

# Design for the analysis of variability management in the industry



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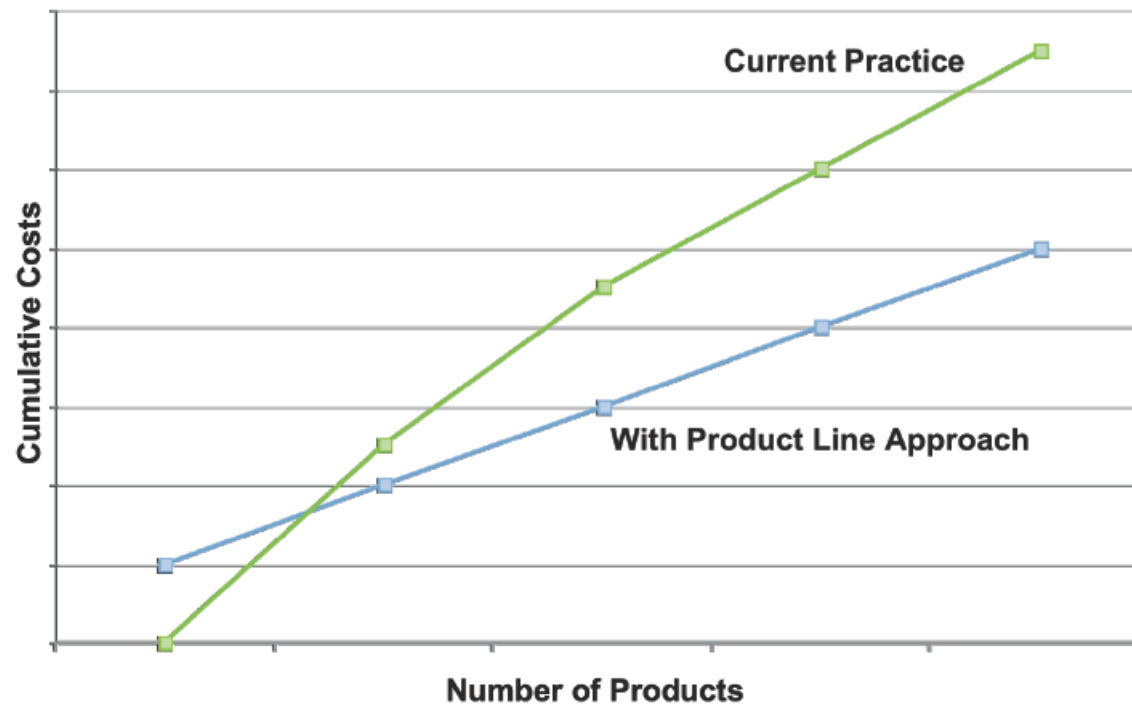
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Context

Planning the study

Conducting  
the study



Weiss, D.M. & Lai, C.T.R..  
*Software Product-Line Engineering: A Family-Based Software Development Process*  
Reading, MA: Addison-Wesley, 1999.

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### Hypothesis:

**There is more practice in variability management than awareness on the practices described in Software Product Line Engineering body of knowledge**

There are extensive studies of the experiences in the use and adoption of SPL for the variability management.  
E.g.

- ESPLA: A Catalog of Extractive SPL  
2017, Sevilla, Spain 25-29 September
- Software product lines in action. B

**But there are no studies about variability management in companies even not aware of SPL techniques (eg. Small/medium companies)<sup>1</sup>**

1. Ana Eva Chacón-Luna, Antonio Manuel Gutiérrez, José A. Galindo, David Benavides: Empirical software product line engineering: A systematic literature review. Inf. Softw. Technol. 128: 106389 (2020)

