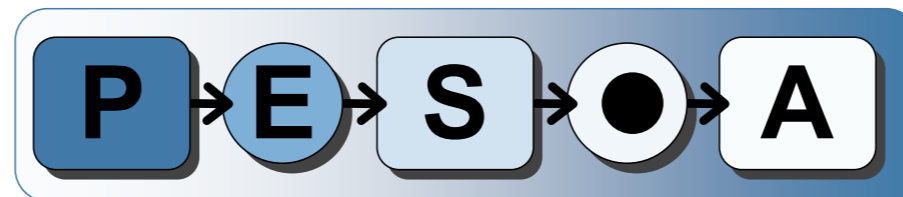


# Variability Mechanisms in E-Business Process Families

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# Outline

- Motivation
- Preliminaries
  - Software Product Lines
  - Process Family Engineering
- Variability Mechanisms
- Example
- Evaluation & Conclusion

# Motivation

# PESOA Project Goals

- Aims at developing methodologies and techniques for modeling variant-rich processes
- Based on Software Product Lines
- Two domains: E-Business and Automotive



Fraunhofer  
Institut  
Experimentelles  
Software Engineering



UNIVERSITÄT LEIPZIG

Faculty of Economics and Management  
Information Systems Institute



DELTA  
software  
technology

The Generator Company

DAIMLERCHRYSLER

ehotelag

# Preliminaries

# Software Product Lines

- Derived from industrial product lines:
- Dual life-cycle of software product lines:
  - Domain engineering (for a set of related products)
  - Application engineering (for a certain product)

# Software Product Lines

- Derived from industrial product lines:



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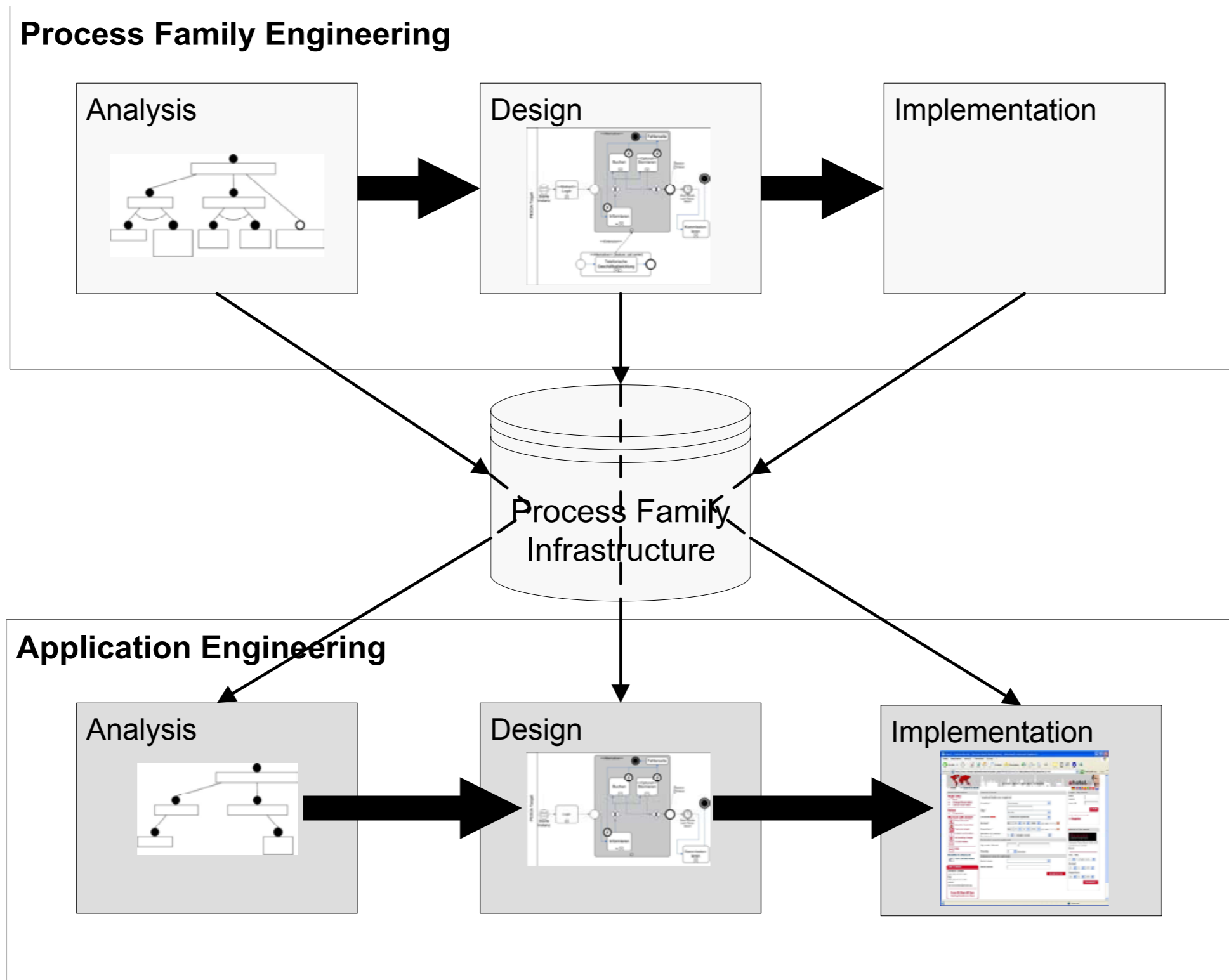


