

Seminar Requirements Engineering

Introduction

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Dr. Anne Koziolk



**University of
Zurich** ^{UZH}

Content

- Introduction
- Organization
- Topics
- Appointments
- For reference
 - Presentation tips
 - Literature research hints

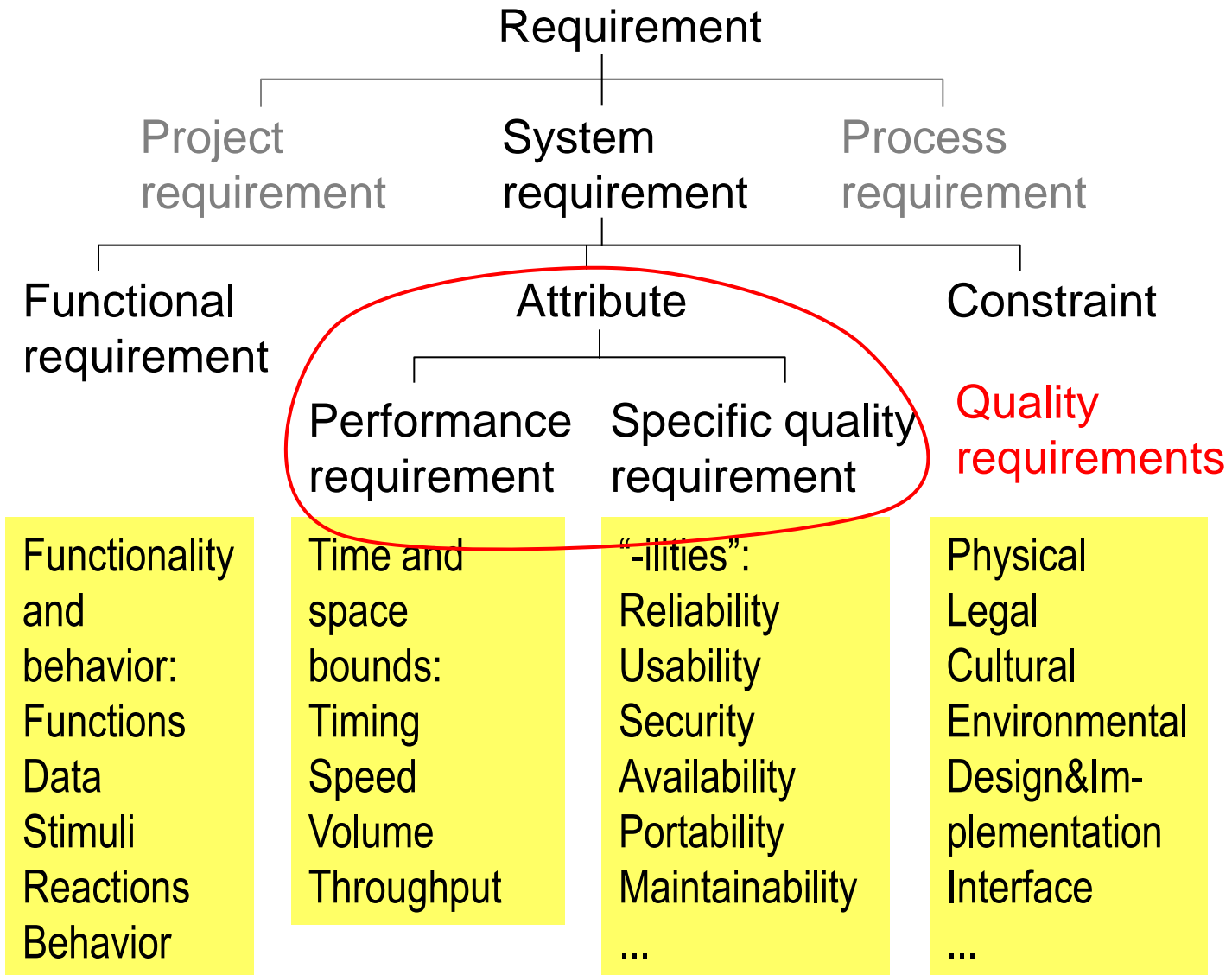
Quality Requirements

What does “Quality Requirements” mean?

Software Quality

- Quality – The degree to which a set of inherent characteristics fulfils requirements (ISO 9000:2000)
- Software Quality – The degree to which software meets its requirements
- Requirement – A condition or capability that must be met or possessed by a system (or a system component)
[IEEE 610.12]
- Quality requirements?

Classifying requirements



Quality requirements

Quality requirement – Those requirements that pertain to a system's **attributes** such as **performance** attributes or **specific qualities**.