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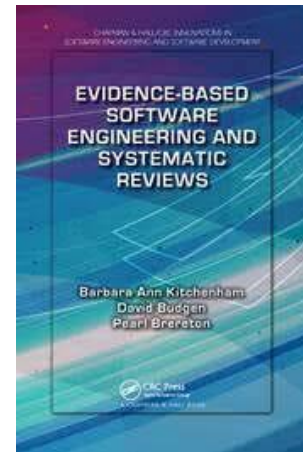
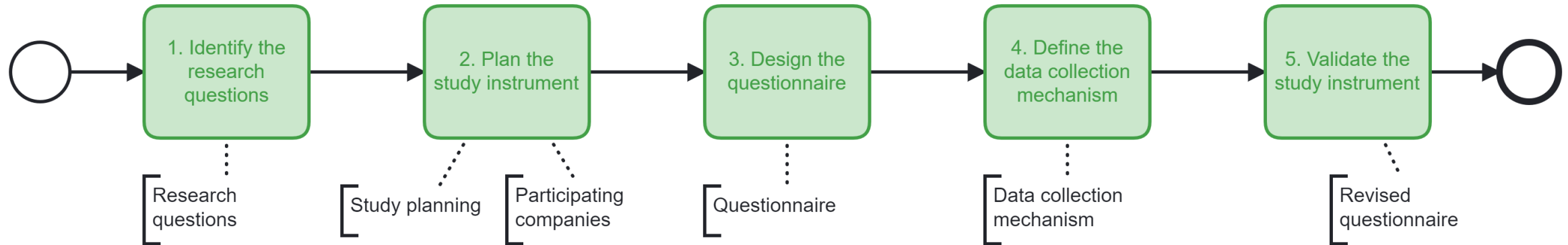


Design of an study to know how companies **manage variability independently** of the knowledge of **SPL techniques**.

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A. Fink. 2003. The Survey Handbook. SAGE Publications

Barbara A. Kitchenham . Shari Lawrence Pfleeger. Principles of survey research,



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# 1. Research questions

**RQ 1. Do companies manage a product portfolio with related products?**

**RQ 2. Do companies analyze characteristics between products?**

**RQ 3. Do companies trace requirements and common parts among the products for their reuse?**

**RQ 4. Do companies have knowledge of techniques from SPL domain?**

## 2. Plan the study instrument

- Use known contacts (Initially the Spanish network TASOVA<sup>1</sup>)
- Online form but sent via contact email.
- Previous experience with unknown contacts had a low answer rate (~15%)



1. <http://tasova.uma.es>

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### 3. Design the questionnaire

0. Profile of the company and participant

Business domain, company size, participant role and experience

1. Do companies manage a portfolio of similar products?

Questions about relation between business strategies and customers

2. How companies analyze characteristics & requirements in products?

Questions about mechanisms used to describe the products characteristics (documentation, formats)

3. Do companies trace requirements and common parts among the products for their reuse?

Questions about formal tracing of commonalities and differences among products (matrix, diagrams, documentation, ...).

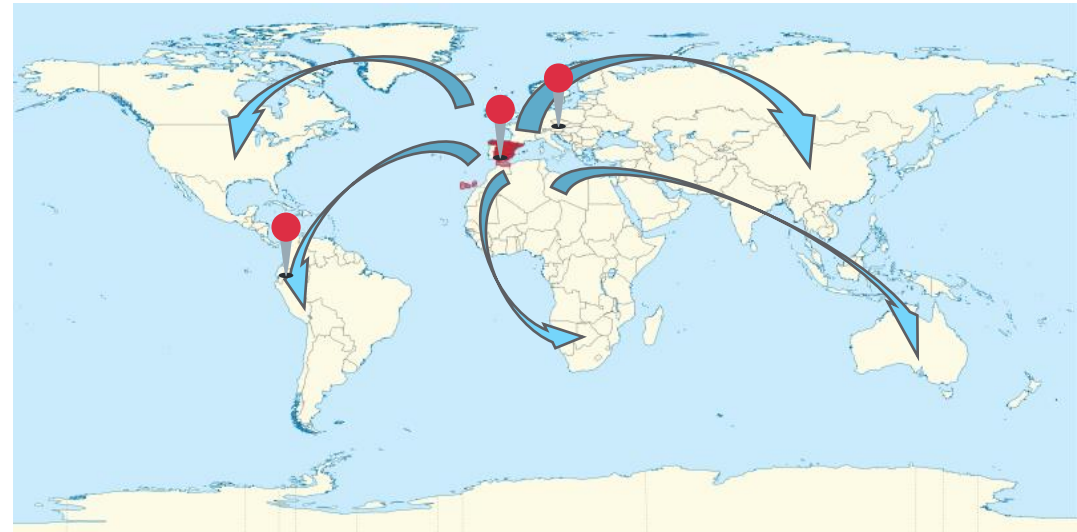
4. Do companies have knowledge of techniques from SPL domain?

