

# An Overview of Generative Software Development

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# Overview

- Introduction
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- Domain vs Application Engineering
- Problem vs Solution Space
- Feature Modelling
- Model Driven Architecture vs Generative Software Development
- Conclusion

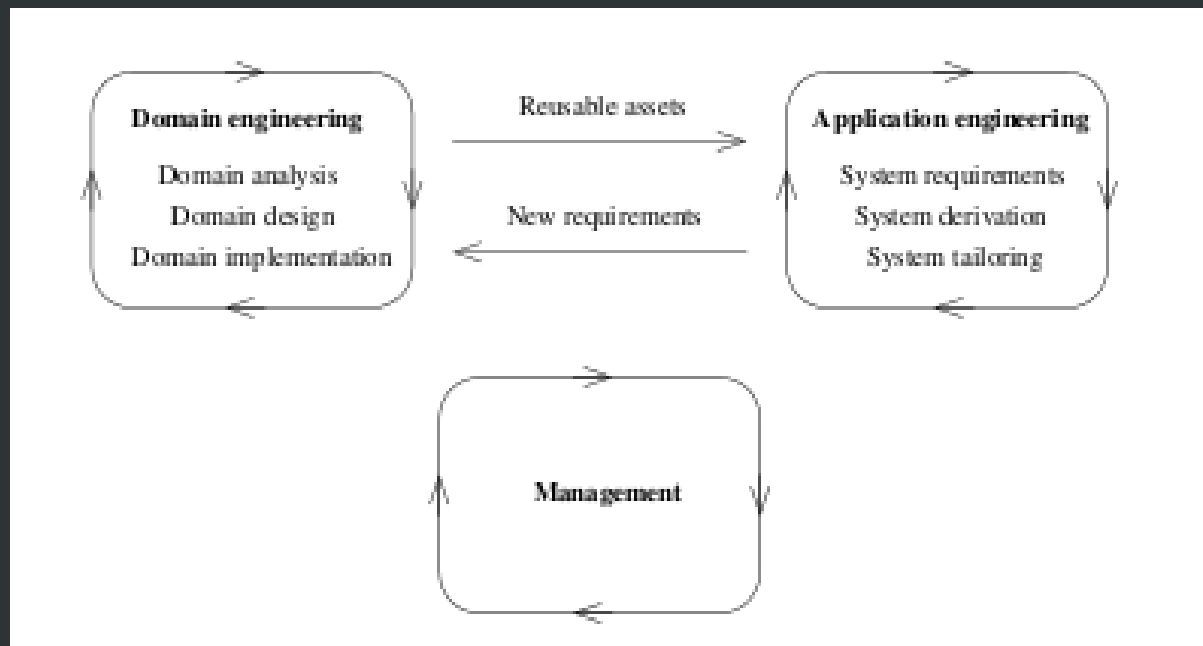


# Introduction

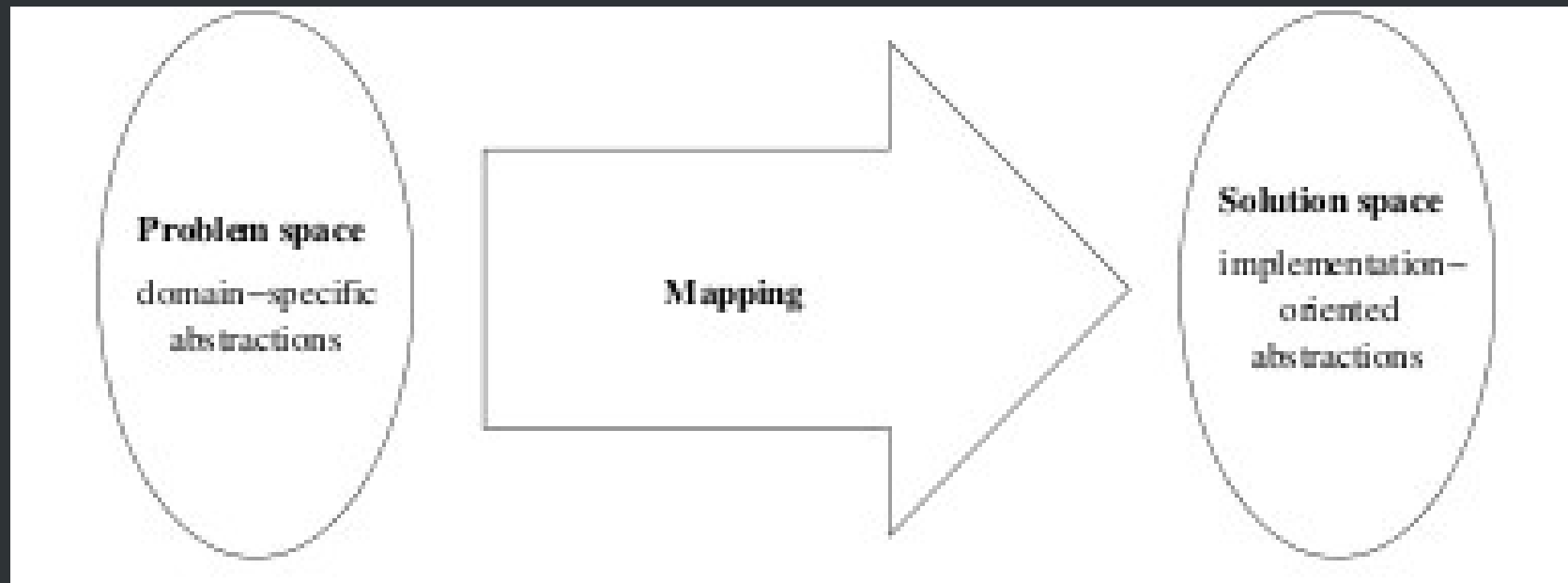
- System Family Engineering
  - Focuses of creating reusable assets
- Generative Software Development
  - Automatic generation of system family component
- Model Driven Development
  - All aspects of software are described using models.
  - Models can be directly compiled into executable code



# Domain vs Application Engineering



# Problem vs Solution Space



# Problem vs Solution Space

- Two views Configuration and Transformation
- Configuration
  - Problem Space: Domain specific features , default values , illegal combinations
  - Solution Space: Implementation components
- Transformation
  - Problem Space: Domain Specific Language
  - Solution Space: Implementation Language