Examples:

- “The system shall be user friendly.”
- “The time interval between two consecutive scans of the temperature sensor shall be below two seconds.”
- “The probability of successful, unauthorized intrusion into the database shall be smaller than 10^{-6} .”

Content and Goals

- Content
 - How to come up with the right quality requirements and specify them?
 - How to fulfil quality requirements? What is the role of software architecture?
 - How to prioritize and trade-off quality requirements?
- Goals
 - “BSc: *einfache* wissenschaftliche Arbeit zu einem Thema des Requirements Engineerings selbständig erstellen und präsentieren können.”
 - “MSc: *fortgeschrittene* wissenschaftliche Arbeit zu einem Thema des Requirements Engineerings selbständig erstellen und präsentieren können.”
- Do not just read and present a single paper, but
- Work on a number of papers, and derive knowledge
 - Problem overview or example application

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Organization

Supervision

- Prof. Dr. Martin Glinz
- Dr. Anne Koziolk

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

Appointments

Updated dates due to join with SE seminar

Day	Appointment
21.02.	First meeting
~ 06.03., by appointment or email	Q&A seminar topic, paper structure, main storyline
~ 29.03., by appointment or email	Review and discussion of draft
06.04. 23:59 CET	Paper submission deadline
16.04. 23:59 CET	Peer Review submission deadline
27.04. 23:59 CET	Camera-ready submission deadline
~ 08.05. by appointment or email	Review and discussion of presentation
15.05.	Seminar Presentations Day

News and info

- Visit these web pages:
 - <http://www.ifi.uzh.ch/rerg/courses/fs12/sem-re-bsc.html>
 - <http://www.ifi.uzh.ch/rerg/courses/fs12/sem-re-msc.html>

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Topics

1. Decomposition of Quality Goals
2. Classifying and Expressing Non-Functional Requirements
3. Using Quality Models for Quality Requirements
4. Iterative Handling of Quality Requirements and Software Architecture
5. Empirical Evidence on Quality Requirements
6. Prioritizing Quality Requirements
- ~~7. Software Architecture Evaluation~~

Decomposition of Quality Goals

- Non-Functional Requirements Framework and related approaches
- How can high-level quality goals be decomposed to solutions?
- How can quality requirements be organized and related to each other?
- J Mylopoulos, L Chung, B Nixon (1992). Representing and using nonfunctional requirements: A process-oriented approach. *IEEE Transactions on Software Engineering* 18, 6. 483-497.
- Better: Book: L. Chung, B. A. Nixon, E. Yu, and J. Mylopoulos (2000). *Non-Functional Requirements in Software Engineering*. Springer.
- Find and compare other goal-oriented approaches.

Classifying and Expressing Non-Functional Requirements

- What different types of quality requirements are there?
- How can quality requirements be expressed?
- Glinz (2007). On Non-Functional Requirements. *Proceedings of the 15th IEEE International Requirements Engineering Conference*, Delhi, India. 21-26.

Using Quality Models for Quality Requirements

- What are quality models?
- How can they be used to improve quality requirements engineering?
- How are they used in different requirements engineering phases?
- Donald Firesmith (2003). Using Quality Models to Engineer Quality Requirements. *Journal of Object Technology*.
- Could be well suited for an example application.

Iterative Handling of Quality Requirements and SW Architecture

- How can quality requirements and software architecture be iteratively specified and designed?
- Woods and Rozanski (2011). How Software Architecture can Frame, Constrain and Inspire System Requirements. In: Avgeriou et al.: Relating Software Requirements and Architectures, Springer.
- Focus on quality requirements

Empirical Evidence on Quality Requirements

- What do we know about quality requirements?
- What scientific evidence is there?
- Starting point:
 - Berntsson-Svensson et al. (2011). “Quality Requirements in Industrial Practice – an extended interview study at eleven companies” *Transactions of Software Engineering*, IEEE.
- Survey and find more insights, summarize what is known. → more independent literature research

Prioritizing Quality Requirements

- How to decide what level of quality is needed?
- How to decide which quality properties are important?
- → How to prioritize
- Berntsson Svensson et al. (2011). Setting quality targets for coming releases with QUPER: an industrial case study. To appear in: *Requirements Engineering Journal*.

Software Architecture Evaluation

- How can software architecture insight support quality requirements decisions?
- Software architecture evaluation techniques such as ATAM
- Compare different techniques.
- Kazman et al. (2000). ATAM: Method for Architecture Evaluation. SEI Technical report.
 - Available at: <http://www.sei.cmu.edu/library/abstracts/reports/00tr004.cfm>

Wegen weniger Teilnehmer gestrichen

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Q&A Seminar Topic

Next Meeting

- By appointment
- Prepare the meeting
 - Plan the story line of your paper
 - Check the ZAK Leitfaden to decide for a paper type
 - Problem overview
 - Example application
- Draft an outline
- Alternatively: Send this information to Anne by email by the indicated date.

