Seminare „Model-Based Quality Engineering (MBQE)“ & „Advanced Model-Based Techniques (AMbT)“

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Scientific Working

Seminar Introduction

based on slides

• SDQ research group at KIT
Note

- All information available online on the seminar webpage
- No need to copy the slides
Overview

1. Version control with SVN

2. Managing deadlines

3. Searching literature, Writing outline

4. Rules for good quality
   - Structure, content, style, spelling
   - Correct citations and plagiarism
   - Technical issues
Overview (2)

5. Create reviews and include results
6. Create and run presentations
7. Evaluate presentations
8. Change management

9. Rules for seminar marking
10. Interaction with your supervisor
Motivation (1)

Goals of writing a seminar

- Get in touch with interesting and recent research
- Practice literature surveying,
- Early creation of a seminar outline
- Finalizing a scientific thesis
  - approx. 20 pages in LaTeX for MBQE, 12 pages LNCS for AMbT
- Getting used to correct citations and style of writing

- Making a peer-review of other theses, Include review comments

- Practice presentations, Improve your presentation skills (by collecting supervisor feedback)
Goals of writing a seminar (cont.)

- Manage hard deadlines (as in real world)
- Gain complementary knowledge to other courses at our chair
- Executing a detailed schedule of small work packages
- Getting used to an iterative self-improvement
- Block seminar at the end of the semester: use the time for high-quality results
- Final presentation: 30 min presentation, 15 min discussion
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Version control with SVN

- SVN: Subversion, “Successor” of CVS
  - Widely applied in academic and industrial practice
- Instead of sending files via mail:
  - Files will be held on a (remote) server
  - Progress between versions recognizable
  - GUI and shell integration for good usability
- Easy to learn and use
  - “learning by doing” – try it
- Visit https://dsd-serv.uni-paderborn.de -> New Account

- SVN-Repository URL for MBQE: https://dsd-serv.cs.uni-paderborn.de/svn/mdq13
- SVN-Repository URL for AMbT https://svn-serv.cs.uni-paderborn.de/ambt13/
SVN: Download and Instructions

- Foundations:  
  - Get yourself a SVN tutorial and exercise to use SVN  
  - Get familiar with it on your own  
  - We supervise on time submission of your materials via SVN tags created by you on submission

- For Windows  
  - Look at [TortoiseSVN](http://tortoisesvn.net)  

- For Mac  
  - Look at Smart SVN
Managing Deadlines (1)

The “real world”

- Project life: Determined by externally defined (+usually tight) deadlines and milestones

- Deadlines: "Zuckerbrot und Peitsche"
  - Missing deadlines: contract penalties
  - Long term effect: Loss of reputation and follow-up contracts
  - Social effects: Unemployment, ...
  - Sticking to deadlines by finishing things early: Relax, continuous work load, confidence
Managing Deadlines (2)

- Even for small projects (seminar theses): define small work packages, break-down overall task
  - **Rough Schedule** defined externally in the deadlines of the seminar
  - **Refined Schedule**
    - Outline
    - Chapters, Figures
    - Survey Literature
    - Revision Effort
    - Buffer
    - Should be defined internally
Managing Deadlines (3)

- Causes in “real world”
  - Projects become foreseeable
  - Upcoming milestones are small and manageable
  - Less deadlines missed
  - “Early motivation to get started"
  - No overlooking of efforts like “Revision"
Managing Deadlines (4): Gantt-Charts

- If you lose the big picture easily maybe **Gantt-Charts** can help

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<td>5</td>
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<td>56 Tage</td>
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<td>Vorbereitung</td>
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<td>7</td>
<td>Formulierung der Hypothesen und Experimentdesign</td>
<td>5 Tage</td>
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<td>8</td>
<td>Installation des DBMS und zusätzlich erforderlicher Software</td>
<td>2 Tage</td>
<td>Mi 25.04.07</td>
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- **Tool support** (not mandatory...)
  - GanttProject (Java, O/S) [http://gantttproject.biz/](http://gantttproject.biz/)
  - MS Project 2007 (use MSDNAA)
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Literature survey (1)

- To get you started, we provide initial literature references
  - This list is non-final
  - Get you started with the topic, **Keywords**
  - Authors, Conference, workshop, proceedings
  - Important: **follow incoming and outgoing** references (see next slides)