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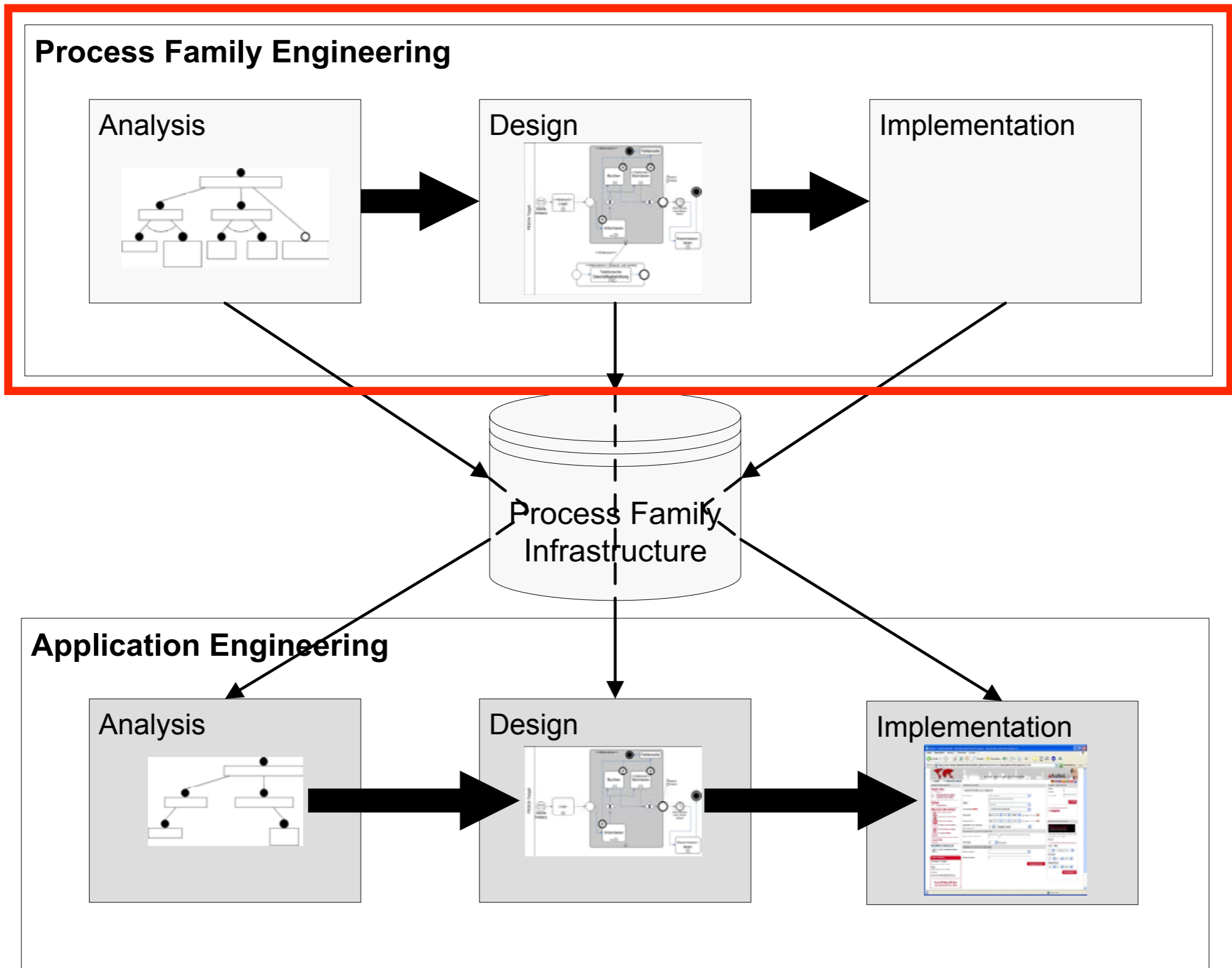
C 270 CDI