Review and Discussion of Draft Meeting

- Read the material on writing before starting to write
- Meeting by appointment
- Send draft to Anne 7 days *before* your appointment
- Alternatively: Send draft to Anne by email by March 25th, you will receive feedback some time after the 29th.

Peer Reviews

- 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

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

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Presentation Tips

Presentation Skills

Use this course as an opportunity to train presentation skills

Great source on how to deliver presentations:
<http://www.garreynolds.com/Presentation>

- Organization and Preparation
- Delivery
- Slides

Not everything is applicable to seminar talks, but main ideas apply

Presentation Tips

Some Rules of Thumb

- Do not put text blocks on slides
- Do not use more than 7 bullet points per slide
- Better: Do not use bullet points at all
- Try to use diagrams / images instead of text
- Use animations sparingly (only appear / disappear)

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Martin Glinz

Requirements Engineering II

Conferences and Journals

Where do Requirements Engineering Researchers publish?



Conferences

- IEEE International Requirements Engineering Conference
- REFSQ
- Others

Conferences – The premier event: RE



14th IEEE International
Requirements Engineering
Conference

Minneapolis/St. Paul, Minnesota, USA
September 11-15, 2006



- Home
- Conference Organization
- Conference Program
- Venue
- Registration
- Workshops, Tutorials, Doctoral Symposium
- Practitioner Track
- Student Information
- Submissions

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The Requirements Engineering Conference Series

The [IEEE International Requirements Engineering Conference](#) is the premier requirements engineering conference. It grew out of two alternating biennial conference series, the IEEE Symposium on Requirements Engineering and the IEEE Conference on Requirements Engineering, which formally merged in 2002.

<http://www.requirements-engineering.org>

Past Conferences

- 13th IEEE International Requirements Engineering Conference (RE'05), Paris, France, August/September 2005
- 12th IEEE International Requirements Engineering Conference (RE'04), Kyoto, Japan, September 2004
- 11th IEEE International Requirements Engineering Conference (RE'03), Monterey Bay, California, USA, September 2003

Conferences – The premier event:

RE – 2

Submissions

Call for Papers
and Proposals

Important Dates

The RE Conference
Series

Monterey Bay, California, USA, September 2003

- 10th IEEE Joint International Requirements Engineering Conference (RE'02), Essen, Germany, September 2002

Prior to 2002, there were two biennial RE conference series: the IEEE International Symposium on Requirements Engineering and the IEEE International Conference on Requirements Engineering.

- Fifth IEEE International Symposium on Requirements Engineering (RE'01), Toronto, Canada, 2001
- Fourth IEEE International Conference on Requirements Engineering (ICRE'00), Schaumburg, Illinois, 2000
- Fourth IEEE International Symposium on Requirements Engineering (RE'99), Limerick, Ireland, 1999
- Third IEEE International Conference on Requirements Engineering (ICRE'98), Colorado Springs, Colorado, USA, 1998
- Third IEEE International Symposium on Requirements Engineering (RE'97), Annapolis, Maryland, USA, 1997
- Second IEEE International Conference on Requirements Engineering (ICRE'96), Colorado Springs, Colorado, USA, 1996
- Second IEEE International Symposium on Requirements Engineering (RE'95), York, UK, 1995
- First IEEE International Conference on Requirements Engineering (ICRE'94), Colorado Springs, Colorado, USA, 1994
- First IEEE International Symposium on Requirements Engineering (RE'93), San Diego, California, USA, 1993

The 2011 RE Conference

Conferences



The 2012 RE Conference

Conferences



The next-tier event: RefsQ Conferences



- One of the leading international forum to discuss RE in its many relations to quality.
- Working conference format
 - Highly structured and interactive forum
 - Provoke discussion among the presenters of papers, pre-assigned discussants, and all the other participants.
- Annually
- Founded as a workshop in 1994
- Proceedings: Springer LNCS (from 2007). For previous proceedings see http://www.sse.uni-due.de/refsq/2012/?page_id=47

Other conferences

Conferences

- Annual:
 - **ICSE** (International Conference on Software Engineering)
 - **CAiSE** (Conference on Advanced Information Systems Engineering)
 - **APSEC** (Asia-Pacific Software Engineering Conference)
- Biennial
 - **ESEC/FSE** (European Software Engineering Conference / ACM SIGSOFT Symposium on the Foundations of Software Engineering)
 - **FSE** (ACM SIGSOFT Symposium on the Foundations of Software Engineering)
- Commercial Conferences (for practitioners only)
 - **RE-Days** (a German event) <http://www.requirementsdays.de>
 - **REConf** (also a German event) <http://reconf.de/>