- **No depth or broad search:**
  - **FIRST** read the material you have
  - **THEN** continue by following references
Literature Survey (2)

- Read literature **efficiently**
  - **FIRST** read abstract, introduction, conclusions, then look at figures
  - **THEN** decide whether it is worth reading the article
  - **Goal-driven** reading:
    - Approach a text using concrete questions
    - Try to answer the questions while reading
  - **Be aware** while reading:
    - Question statements made in the text
    - Do not believe immediately all statements in a text even if it has been published at well-known conferences or journals
Literature Survey (3)

- How to find more literature?
  - Use references at the end of an article
    - Follow only references which seem to be promising given their context in the original paper
    - Do not follow all references
Many articles available from the university network or via VPN

- [http://scholar.google.com](http://scholar.google.com)
- [http://ieeexplore.ieee.org/Xplore/dynhome.jsp](http://ieeexplore.ieee.org/Xplore/dynhome.jsp)
- [http://portal.acm.org/dl.cfm](http://portal.acm.org/dl.cfm)
- [http://liinwww.ira.uka.de/bibliography/](http://liinwww.ira.uka.de/bibliography/)
- [http://www.informatik.uni-trier.de/~ley/db/](http://www.informatik.uni-trier.de/~ley/db/)
  - Search for similar publications of the same authors

If no PDF directly available, contact your supervisors or the authors directly 😊

Save BibTeX entries together with the papers! (JabRef)
Literature Survey (5)

- **Books** and scientific journals
  - “More intense“ and strict review process
  - Ask supervisor (maybe book is available at special locations)
  - Amazon and others offer (partial) full-text search
  - Read sample chapters (look at publisher or author websites)

- Websites, online tutorials, etc. are commonly considered as weaker references
Outline (1)

- **Contents**: (deadline after 4 weeks)
  - **Headlines** for all sections and subsections, **Keywords** for all content of the seminar thesis
  - List of **references** (!) plus their association to sections (reference the articles from their linked sections)

- **Number of entries per outline level**
  - Subsections serve classification purposes, not for highlighting
  - Each outline level should have \( \geq 2 \) entries

- **Wrong**:
  - 1. Foundations, 1.1 My special foundations, 2. My contribution

- **Right**:  
  - 1. Foundations, 1.1 Common foundations, 1.2 Special foundations

- **Or**:
  - 1. Foundations, 2. My contribution

- **Very common mistake 😞**
Outline (2)

- Section names
  - No punctuation, besides colon or hyphen
  - Compactness and precision. Short and wrong titles are more confusing than long and correct ones

- No multiline headings: always avoidable
- Try to avoid abbreviations

- Try using short headings (in LaTeX `\section[short heading]{long heading}`)

- Readers should understand outline without reading content – should match abstract and introduction
Outline (3)

- Structure:
  - **Title page** (Topic, author, name of the seminar, name of the university group, name of supervisor, date)
  - **Abstract** (max. 10 lines)
  - **Introduction, Motivation**
  - **Contents**
  - **Conclusions** (plus critical reflection of the topic)
  - **References**
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Structure and contents

- Follow your **outline**
- Follow a central theme **from the viewpoint of your reader**
- Use logical arguments, from broad context to deep details
- Monitor whether you still comply to your central theme
- Seminar: no scientific break-through expected
**Style (1)**

- **Write as simple as possible**, precise and logical

- „Blurring“ sentences by the use of words like „maybe“, „in some (undefined) cases“, etc. is non-scientific

- **Short sentences**: Make one statement per sentence
  - Use „because“ to make logical dependencies between arguments/statements explicit

- **Define terminology**: if term is non-common but: do not get lost in terminology discussions
Style (2)

- **Stick to well-defined (technical) terms**: Repetitions in scientific work are common
  - Reason: when you use synonyms the reader tries to see whether there are intentional differences you wanted to point out
  - Not valid for non-technical terms. Try to avoid repetitions here as usual!
Form

- **Thesis:**
  - Use LNCS Template

- **Slides:** Powerpoint or compatible program
Hand-ins (1)

- Intermediate versions: Use PDF

- Final version:
  - Including all sources
  - All .tex files and .bib files (BibTeX) or Word files
  - All figure sources (e.g. Visio files plus their PDF variants)
  - All non-standard LaTeX packages (please try to avoid this anyway)
Grammar, Spelling (1)

