



Design Patterns and Frameworks Summary

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1) Summary

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1. Overview of Course

Tools & Materials

Layered Frameworks

Part II: Patterns and Frameworks

Metapatterns
and Framework patterns

Role Models

Composite Patterns

Variability Patterns

Extensibility Patterns

Glue Patterns

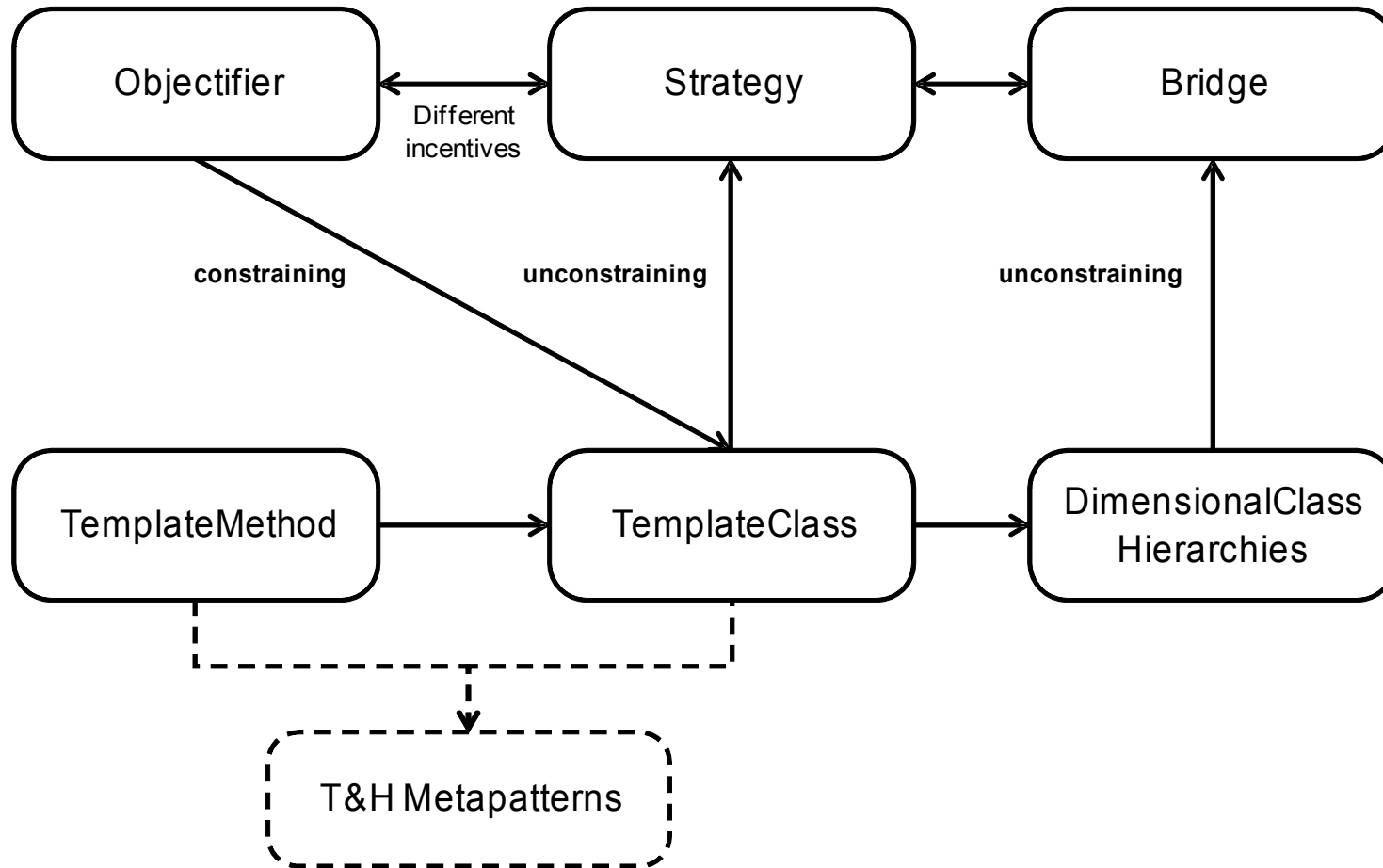
Part I: Basic Patterns

Part I: Basic Patterns

- ▶ Part I introduces basic design patterns for
 - Variability
 - Extensibility
 - Glue
- ▶ Part I explains how the design patterns relate to each other
- ▶ Variability patterns mainly base on
 - TemplateMethod and
 - Objectifier
- ▶ Extensibility patterns mainly base on
 - Object-Recursion

