3rd paper*: Feb 2011 (Implementation details, first measurements)
- Measurement methodology development, conceptual clarifications
- 2nd Journal selection: Aug 2011 (CFP for another special issue)
- *1st Submission*: Oct 2011
- 1st Review: Feb 2012
- *2nd Submission*: Apr 2012
- Accepted: Maj 2012
- To appear.

Thank you for your attention!
Questions?