- [http://dict.leo.org](http://dict.leo.org)
- Spell check, e.g., available in TeXnicCenter
- Use US English
- Proof-read your text with a little delay
- **Supervisors are not spell checkers!**
- **Too many spelling mistakes lead to penalty points**
- Assign someone to proof-read your text (but not revise or write your text 😊)
Spelling (2)

- Footnotes

Before using a footnote check the following conditions

- No important text in footnotes
  - If a footnote is important include it in the main text for better readability
  - Otherwise avoid the footnote

- Never cite literature using footnotes

Footnotes should be an exception
“Proper citing avoids plagiarism issues"
Especially suited for this are parrots. Therefore, I advise in order to kill two birds with one stone, you should have good stones at hand.
Citation: Correct

In the main text
• Hans Meier coined funny statements like “to kill two birds with one stone you should have good stones at hand” [Mei98, S. 4].

In list of references
Wrong citation in the main text

Hans Meier coined funny statements like “to kill two birds with one stone you should have good stones at hand”.

Problems:

- Where does the statement come from?
  - No way of checking correctness
  - Where and when was the statement made? What was its context?
Citations: Why?

- **Give context** of information taken from a partial sentence.

- Better: “to kill two [parrots] birds with one stone you should have good stones at hand" [Mei98, S. 4]
Citation: Shortening

- To shorten original text use []

- For example
  - He argues "[..] you should have good stones at hand" [Mei98, S. 4].
Citations: Use

- Use a reference actively in your text. Having a reference in the list of references only is not allowed.
- Translations
  - Translating existing work into English is still a citation
  - Especially, it is not own and original work
  - Non citing such work is considered as cheating attempt
Citation: Summarizing foreign ideas

- Summarizing foreign ideas with own words
  - Used source must be cited
  - Citation of the source close to the summarized idea
    - Clearly recognize who had the original idea
    - Clearly identifiable own and foreign ideas

- Same is true for shortened citations
In BibTeX (Entry from DBLP):

```latex
@proceedings{2004trust,
    editor = {Ralf H. Reussner and Judith A. Stafford and Clemens A. Szyperski},
    title = {Architecting Systems with Trustworthy Components, International Seminar, Dagstuhl Castle, Germany, December 12-17, 2004. Revised Selected Papers},
    booktitle = {Architecting Systems with Trustworthy Components},
    publisher = {Springer},
    series = {Lecture Notes in Computer Science},
    volume = {3938},
    year = {2006},
    isbn = {3-540-35800-5},
}
```
Citation: Exaggeration

- Not common to include non-referenced work in literature list
- **Do not use LaTeX \nocite{**}

- Foundations:
  Include in introduction of a matching section, i.e., „The following foundations introduce XML [1,2,3]“
"[the] use or close imitation of the language and thoughts of another author and the representation of them as one's own original work." (Source: http://en.wikipedia.org/wiki/Plagiarism)

Is considered to be a crime in some countries
Citation: Plagiarism (2)

- **Consequences** of plagiarism
  - Denial of „Seminarschein“
  - Seminar counts as „not passed“
  - Might have more consequences

- **Always mark your sources**
  - Mark your sources clearly
  - **In case of doubt:** Ask your supervisor!
Technical issues

- **LaTeX and BibTeX:**
  - **Learning** LaTeX: Books in library, tutorials online
  - **Figures** in LaTeX: use vector graphics only, i.e., Visio or Inkscape figures
  - **Tools under Windows:** MikTeX+TeXnicCenter
  - **Others:** search online
  - **References:** JabRef (Java, open-source) manage BibTeX entries and corresponding PDFs
  - **Slides:** Powerpoint or similar office product, use PDF export in case of doubt
  - **SVN:** version control (also usable offline on local machine)
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Writing reviews

- A fellow student submitted a seminar
- We expect **constructive and reasonable** feedback
- **Primary**: Understandability, Outline, Correctness and Completeness
- **Secondary**: correct citations, grammar, spelling, reasonable references, etc.
- We provide a **template** to ease your task
Dealing with reviews