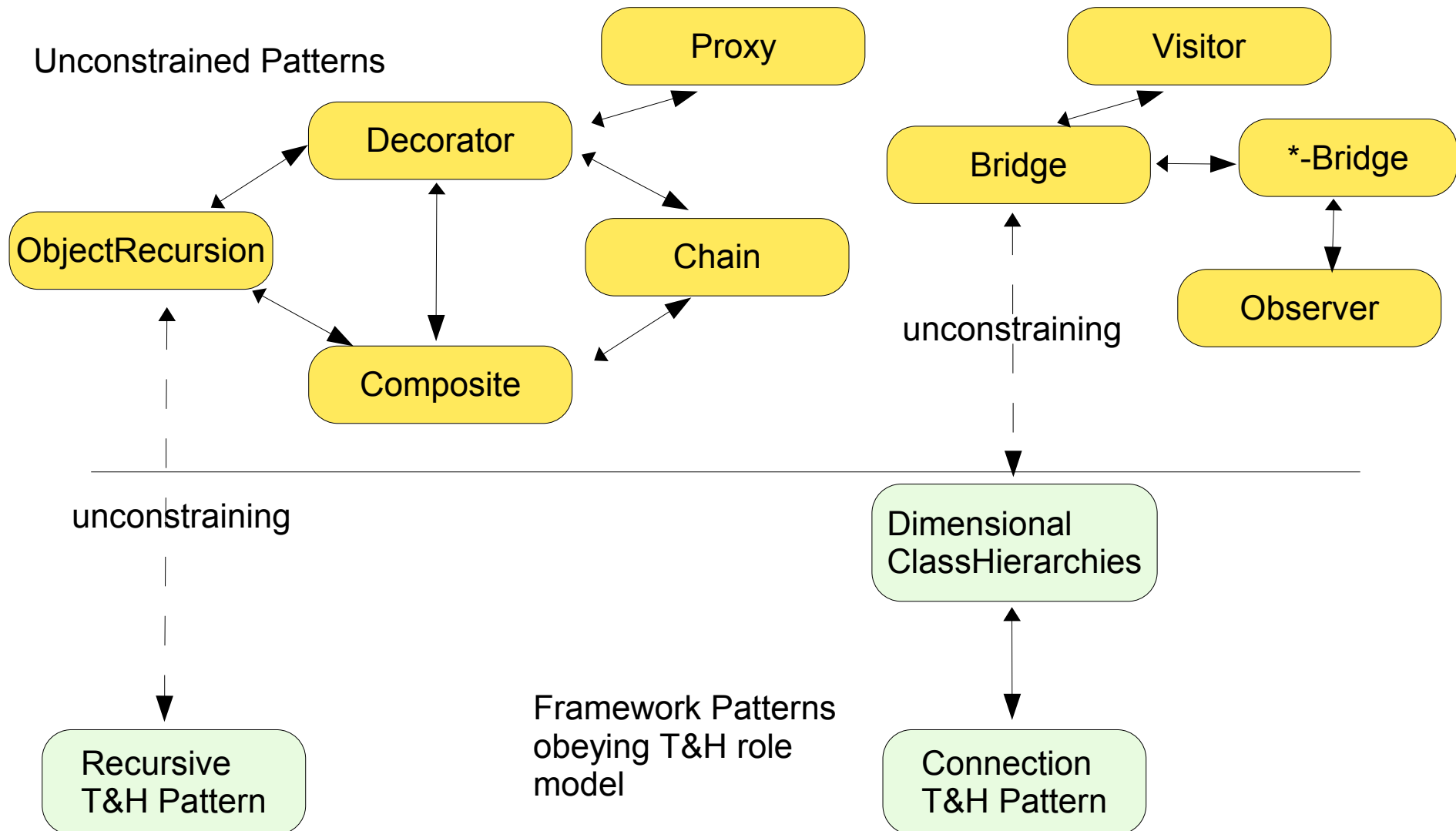
Part I: Basic Patterns

- ▶ Relations between variability patterns:



Part I: Basic Patterns

Relations between extensibility patterns:



What should you know?