Scored ranking of knowledge of common terms in SPLE domain



## 4. Define the data collection mechanism

- ✓ Self-administered questionnaire in Google Forms (2021)





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## 5. Validation of the study instrument

- ✓ Questionnaire reviewed by different co-authors in an iterative process, including the possible answers in the closed questions.
- ✓ A pilot test of the questionnaire was applied to validate the understanding.
- ✓ The initial version of the questionnaire is in Spanish to avoid threats to the validity because the native language.



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## Planned stages

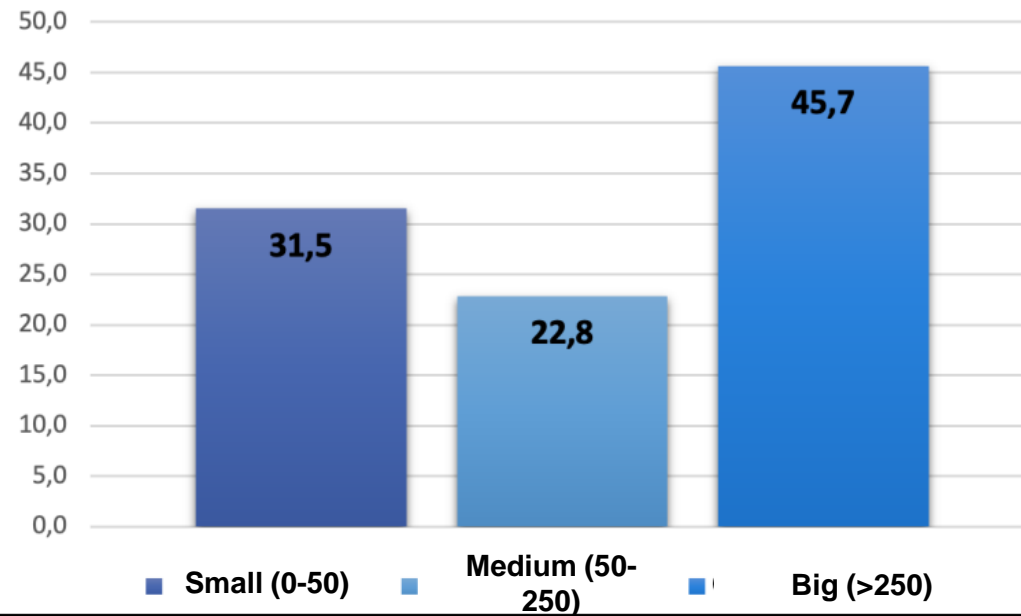
- ✓ Conduct the survey.
- ✓ First participants are 180 requested (75% response rate), distributed over different Spanish regions. Data analysis is still in process.
- ✓ Potential detailed study with interviews and round tables.