- No need to accept all comments – however, provide reasons for not accepting something
- **Reviews by your fellow students** give you feedback from people with comparable background
- Later you also get feedback by your supervisors
- **You gain experience** from multiple reviews
- **Trains you for later industrial and academic life**
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Presentations (1)

- Seminar 10 - 15 slides, 2 minutes per slide, proven practice
- Do not assume you can do better

Contents
- Outline: after title or motivation slide
- Content
- Summary + Future Work: final slide
- Slide with used references: usually not shown in the presentation, but be prepared to show it
Prepare and run presentations (2)

- Slide design
  - max. 5-7 bullet points per slide
  - No complete sentences
  - Figures instead of text: Replace text by self explaining figures
  - Check readability (font size, contrast)
  - On each slide: name of presenter + title of talk (footnote), slide number, number of total slides, maybe progress indicator
  - Use animations carefully: Do not play with animations, we know that you can find them in PowerPoint
  - A typical animation effect is simple „appear“
Prepare and run presentations (3)

- **Format**
  - Sans serif font
  - **Fontsize**: min. 18pt
  - **Colors**: red/green, blue/violet bad for color blind people
  - **Vector graphics only**
  - Include 1-2 slides as **buffer**, to compensate for **timing** issues
Important: **Stick to your time limit**
- Check time while talking
- Identify timing issues early and react on them, never realize them when interrupted by supervisor due to timeout

**Rehearsal:** Practice 1-2 times at home
- Speak continuously, get a feeling for your timing

**Look at your audience:** speak to everybody
- And not only to your supervisor...

When explaining figures do not show them on your laptop screen, but on the projection
- But do not lose contact to your audience

**Be serious:** no chewing gum, no cool slang

**Acoustics:** Speak loud and clearly
Judge Presentations

- Requires **concentrated listening**

- Take **notes**!

- **Jot down questions** and ask later – only ask very important questions directly

- Get an overall picture and not just details

- If you get lost: note down the slide number and try to resync 😊
Change management

- Erased sections are lost, but may contain important information

- Version control (CVS, SVN etc.)
  - Idea: Track versions which can be restored, compared, etc.

- Used in our seminar to submit thesis, but also in between
  - Get used to it now
  - SVN ("Subversion"): free, integrates in Windows Explorer, automation in shell scripts
Seminar Penalty Points (1)

Procedure: All participants start with 7 penalty points. If penalty points drop to zero, we do not issue a “Schein” anymore

Penalties:

- For all deadlines, one point per day delay
- No hand-in of thesis, reviews, or slides, missing at the “Blockseminar” without excuse: each 7 Pt.
- Outline, References
  - “Nonsense" or incomplete outline: 1 Pt.
  - No further literature found: 1 Pt.
- Review
  - incomplete / too short / “content free": 2 Pt.
- Questions
  - Incomplete / not related to the topic: 1 Pt.
Penalties (cont.):

- Issues in the thesis
  - Violations of rules (preceding slides): 1-4 Points
- Issues with the slides
  - Violation of rules: 1-2 Points
  - Incomplete / too short / too many: 1 Point
- Presentation
  - Very bad presentation: 1-2 Points
  - Missing without excuse: 7 Points
- Misc (only in rare special cases): 0-7 Points
Seminar Marking

Your mark will be based on:

- Your thesis
- The peer review you did
- The questions you formulated
- Your presentation (slides, talk, answering questions)
- Search for additional literature
- How independent you achieved our results, how much help did you need by your supervisor
- Active participation in block seminar discussion!
Interaction with your supervisor

- In general: your supervisor does not need a „Seminarschein“ anymore…

- Supervisors are usually busy:
  - Appointments: stick to agreed dates
  - Canceling an appointment: as early as possible
  - Non-availability via phone
    - No reason to not cancel an appointment
    - Contact supervisor via mail
  - Not coming to an agreed appointment: only in urgent cases

- The same is true for supervisors. We try to inform you as fast as possible if an appointment does not take place. We need to reach you via mail!
Final tips

- **Stick to our proven rules.** They help you to avoid trouble.
- **Read and understand our rules.** In case of doubt, read them again. In case of further doubt, talk to your supervisor.

- **Do not fool yourself by**
  - Missing deadlines
  - Violating rules
  - Or even plagiarism

- **You are not learning for a “Schein” but for life**