- Dual life-cycle of software product lines:
  - Domain engineering (for a set of related products)
  - Application engineering (for a certain product)



# Process Family Engineering





# Process Family Engineering

# Process Family Engineering

- Analysis:
  - Requirements on process family members
- Design:
  - Variant-rich processes containing
    - Variation points
    - Possible resolutions (variants)
    - How to resolve (variability mechanisms)
- Implementation:
  - Process artifacts containing variability

# Variability Mechanisms

# Variability Mechanism

- *Describes techniques for realizing variability*
- Selection can have substantial impact
- Links design and implementation

<b>Mechanisms</b>
<b>Encapsulation</b>
<b>Parameterization</b>
<b>Extension</b>
<b>Inheritance</b>
<b>Design Patterns</b>

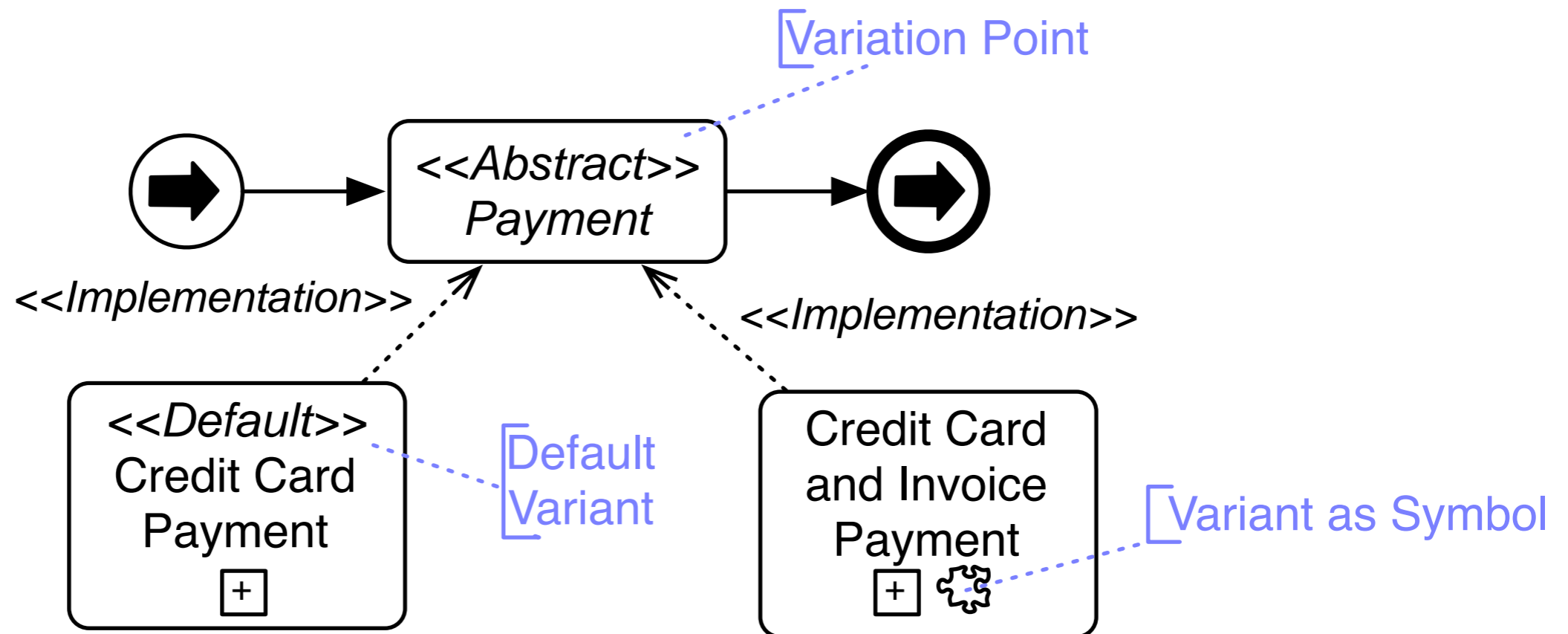
# Examples of Variability Mechanisms

<b>Mechanisms</b>
<b>Encapsulation</b>
<b>Parameterization</b>
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# Examples of Variability Mechanisms

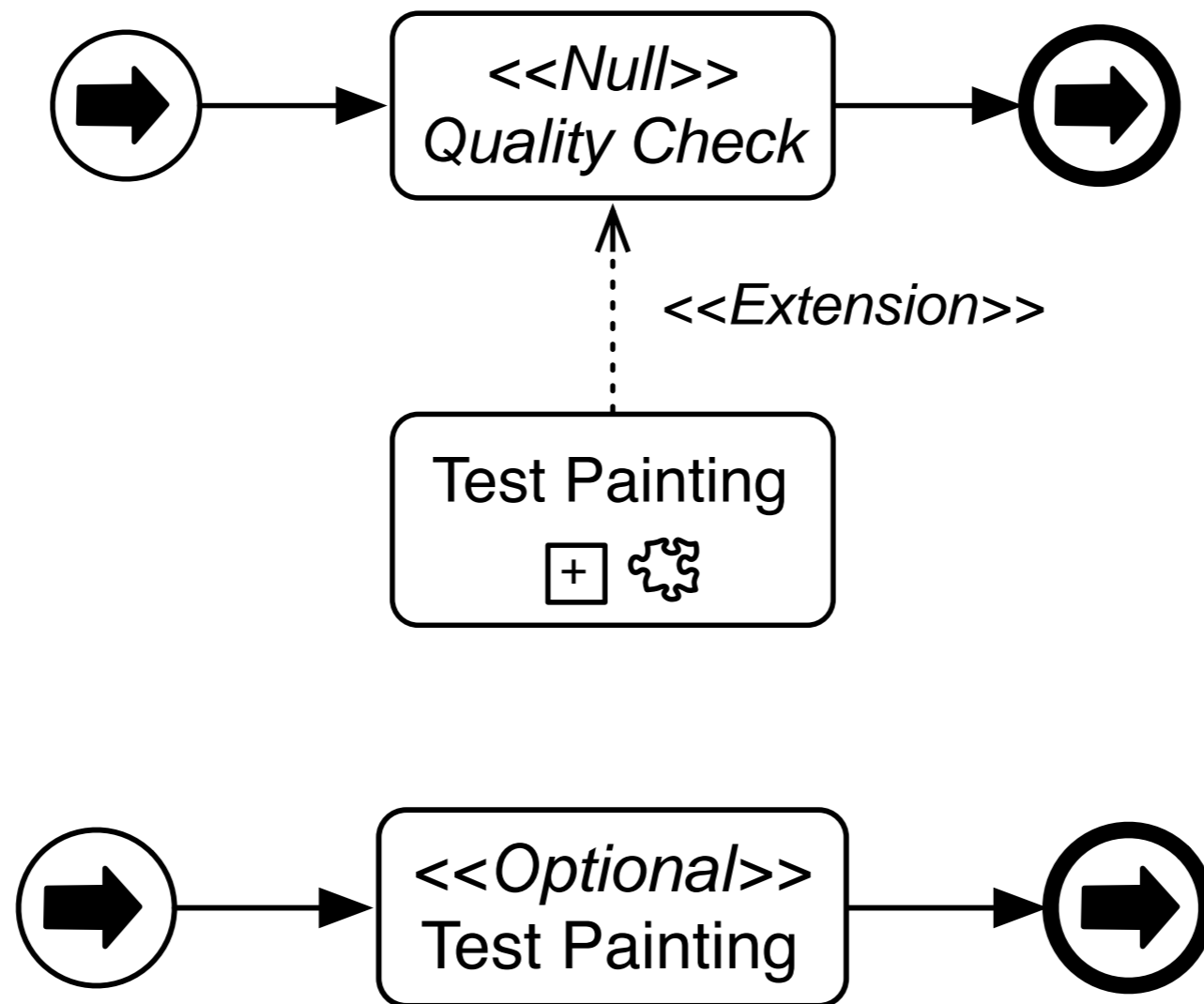
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# Examples of Variability Mechanisms



