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Paper Writing 101: So you want (have) to write a Software Engineering paper...?

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Outline

■ Part I:

- Some (personal) philosophies

■ Part II:

- Some tips for writing an SE paper

■ Part III:

- Case study

Some Personal Philosophies...

- You need something to write about
=> DO THE RESEARCH !!!
- If you don't tell people about research, is it really worth doing?
- Software Engineering papers should demonstrate value (or potential value) of the work done
- Quality vs quantity – esp. in a ERA world
- Try and change the world – just a little bit...
- ENJOY writing – its an incredibly powerful thing

Some Tips

- Know your audience:
 - Who are the target readers of the paper?
 - Where is it going to be published/presented/used?
 - What kinds of papers have they published before?
 - Can you get hold of and understand refereeing/marking guidelines?

- Decide on the kind of paper (and stick to it!):
 - Presenting new ideas/concepts/methods/tools?
 - Describing design/prototype?
 - Empirical evaluation results, study?
 - Comparison, survey?

Tips (2)

- Keep the paper focused – have one and one only major theme/topic/focus
- Organise the paper carefully – e.g. my usual “tool prototype” paper (which I write lots and lots of) structure is:
 - Introduction
 - Motivation/Related work
 - Outline of approach
 - Illustration of example usage
 - Architecture/Design
 - Evaluation/Discussion
 - Summary

My “Paper Writing Process”

- Decide on focus/venue (audience)
- Construct a rough outline – sections, few bullet points of what is going in each
- Add figure captions then figures
- Flesh out Motivation, Approach, Examples, Design etc
- Flesh out Evaluation, Discussion, Related work
- Complete Introduction/Summary
- This works real well for theses too!

“Polishing” ...

- After each, print it out and proof read
 - Fix it up
- Print it out and proof
 - Fix it up
- Print it out and proof
 - Fix it up
- Print it out and proof
 - Fix it up
- (I typically stop doing this due to deadline/time pressures!)

Tips (3)

- Spelling and Grammar REALLY MATTER – get them right!
- Technical accuracy MATTERS – get it right!
- Be concise, precise - don't waffle
- Back up ALL opinions with references
- Choose references carefully – accessible, current
- Say it once and once well; don't repeat
- Don't plagiarise
 - Going back to my point about research again... besides the ethical and moral issues, if some one else has already told the world about this, then why are you???
 - We “stand on the shoulders of giants” – so acknowledge them

Tips (4)

- Don't be afraid to “kill your darlings” – if its in the way/isn't working/just feels bad – then get rid of it/do it again
- Minimise distractions when writing – blocks of time
- Don't play music (or games) when writing !!!
- Be organised
- Work with someone else (esp. a successful person!)
- Practice, practice, practice, ...

If at first you don't succeed...

- Some papers never make it past the drafting stage
 - Research just not sufficient/new enough/quality enough
 - Unfocused
 - Distractions/lack of time
- Many papers don't make it at the first attempt e.g. about 30% of my own get rejected/require substantial revision/resubmission
- Don't take criticism personally:
 - “The paper lacks in-depth theory or method. It should be carried out major revision before it can be consider further. ”
 - “This paper was really disappointing. I expect much better from these authors...” – ouch!!
- The referees/markers MAY be wrong – but is it SO hard to give them what they want??
- Be nice when responding to the referees/markers...

A Case Study

- Software tool integration via web services
 - With Rebecca Berrigan, Nelson Yap, Hau Chean Chiong
- Prototype developed (Part 4 SE Project) – shown can integrate tool facilities into JEdit via WS infrastructure
- Quite sophisticated integration achieved; nice technical SE work as well as SE tool focus
- We thought this was a really good bit of work for a conference paper...
- Target audience – ICWS 2004
 - Other options were also debated e.g. ASE (probably would have been best in hindsight), ICSE (probably not quite interesting enough)...

