# Domain Engineering

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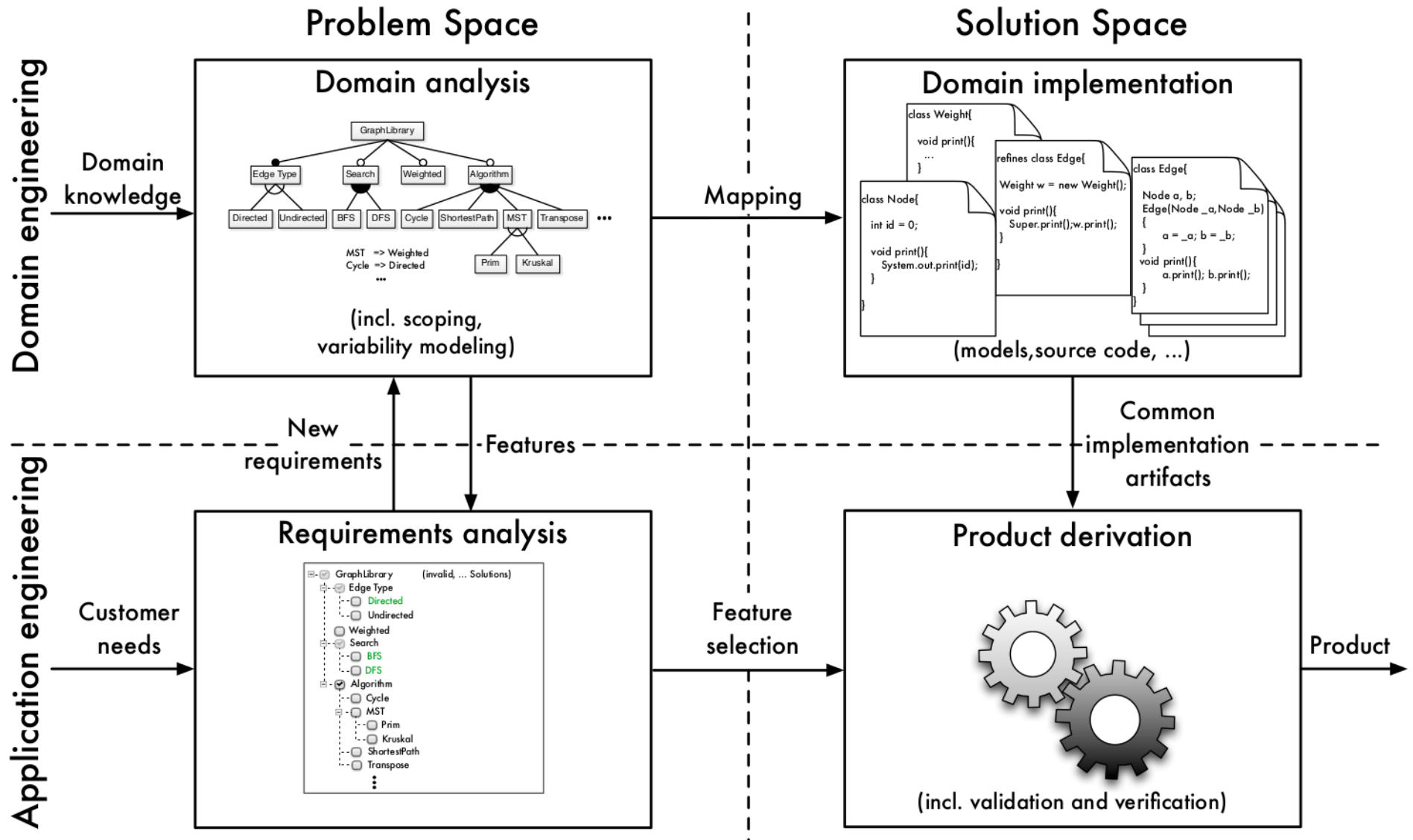
# Engineering Process of SPL