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## Preliminary Findings



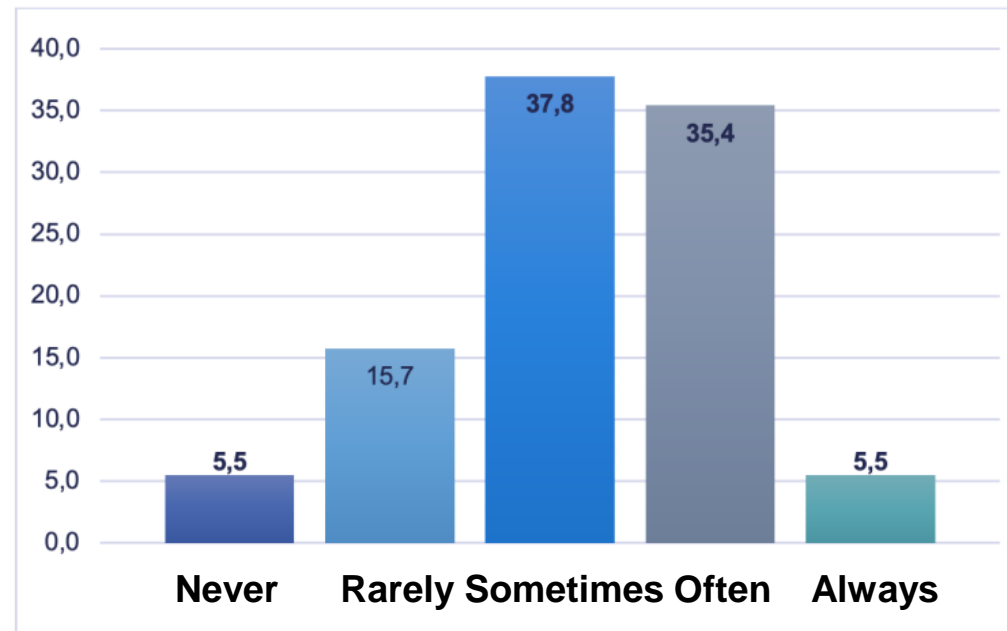
Size of the company (employees)

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## Preliminary Findings



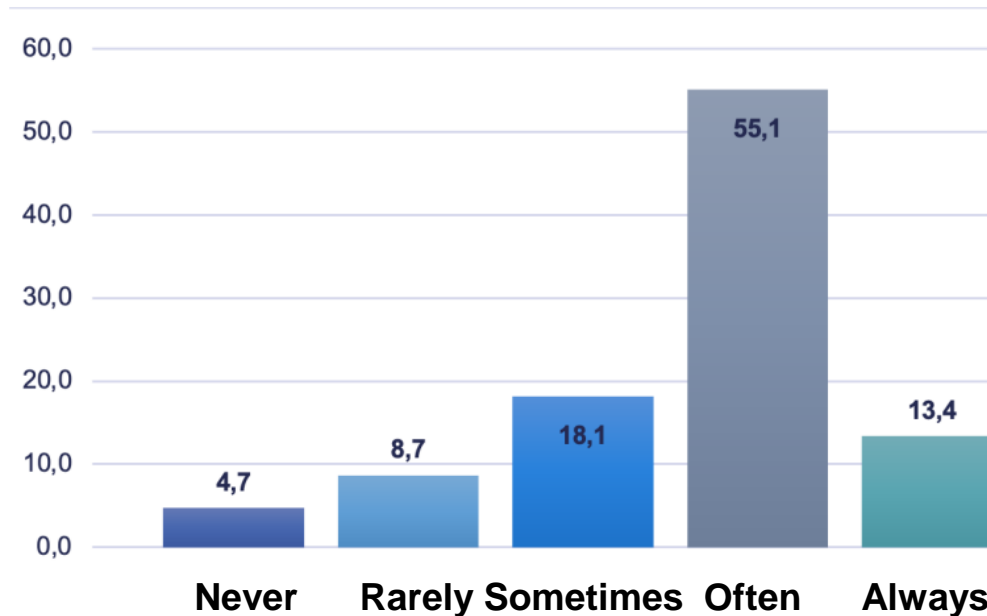
Relation between different projects

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## Preliminary Findings



After a Project, a new customer wants an adaption of previous project



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## Threats

- ✓ The use of contact limits the sample size
- ✓ Spanish networks can introduce cultural biases
- ✓ The self-managed questionnaire can introduce ambiguities because language misunderstandings



# Thank you!

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