Worked up an Outline

- Abstract
- Introduction
- Motivation
- Related Work
- Overview of Approach
- Architecture
- Example Usage
- Evaluation
- Summary

Added Notes & Figures

4. Architecture

-architecture diagram(s) + explanation – focus on use of WS technology

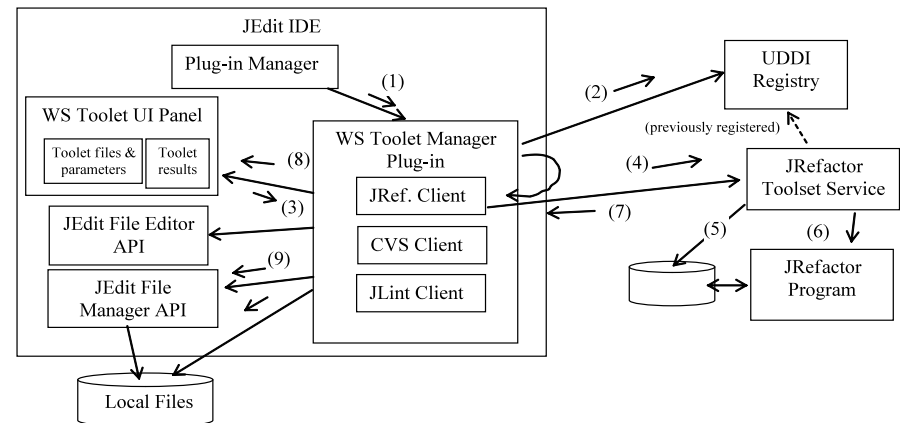
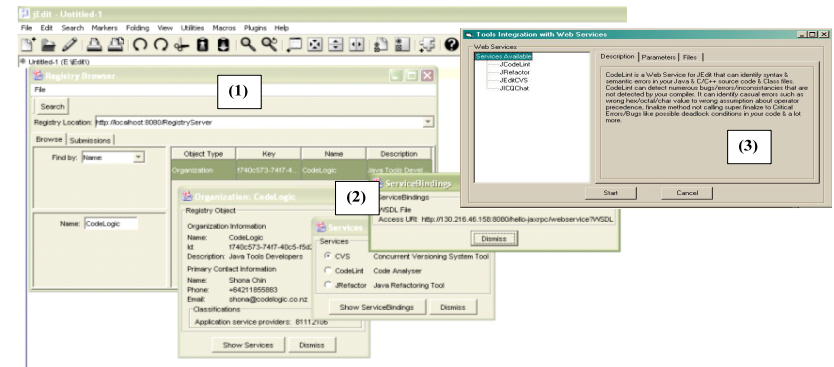
- JEdit-WS client
- UDDI registries+queries
- multiple remote toolset services e.g. versioning, refactoring, lint, messaging, CASE, code gen, ...

Figure 3. JEdit-WS software architecture.

5. Example Usage

- worked example – focus on Jedit client and web service-based remote components
- how discover & integrate toolets within JEdit (1)
- how access web service toolets (2)

Figure 4. JEdit-WS tool discovery and integration support



Text/Polishing/Collaboration

- Split up the work:
 - John G – Approach, Architecture, Evaluation
 - Rebecca – Motivation, Introduction, Example
 - Nelson – details on implementation, screen dumps, polish
- Fleshed out “body” of paper & revised: Motivation, Approach, Example Usage, Implementation
- Added Evaluation, Intro/Summary
- Did a couple print/proof cycles
- Submitted paper (just made the deadline – this is quite normal 😊)
- And...

Not every story ends well...

- Got rejected ☹️
- Referees were pretty scathing 😊
- Wrong audience; wrong focus; key areas of research poorly described; too much rush to finish; didn't kill off poorly constructed parts earlier; not enough polishing
- Next steps:
 - New audience
 - Revise – focus, structure, emphasis
 - Try, try again...

A more positive ending...

- *Supporting dynamic software tool integration via web service-based components*, Nelson Yap, Hau Chean Chiong, John Grundy, and Rebecca Berrigan, Proceedings of the 2005 Australian Software Engineering Conference
- Got much more positive reviews
- More general SE audience seemed to like rather more than a WS audience
- Presentation well-received with good feedback on the work

Happy writing!!!