The flagship journal: REJ

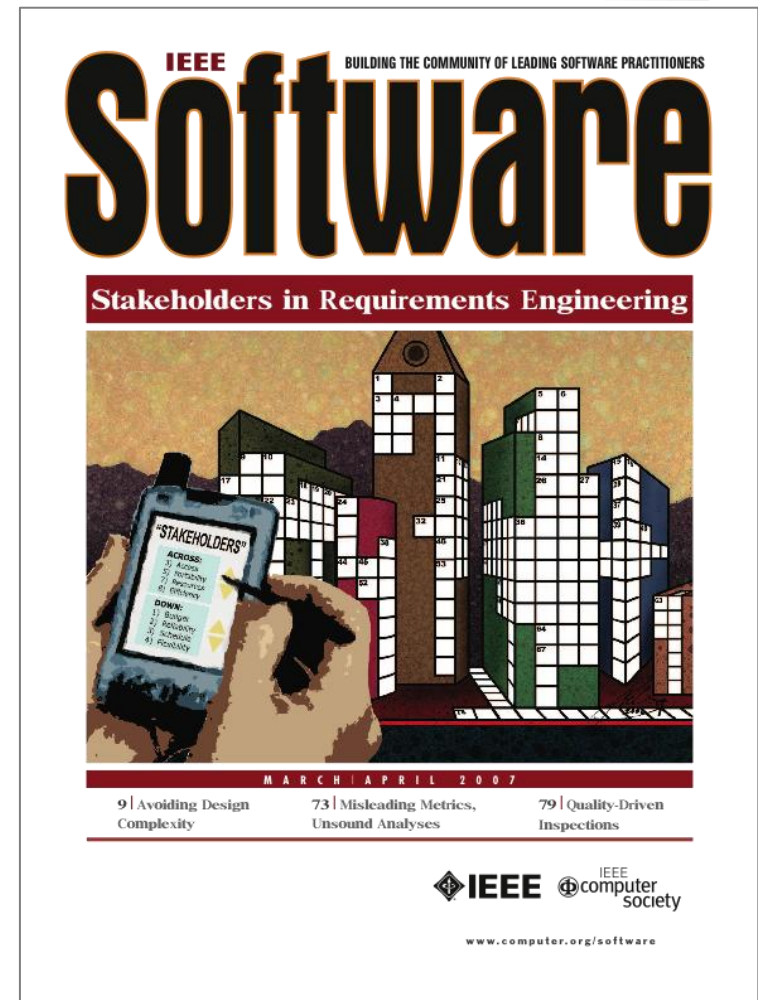
Journals

- Requirements Engineering Journal (Springer)
- Publishes research papers only
- Geared towards an academic audience



The practitioner journal: IEEE SW Journals

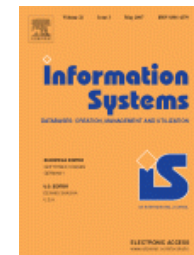
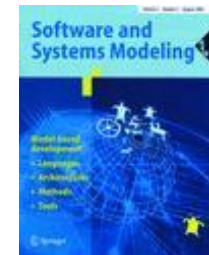
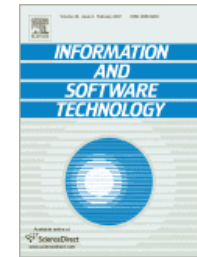
- IEEE Software Magazine (IEEE)
- Publishes practitioner-oriented research and experience
- Geared towards practitioners



Other Journals

Journals

- TSE – IEEE Transactions on Software Engineering (IEEE)
- IST – Information and Software Technology (Elsevier)
- SoSyM – Software and Systems Modeling (Springer)
- Information Systems (Elsevier)



Access to Papers

- All aforementioned **journals** are eletronicly available in the UZH electronic journal library:
 - Go to <http://www.uzh.ch/services/libraries.html>
 - Scroll down and click “E-Zeitschriftenbibliothek”
 - works only from the domain `uzh.ch`
- Available on paper in the library of the Department of Informatics:
 - IEEE Software
 - TSE (back to volume 1; early volumes on microfiche)
- Available on paper in Prof. Glinz’ office
 - REJ (back to volume 1)

Access to Papers – 2

- Conference Proceedings
 - IEEE conferences and workshops
 - IEEE Digital library
 - <http://www.ieeeexplore.ieee.org>
 - fulltext available from the domain uzh.ch
 - ACM conferences and workshops
 - ACM Digital Library
 - <http://portal.acm.org/dl.cfm>
 - fulltext available from the domain uzh.ch
- Other sources for finding fulltext
 - Search in Google Scholar: <http://www.scholar.google.com>
 - Send e-mail to the main author