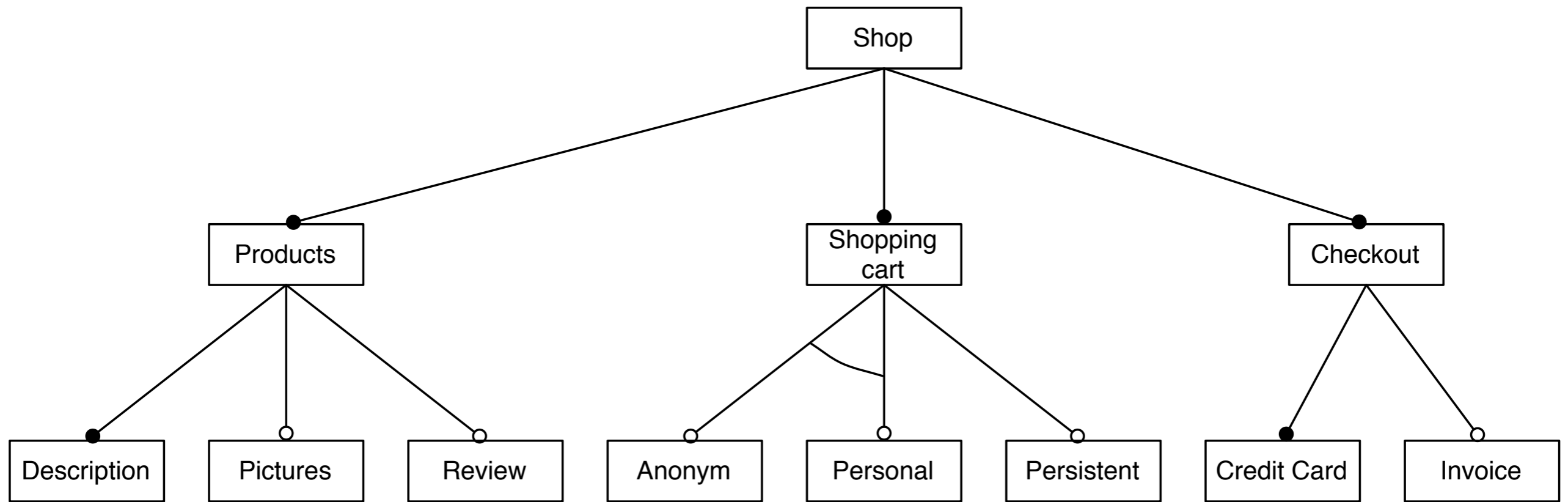
# Encapsulation





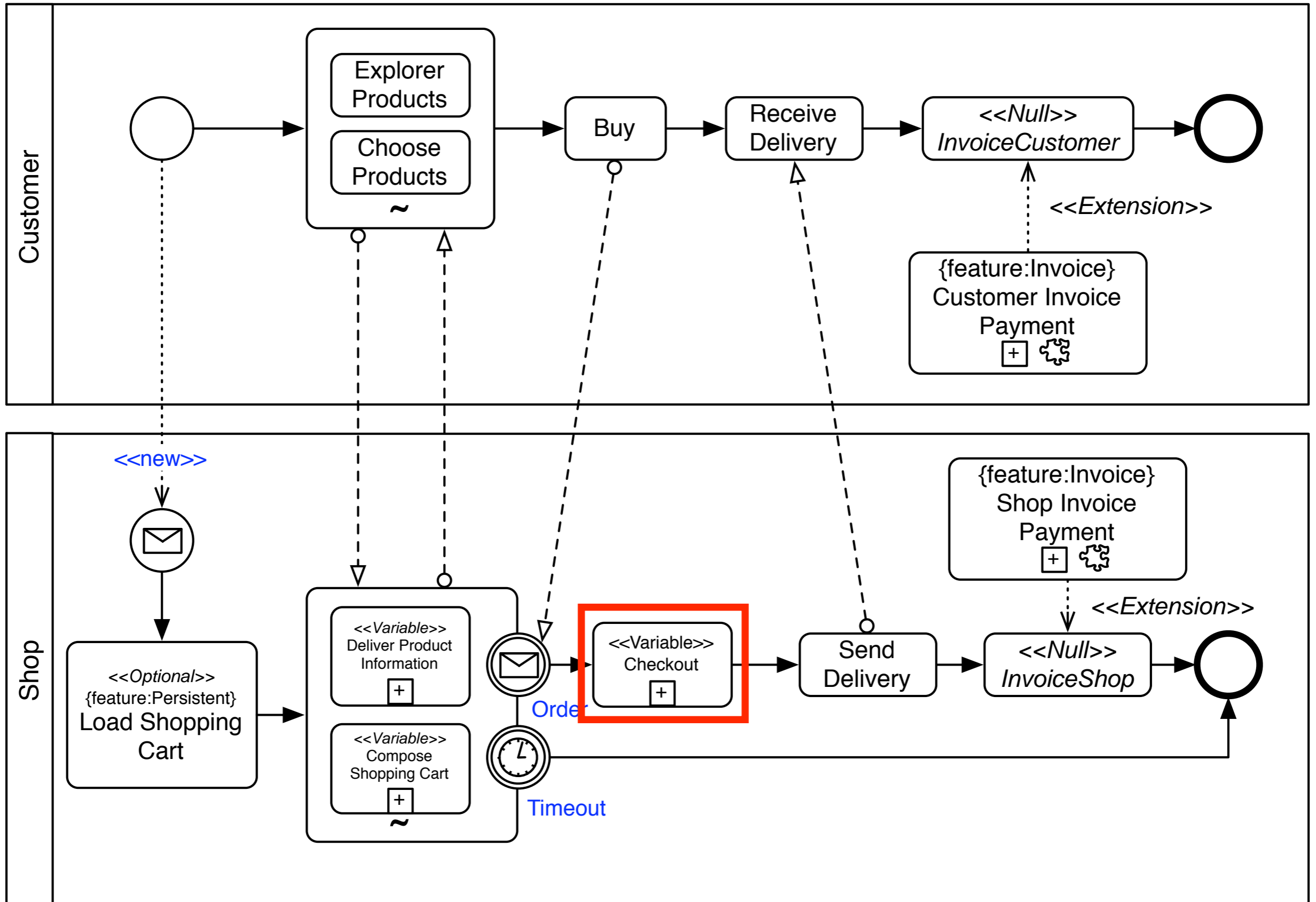
# Extension

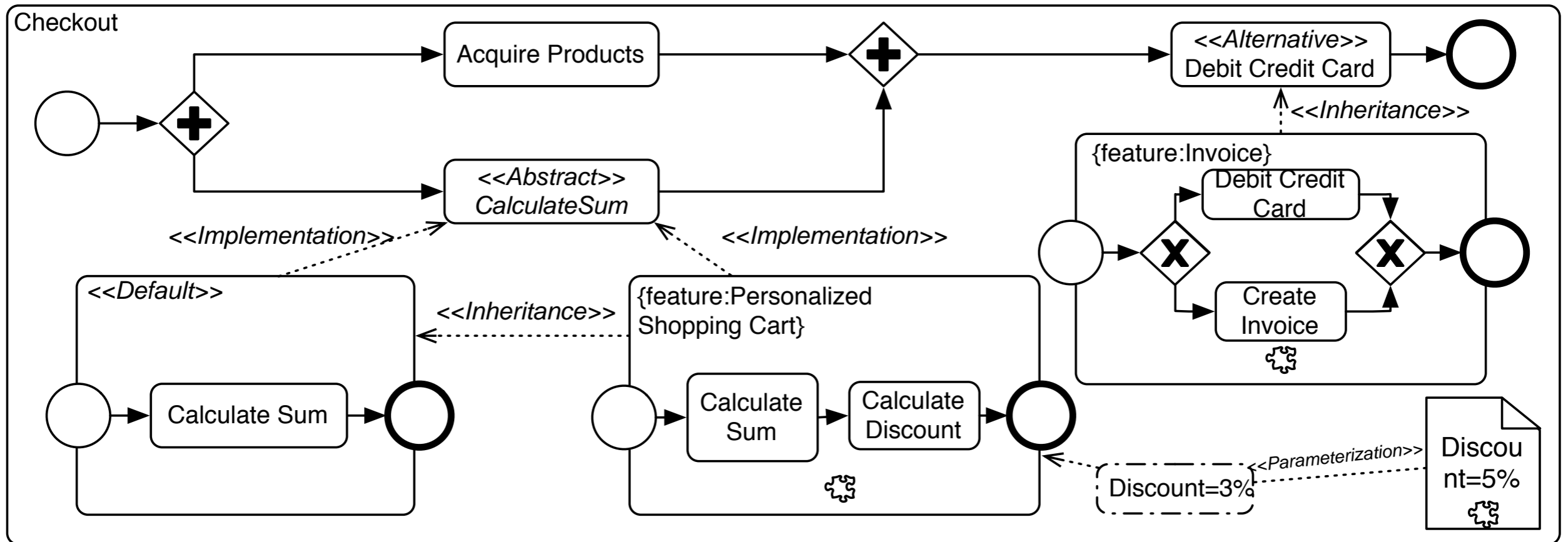
# Example



# Features of an E-Business Shop







# Evaluation & Conclusion

# Evaluation

- Case studies at ehotel
  - Source of variant-rich processes
- Bachelor project „Magrathea“ (in corporation with ehotel and Delta Software)
  - Complete prototype covering domain and application engineering
  - Generation of web-based applications based on variant-rich processes



# Conclusion

- PESOA researches novel approaches for process family engineering
- We showed how a family of E-Business processes can be modeled using
  - Process Family Architecture
  - Variability Mechanisms

# Thank You!

<http://pesoa.org>

