

# Requirements Engineering Seminar

## Introduction

Prof. Dr. Martin Glinz

Eya Ben Charrada

Dr. Norbert Seyff



**University of  
Zurich** <sup>UZH</sup>

# Seminar Topic

## Managing Requirements Evolution

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- How to specify new requirements?
- How to keep the specification consistent when requirements evolve?
- How to propagate changes among the different artifacts when requirements evolve?

# Goals

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- Goals
  - Analyse and present scientific work in the field of requirements engineering
  - Master students are expected to present a more elaborate analysis than bachelor students (e.g. include more references).
- Do not just read and present a single paper, but work on a number of papers, and derive knowledge

# Organization

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3 credits ECTS

Examination process

- Seminar paper (15 pages Springer style)
- Reviewing (2 papers)
- Own presentation (20 minutes)
- Participation on presentation day

Grading

- 2/3 seminar paper, 1/3 presentation

# Topics

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1. Keeping requirements specifications consistent
2. Specifying requirements change
3. Traceability for managing software evolution
4. Automated impact analysis via traceability
5. Keeping the specification up-to-date during software evolution

# Keeping requirements specifications consistent

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- How to ensure that the requirements specification is consistent after each change?
- How to detect errors and problems in the specification?
- References:
  - Didar Zowghi, Vincenzo Gervasi, On the interplay between consistency, completeness, and correctness in requirements evolution, *Information and Software Technology*, 2003.
  - Bashar Nuseibeh, Steve Easterbrook, and Alessandra Russo. Leveraging Inconsistency in Software Development. *Computer*, 2000.
  - Kamalrudin, Massila, John Hosking, and John Grundy. "Improving requirements quality using essential use case interaction patterns." *33rd International Conference on Software Engineering (ICSE)*, 2011.

# Specifying requirements change

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- How to specify new requirements?
- How to adapt the existing requirements specification to reflect the new changes?
- References
  - Andrea Herrmann, Armin Wallnöfer, and Barbara Paech. Specifying Changes Only --- A Case Study on Delta Requirements. *In Proceedings of the 15th International Working Conference on Requirements Engineering: Foundation for Software Quality (REFSQ '09)*, 2009.
  - Rolland, Colette, Camille Salinesi, and Anne Etien. Eliciting gaps in requirements change. *Requirements Engineering 9.1* (2004): 1-15.

# Traceability for managing software evolution

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- What is requirements traceability?
- How can one establish and maintain traces?
- How is traceability used for managing change?
- References:
  - Orlena Gotel and Anthony Finkelstein. An analysis of the requirements traceability problem. *International Conference on Requirements Engineering*, 1994.
  - Jane Huffman Hayes, Alex Dekhtyar, and Senthil Karthikeyan Sundaram. 2006. Advancing Candidate Link Generation for Requirements Tracing: The Study of Methods. *IEEE Transactions on Software Engineering*, 2006.



# Automated impact analysis via traceability

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- How to automatically analyze and identify the impact of a change on the various software artifacts?
- References:
  - Cleland-Huang, Jane, Carl K. Chang, and Mark Christensen. Event-based traceability for managing evolutionary change. *IEEE Transactions on Software Engineering*, 29.9 (2003): 796-810.
  - von Knethen, Antje, and Mathias Grund. QuaTrace: a tool environment for (semi-) automatic impact analysis based on traces. *International Conference on Software Maintenance*, 2003.

# Keeping the specification up-to-date during software evolution

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- How to keep the requirements specification consistent with the implementation when the system evolve?
- References:
  - Eya Ben Charrada, and Martin Glinz. "An automated hint generation approach for supporting the evolution of requirements specifications." Proceedings of the Joint ERCIM Workshop on Software Evolution (EVOL) and International Workshop on Principles of Software Evolution (IWPSE). 2010.
  - Eya Ben Charrada, Anne Koziolk, and Martin Glinz. Identifying outdated requirements based on source code changes. In Proceedings of the 20th International Requirements Engineering Conference (RE 2012), 2012

# Plan

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Day	Appointment
20.02.	First meeting
~ 06.03., by appointment or email	Q&A seminar topic, paper structure, main storyline
~ 27.03., by appointment or email	Review and discussion of draft
07.04. 23:59 CET	Paper submission deadline
17.04. 23:59 CET	Peer Review submission deadline
28.04. 23:59 CET	Camera-ready submission deadline
~ 08.05. by appointment or email	Review and discussion of presentation
Tbd (mid May)	Seminar Presentations Day

# Q&A Seminar Topic

## Next Meeting

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- By appointment
- Prepare the meeting
  - Plan the story line of your paper
- Draft an outline

# Review and Discussion of Draft Meeting

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- Send draft to Eya 7 days *before* your appointment
- Read the material on writing before starting to write

# Peer Reviews

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- Adhere to the reviewer forms (will be provided)
- Be constructive:
  - When filling in the form, put yourself in the authors place: Formulate constructive criticism that helps the author.
- Concrete suggestions for improvement
  - Name weaknesses of the paper and describe ideas how to improve these aspects. Try to make concrete suggestions. For example, the remark „In section X and Y the term A is defined differently“ is more concrete than the remark „Some terms in the text are inconsistently used“ or, even worse, „there are inconsistencies“.
- Check for plagiarism
  - If the writing style of sections differs, the texts might be copied from other sources. Compare the outline of the paper and parts of the paper with the original, using online search engines. Let the seminar supervisors know if you find plagiarism.

# Seminar Presentations Day

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- Presentations of the seminar topics
- Own presentation (20 minutes)
- Participation on presentation day
  
- Prepare presentation well, will be part of your grade!
- Train your presentation with a peer beforehand (organize on your own or ask Eya to make contact)

# News and info

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- Visit these web pages:
  - <http://www.ifi.uzh.ch/serg/courses/fs13/sem-re-bsc.html>
  - <http://www.ifi.uzh.ch/serg/courses/fs13/sem-re-msc.html>