- ▶ The classes of patterns
- ▶ The individual patterns (structure, incentive, collaboration)
- ▶ The relations between patterns
- ▶ Differences between the patterns

Part II: Patterns and Frameworks

Roles

- ▶ Role models have been introduced
- ▶ You learned how to specify design patterns as role models
- ▶ You learned how to compose role models and, by this, how to compose design patterns

Framework Patterns

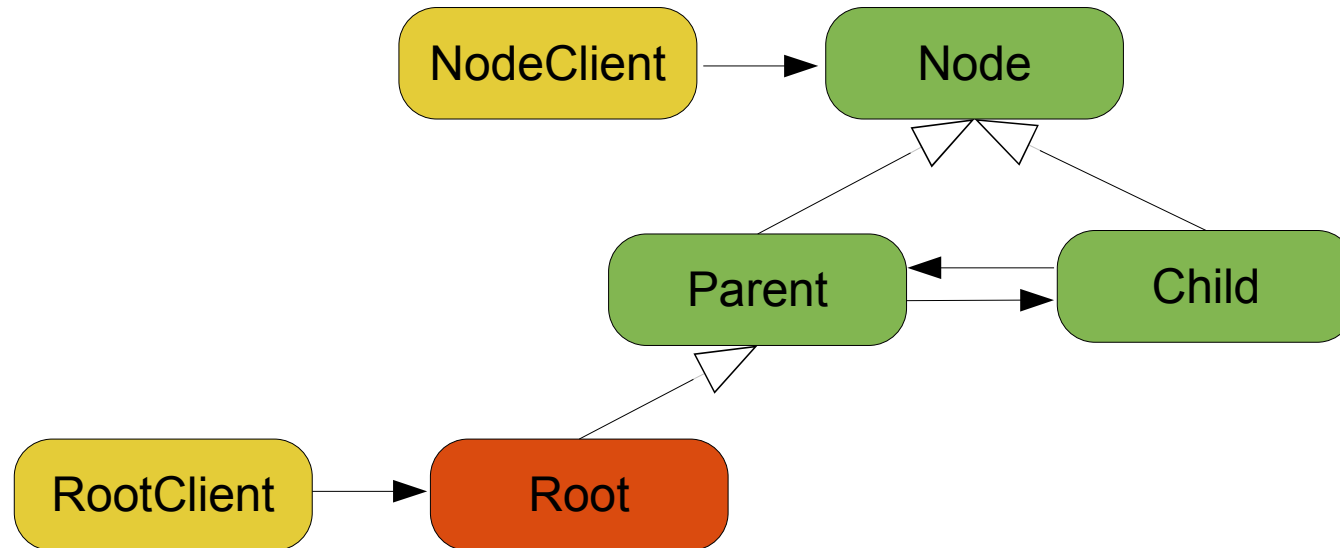
- ▶ You learned Pree's framework hook patterns
- ▶ You learned how to compose frameworks
- ▶ You learned the benefits of layering frameworks

Tools and Materials (TAM)

