Introduction to Case Study Research

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Goals

The course aims at providing and overview of case study methodology for software engineering research, as well as practice training in defining, conducting and reviewing case study research.

Content

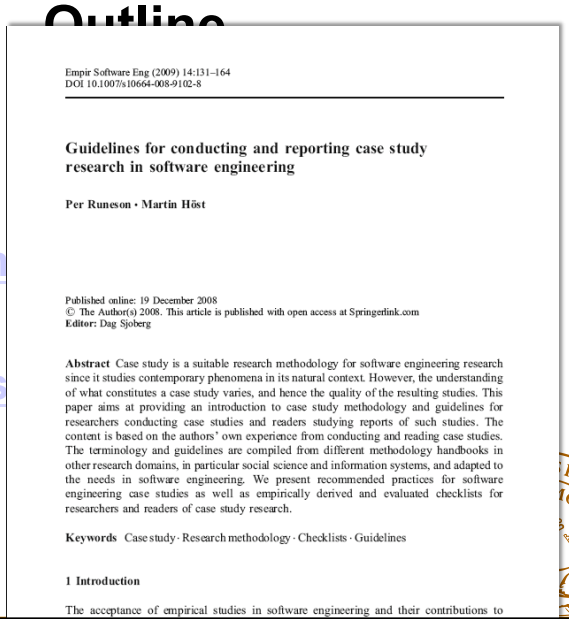
- **Six days of lecture/seminar:**
  - **Oct 9-10, Nov 6-7, Nov 21, Dec 11**
- **Book on case study + ≈15 papers**
- **Own work on analysis and definition of case studies**

Schedule

	Oct 9	Oct 10
8.30-10		Design
10.15-12.00	Introduction, definitions	Ethics
13.15-15.00	Design	Group work
15.15-16.30	Group work	

Outline

- Definitions
- Design
- Preparation
- Collection
- Data analys
- Reporting



Empir Software Eng (2009) 14:131–164
DOI 10.1007/s10664-008-9102-8

Guidelines for conducting and reporting case study research in software engineering

Per Runeson · Martin Höst

Published online: 19 December 2008

Editor: Dag Sjoberg

Abstract Case study is a suitable research methodology for software engineering research since it studies contemporary phenomena in its natural context. However, the understanding of what constitutes a case study varies, and hence the quality of the resulting studies. This paper aims at providing an introduction to case study methodology and guidelines for researchers conducting case studies and readers studying reports of such studies. The content is based on the authors' own experience from conducting and reading case studies. The terminology and guidelines are compiled from different methodology handbooks in other research domains, in particular social science and information systems, and adapted to the needs in software engineering. We present recommended practices for software engineering case studies as well as empirically derived and evaluated checklists for researchers and readers of case study research.

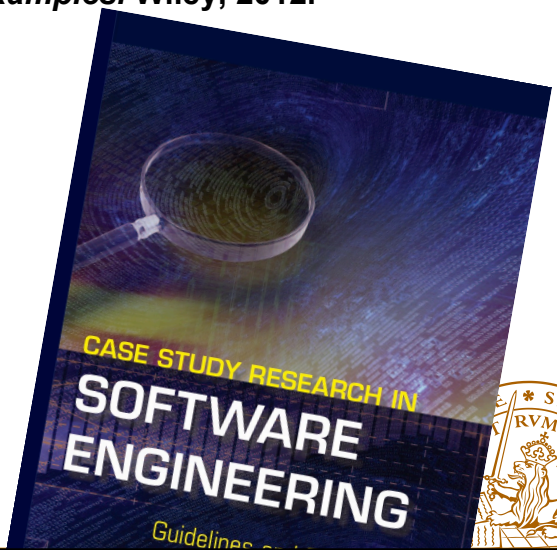
Keywords Case study · Research methodology · Checklists · Guidelines

1 Introduction

The acceptance of empirical studies in software engineering and their contributions to

Literature 1(3)
P. Runeson, M. Höst, A. Rainer, and B. Regnell. ***Case Study Research in Software Engineering – Guidelines and Examples.*** **Wiley, 2012.**

I. Case study methodology
II. Examples of case studies



Literature 2(3)

Examples

- D. Karlström and P. Runeson. Integrating agile software development into stage-gate managed product development. *Empirical Software Engineering*, 11(2):203–225, 2006.
- A. W. Rainer. The longitudinal, chronological case study research strategy: A definition and an example from IBM Hursley Park. *Info. and Software Technology*, 53(7):730-746, 2011.
- C. Andersson and P. Runeson. A spiral process model for case studies on software quality monitoring—method and metrics. *Software Process: Improvement and Practice*, 12(2):125–140, 2007.
- Bjarnason, E., P. Runeson, M. Borg, M. Unterkalmsteiner, E. Engström, B. Regnell, G. Sabaliauskaite, A. Loconsole, T. Gorschek, and R. Feldt (2013). Challenges and Practices in Aligning Requirements and Verification and Validation: An Industrial Multi-Unit Case Study. *Empirical Software Engineering* http://dx.doi.org/10.1007/s10664-013-9263-y.

Ethics

- J. Singer and N. G. Vinson. Why and how research ethics matters to you. yes, you! *Empirical Software Engineering*, 6:287–290, 2001.
- K. El-Emam. Ethics and open source. *Empirical Software Engineering*, 6:291– 292, 2001.
- C. B. Seaman. Ethics in qualitative studies of commercial software enterprises: Case description. *Empirical Software Engineering*, 6:299–300, 2001.

Literature 3(3)

Observation and protocol analysis examples

- H. Sharp and H. Robinson. An ethnographic study of XP practice. *Empirical Software Engineering*, 9(4):353–375, 2004.
- A. M. Vans, A. von Mayrhauser, and G. Somlo. Program understanding behav- ior during corrective maintenance of large-scale software. *International Journal of Human-Computer Studies*, 51:31–70, 1999

Focus group example

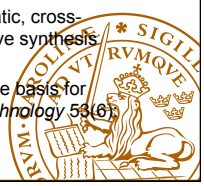
- Höst, M., A. Orucevic-Alagic, and P. Runeson (2011). Usage of Open Source in Commercial Software Product Development - Findings from a Focus Group Meeting. In: *Proceedings 12th International Conference on Product-Focused Software Process Improvement (PROFES)*. Vol. 6759. LNBIP. Springer, pp.143–155.

Reporting examples

- Karlström, D. and P. Runeson (2005). Combining agile methods with stage-gate project management. *IEEE software* 22(3), 43–49.

Synthesis

- Chapter 4: Systematic Literature Reviews in Wohlin, C., P. Runeson, M. Höst, M. C. Ohlsson, B. Regnell, and A. Wesslén (2012). Experimentation in Software Engineering. Springer. http://dx.doi.org/10.1007/978-3-642-29044-2.
- D. S. Cruzes, T. Dybå, P. Runeson, and M. Höst. Case studies synthesis: A thematic, cross-case, and narrative synthesis worked example a thematic, cross-case, and narrative synthesis worked example. *EMSE*, 2014 http://dx.doi.org/10.1007/s10664-014-9326-8.
- B. A. Kitchenham, D. Budgen, and O. Pearl Brereton. Using mapping studies as the basis for further research - a participant-observer case study. *Information and Software Technology* 53(6): 638–651, June 2011.



Communication

Course program:

http://serg.cs.lth.se/index.php?id=46399

Discussions:

http://forum.student.lth.se/index.php/topic,11810.0.htm