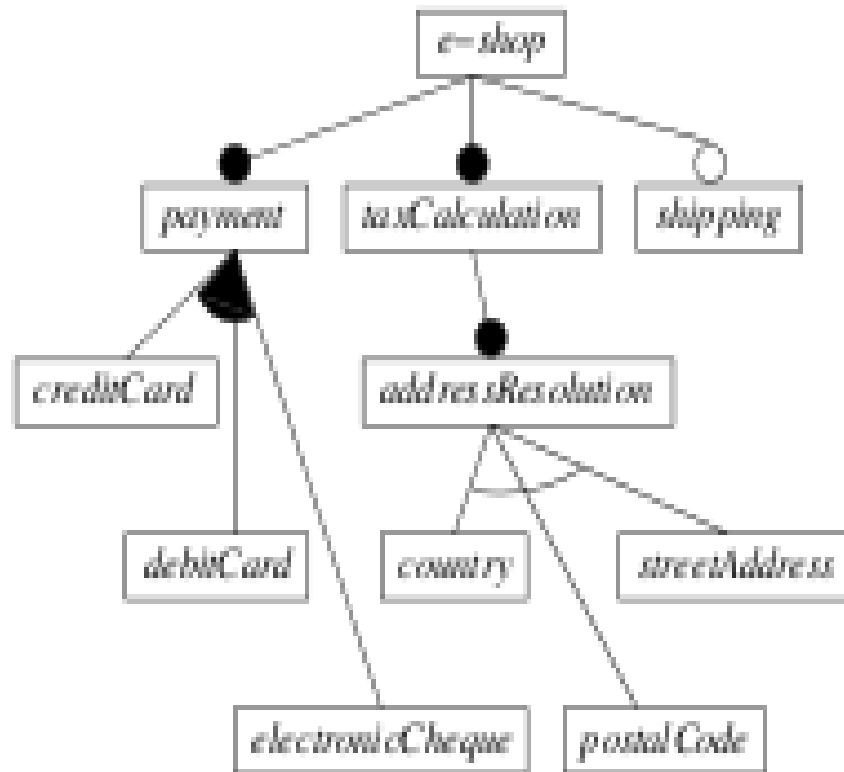


# Feature Modeling

- Method for describing the common and the varying components of a system family
  - Concrete
    - Individual components
    - e.g data storage
  - Aspectual
    - Affect groups of components
    - e.g logging , synchronization
  - Abstract
    - Configuration of components/aspects
  - Grouping

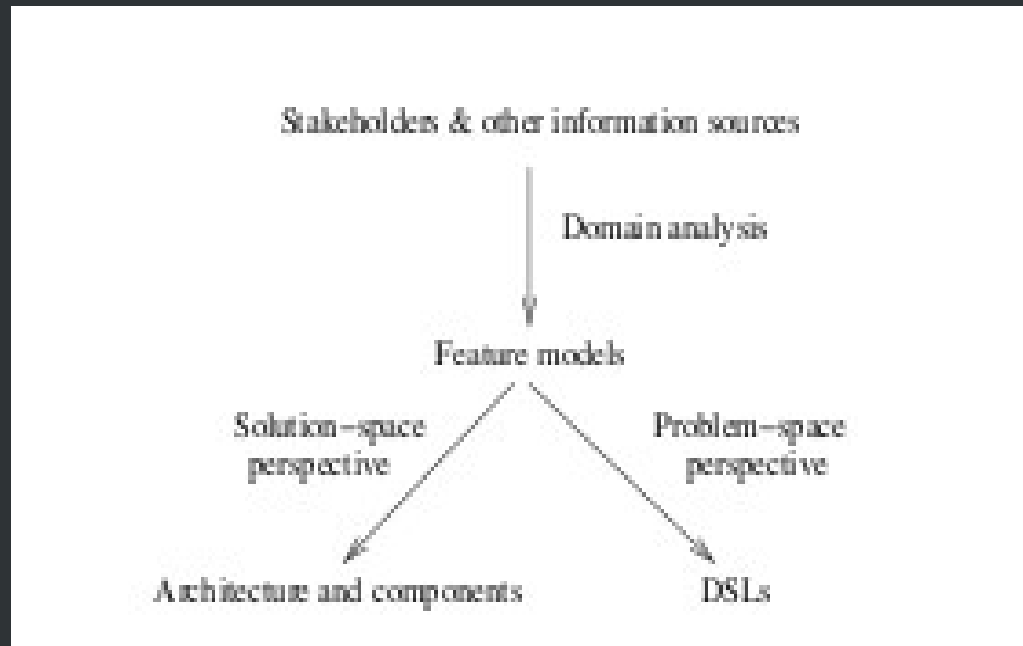


# Feature Modeling





# Feature Oriented Approach



# Model Driven Architecture (MDA)

- Framework for model driven development
- Developed by the Object Management Group(OMG)
- Allows platform independent descriptions of software systems
- Platform Independent Models (PIM) are transformed into Platform Specific Models (PSM) and then into code



# MDA vs Generative Software Development

- Transformation from PIM to PSM can be seen as a transformation from the problem to solution space
- Focus on variation in technology
  - Specifically platform independence



# Conclusion

- Generative Software Development
  - Automatic generation of reusable system components
  - Domain specific languages
  - Feature modelling for domain scoping , DSL creation and system architecture



# Discussion

- Does generative software development lead to an improvement in developer efficiency
- Are feature models a good way to describe system families

