


Assignment
Case Study in SPL
Empirical Methods in Software
Engineering Research




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Partly slides originally from Prof. Wohlin

Today's objective

- A context for empirical methods when doing research and working with industry
- Summary of your assignment
- Tips and tricks




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Combine research methods

Main methods used:

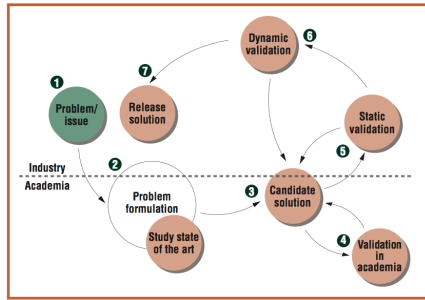
- Research-in-the-typical: case study
- Research-in-the-large: survey
- Research-in-the-small: experiment

Often mixed designs with different, for example, sub-methods within a case study, which may include interviews and archival analysis.



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Our way of doing research: knowledge exchange



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1. Problem/Issue

We often start with:

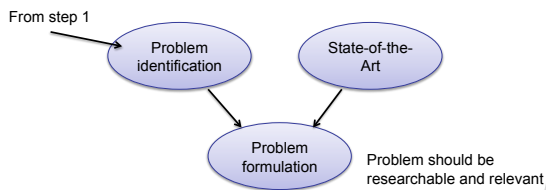
- Interviews to capture needs
- Perform assessment of processes, products or projects in industry typically both from general descriptions and actual project documentation
- Problems prioritized by industry

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2. State-of-the-art and Problem formulation

State-of-the-art is studied often using a systematic review.



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3. Candidate solution

A solution to the problem formulation or part of it is proposed based on literature and own inventions in close contact with our collaborative partner.



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4. Academic validation

This is typically done in a controlled experiment with students. The experiment is often done as part of a course and we ensure that we connect a learning objective to the experiment. This may result in improvements of solution.



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5. Static validation

This refers to validation done in industry, but offline. This is typically done by interviewing a set of people in relation to the solution. Their feedback is taken into account and the solution is potentially revised.



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6. Dynamic validation

This is typically a pilot in a project, part of a project or part of a product. The objective is to evaluate the solution "live", but to minimize costs and risks. A case study is used to follow up on the pilot.



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7. Release

Two aspects are important:

- Academically: publications are submitted as we go along in the collaboration.
- Practically: solution should if passing through all steps be released for broader use.

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Summary: Empirical methods

Use different methods, we typically use:

- Interviews and archival analysis in the start
- Systematic reviews to capture literature
- Experiments for first validation
- Interviews for first industry evaluation
- Case study for pilot evaluation
- Case study for release of solution

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Our assignment

- Companies that commit to your study and give you access will expect you to give something substantial back to them.
- Deadlines: Three of them... (well four if you're counting the presentation).
- Formatting
- 15 min presentation + opposition

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Our assignment (2)

- Product dev company (software)
- Perform SPL Ps Assessment and Improvement
- Anywhere in the world
- Plan and design CS (in-depth, longitudinal, investigation of a case) to gain understanding
- Model elimination not validation

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How to help companies?

- Which model to use? BAPO/PLPA
- Develop roadmap, overall plan, timeline
- Broken down to detailed recommendations
- Recommendations based on **peer-reviewed** sources
- You may need to expand BAPO/PLPA
- Read and understand the specific goals for the CS as found in the descriptor

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The assessment

- Who to talk to?
- What to ask (BAPO/PLPA)?
- What more data/info to ask for?
- Qualify your analysis and motivate your conclusions (peer-reviewed sources)

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Find a company?

- eniro.se, google, emfas.se, SAST.se (organizations), press, Chalmers Careers Services
- Geographic
- Homepage
- Max 10 companies and prioritize
- Contact info
- Call the companies!

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Terminology and defs

- The language at companies is different from what you read in your papers
 - Be clear and explicit
 - Prepare yourself
 - What is a SPL in other words?

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Company context

- Which method to use?
- Level of commitment
 - Selling your study
 - Try getting as much info as possible out of the company
- This is not pure master studies anymore. You are doing research!

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Writing, writing, writing...

- Write for your peers (assume previous knowledge)
- Provide details on anything unique and specific to your study
- Explain what you have done and how
- Use figures and tables
- Clear, concise and explicit

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Stand on the shoulder...

- References are a key part of your assignment, that is the reason for why I'm hassling you searching databases
- Summarize in own words, then provide reference
- Plagiarism...
- Original source!
- Trustworthiness


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Design

- BAPO/PLPA is not for out of the box use
 - Select what to ask for
 - Careful selection of participants/roles
 - Questions
 - ...
- Design for ideal case – scale down if necessary. Shit flows downstream... Better to have a good design that is almost attained than a poor one perfectly executed


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Design

- Have a plan! Then you always have something to deviate from!
- Look at examples (good and bad)


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Interview

- Too many interviewers is frightening
 - One asking... One writing...
 - Tape recorder
 - Assure them it's anonymous
- Be prepared!

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Interview (2)

- Interview instrument
 - Purpose (3-5 sentences)
 - Statement how answers will be used (anonymous?)
 - Logical flow
 - Open-ended questions
 - Format (who will ask questions etc.)
 - How will you collect the questions?
 - Take 10 after an interview and summarize

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Interview execution

- On time
- Welcome the person, present yourself
- Explain purpose
- Explain what the data will be used for
- Ask questions
- Have a very open-ended question in the end (things missed?)
- Thank them!

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Be prepared

Prepared questions

Topics covered in interview

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