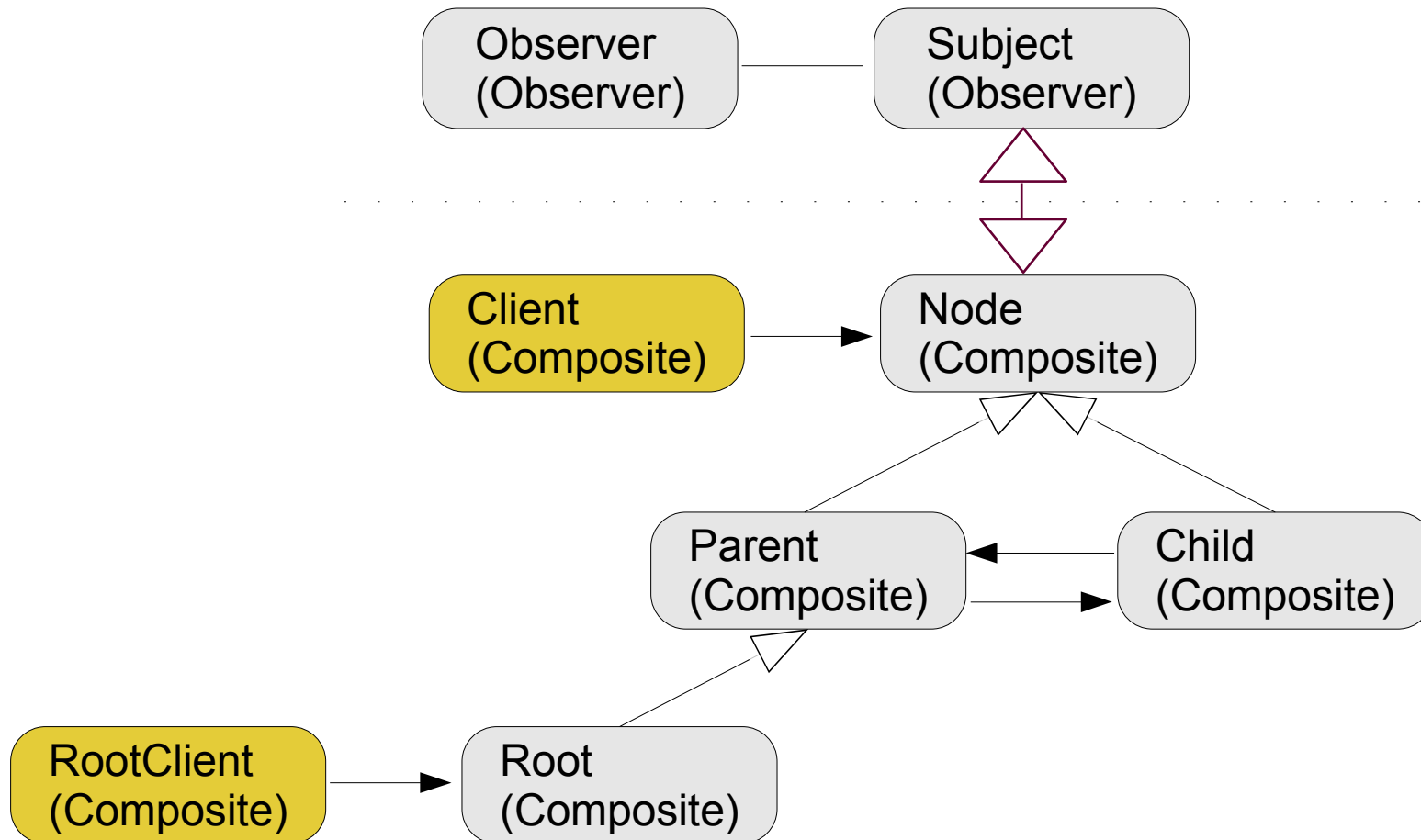
- ▶ You learned the basic concepts of TAM

