

Design Pattern Mechanism with OCL

Gustav Andersson, Martin Giese,
Kristofer Johannisson, Daniel Larsson



KeY Symposium
Göteborg, June 2005

Motivation

- Want to integrate formal methods with development process
- Important step: Application of design patterns
- Idea: Associate formal spec with design patterns

Motivation cont'd

- Design pattern instantiation mechanisms in many CASE tools
- ⇒ UML class diagram
- ⇒ Java class skeletons
- Idea: Associate OCL schemas with design pattern templates

Motivation cont'd

- Design pattern instantiation mechanisms in many CASE tools
- ⇒ UML class diagram
- ⇒ Java class skeletons
- Idea: Associate OCL schemas with design pattern templates
- ⇒ OCL constraints

OCL Simplification

- Problem: Generated constraints contain redundant information
- Formal spec should be easy to read and understand
- Need to simplify the generated constraints

The new feature

Have implemented a prototype of a:

- Design pattern instantiation mechanism
- ... with associated OCL constraints
- ... with a built-in OCL simplifier
- ... integrated with KeY

Implementation

- Use KeY theorem prover to perform simplification
- Have added constructs to logic datastructures
- Simplification rules expressed as taclets

DEMO

● Time for DEMO!