

# A Change Management Approach in Product Lines for Use Case-Driven Development and Testing

Ines Hajri, Arda Goknil, and Lionel C. Briand  
Interdisciplinary Centre for Security, Reliability and Trust (SnT)  
University of Luxembourg

## Context & Problem Statement

### 1) Context

- Automotive domain: software development driven by standards
- Use case centric development and requirements-driven testing
- Evolution of requirements and test cases in a family of products

### 2) Problem Statement

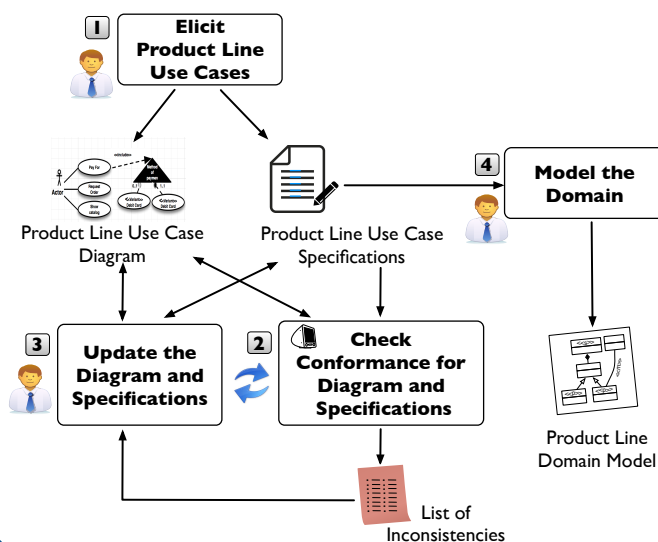
- Ad-hoc change management in the context of product lines

## Project Goals

- A modeling method for capturing variability information in product line use case and domain models
- An automated configuration approach for product specific use case and domain models
- A change impact analysis approach for product line use case and domain models
- An automated regression test selection approach for product line use case and domain models

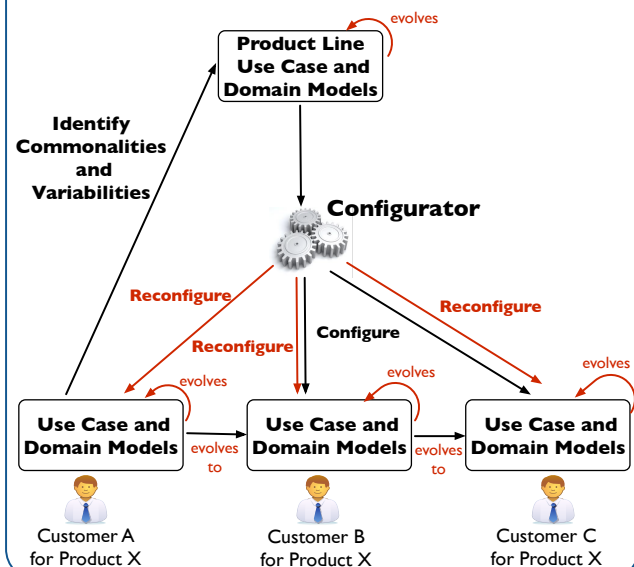
## Product line Use case modeling Method: PUM

- Modeling variability in product line use case and domain models
- Relying on **Natural Language Processing (NLP)** to **automatically** report inconsistencies between product line use case diagrams and specifications

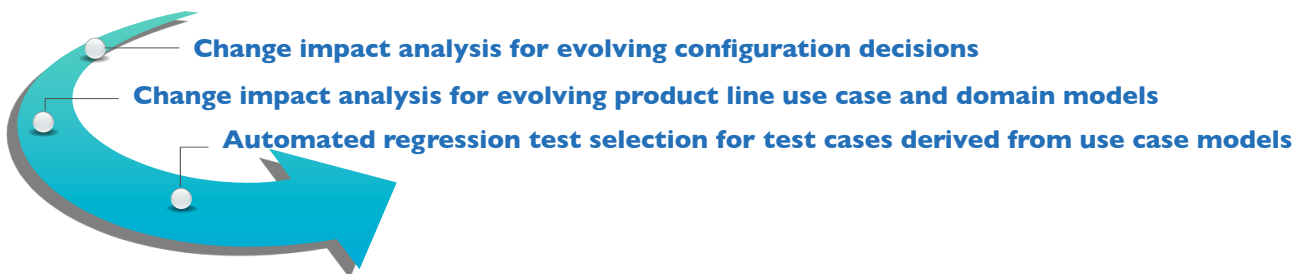


## Requirement Configuration Approach: PUMConf

- PUMConf **guides stakeholders** in making configuration decisions in product line models and **automatically generates** product-specific use case and domain models



## Current & Future Activities



## Selected Publications

- I. Hajri, A. Goknil, L. C. Briand, and T. Stephany. **Incremental Reconfiguration of Product Specific Use Case Models for Evolving Configuration Decisions.** In REFSQ'17, pages 1-19, 2017.
- I. Hajri, A. Goknil, L. C. Briand, and T. Stephany. **A requirements configuration approach and tool for use case-driven development.** In Software and Systems Modeling Journal (SoSyM), Springer, 2016.
- I. Hajri, A. Goknil, L. C. Briand, and T. Stephany. **Applying product line use case modeling in an industrial automotive embedded system: Lessons learned and a refined approach.** In ACM/IEEE MODELS'15, pages 338-347, 2015.