Part II: Design Patterns as Role Models

- ▶ Example: Composite



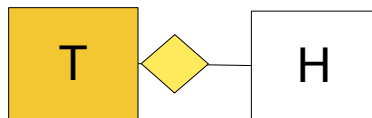
Part II: Role model composition



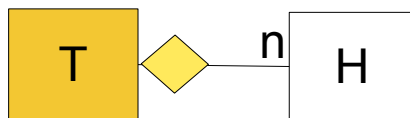
Part II: Framework Patterns

Aggregation/Association

T--H
 H part of T
 T is core class of complex object

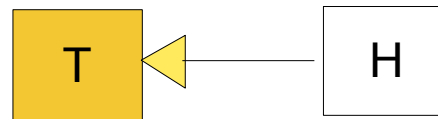


n-T--H
 T has n H parts
 T is core class of complex object

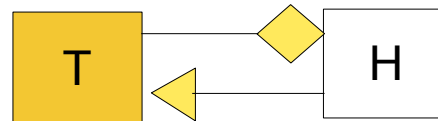


Inheritance

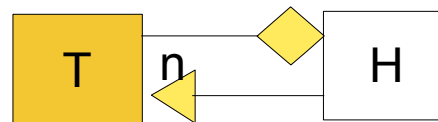
H<T
 H inherit from T
 whitebox



H<=T
 T part of H
 H inherit from T
 Decorator



n-H<=T
 H has n T parts
 H inherit from T
 1:n-Decorator



Unification

TH
 T == H



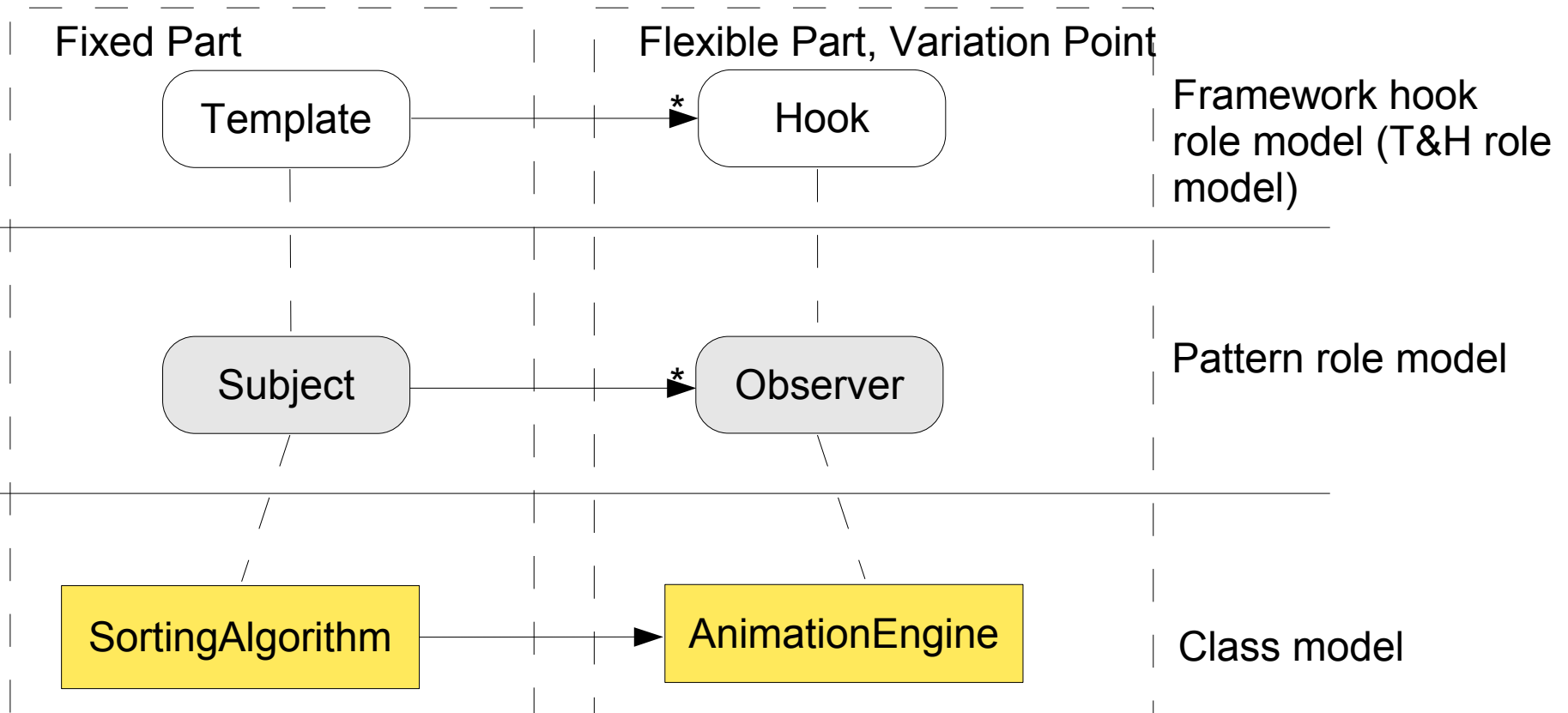
1-TH
 T == H
 TH part of TH
 Decorator



n-TH
 T == H
 TH has n TH parts
 1:n-Composite



Part II: Framework Patterns



Part II: Framework Patterns

- ▶ For extensibility of frameworks, you learned 4 techniques:
 - Role-object Pattern
 - Extension-object Pattern
 - GenVoca
 - Mixin Layers

Part II: Tools & Materials

- ▶ Tools & Materials as central metaphor of SE
- ▶ Comprised of 3 components:
 - Tools - active
 - Materials - passive
 - Environment
- ▶ Tools access materials via views.
 - Different realizations have been discussed
- ▶ Distinction between functional and interactive part (FP/IP)
- ▶ Varying coupling between FP/IP and composite tools
- ▶ Environment offers
 - Tool coordination
 - Material-Dependency-Management

What should you know?

- ▶ Syntax and Semantics of role models
- ▶ Role models of basic design patterns
- ▶ How to compose role-based design patterns

- ▶ Framework Hook Patterns
- ▶ Framework Extension by ROP, EOP, GenVoca and Mixin Layers

- ▶ T&M concepts and patterns
 - 3 constituents
 - Tool/View/Material pattern
 - IP/FP pattern
 - Tool coordination and material container pattern

The End