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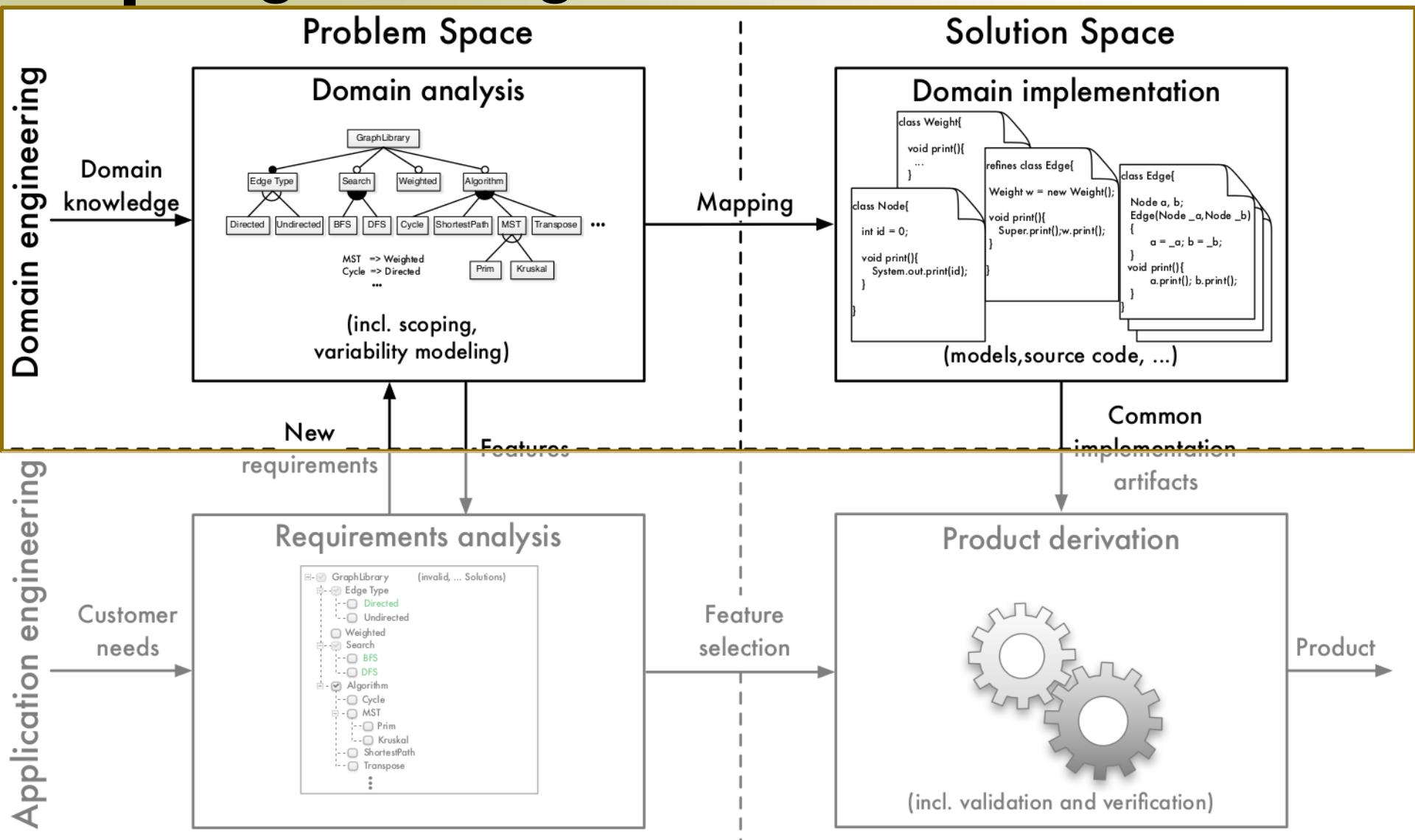

# Tasks in SPL Development

- Four clusters of tasks in SPL development
  1. **Domain Analysis**
  2. **Domain Implementation**
  3. Requirements Analysis
  4. Product Derivation

# Domain Analysis

# Domain Analysis

- It is a form of requirements engineering for the entire SPL
  - It targets the problem space
- Domain analysis has two main tasks
  - Domain Scoping
  - Domain Modeling

# Domain Scoping

- The process of deciding on the SPL extent or range
  - Which requirements should be considered
- In domain scoping, experts collect information from several sources
  - Handbooks, previous systems, interviews, etc.

# The Role of Scoping

- Scoping involves design decisions
  - Include security as an optional feature?
  - Security is out of scope (exclude)?
- SPL with a small scope is easier to develop and maintain
  - Well-defined domain with similar products
  - Less variation points with more reuse opportunities

# Domain Modeling

- It captures and documents the commonalities and variabilities
  - In this task, stakeholders could give examples for possible products
- Commonalities and variabilities are documented in terms of features
  - A feature model is created

# Domain Implementation

# Domain Implementation

- After identifying features, they are implemented as reusable artifacts
  - It targets the solution space
- Besides the source code, we have to consider other artifacts
  - Design models (UML), test cases, user manual, etc.

# Implementation Technique

- The implementation process involves several considerations
- We have to select a implementation strategy or framework
  - Preprocessor, AOP, FOP, etc.
- We also need to structure common parts and define extension points
  - New features may be included later

# Bibliography


- S. Apel, D. Batory, C. Kastner, G. Saake. **Feature-Oriented Software Product Lines: Concepts and Implementation**. Springer; 2013.
  - Section 2.2 (2.2.1 and 2.2.3)