Adaptive Object-Models and metamodeling techniques

Ecoop 01 workshop 06

Nicolas Revault

Joe W. Yoder

(Ali Arsanjani)

Workshop program

- History (30-45')
- Objectives
- Introduction of participants
- Context for the workshop
- Details on two of the "subfields" of interest (40-60')
- Some works in the "subfields" (20-30')
- Topics for group discussions (end of the morning)
- Discussions and synthesis (afternoon)

History

- Adaptive Object-Models workshops (98 - 00)
- Adaptive Object-Models @ Ecoop 00
  - Dimensions of abstraction in Adaptive Object-Models, Reflection and OMG's metamodeling architecture

Objectives

- Going bottom up "from" Adaptive Object-Models
  - i.e. building (operational) Domain Specific Languages
- Going top down "from" metamodeling and generating (meta) environments
  - i.e. getting user customized (operational) model editors

Objectives (2)

- Interacting somewhere in the middle
  - Supporting one another
  - Setting differences and overlapping (if any)
- Integrate / locate techniques with similar objectives / means
  - Reflection at the language level
  - Grammar-Oriented Object Design
  - Others ?

Introduction of participants

- Your name ?
- Your interests ?
- …

Context for the workshop

=> fix common vocabulary

=> settle the basis of today's work

- An idea of "Meta"
- Some techniques to deal with metamodeling ("subfields" of interest)
- Addressing common problems

An idea of "Meta"

- Instance level vs. Class level
  - In the operational sense of OOPL !
- Classes as instances vs. their class as a metaclass
  - In the operational sense of some OOPL (Smalltalk)

Some techniques to deal with metamodeling ("subfields" of interest)

- **Reflection at the language level**
  - mostly applied to programming language design
- **Grammar-oriented Object Design**
  - applied in the three major areas of configurable workflow, tier-to-tier mapping and object graph traversal
- **Adaptive Object-Models**
  - applied in insurance, medicine, telephony
- **Meta-CASE tools and environments approaches, à la MetaEdit+ or à la MétaGen**
  - applied in various fields of information system modeling: telecom, finance, medicine

Addressing common problems

- Capturing [business] rules for user modeling and/or building [Domain] Specific Languages

- Building systems that need to change requirements and reflect those requirements as quickly as possible, i.e. runtime or dynamic adaptability

Details on two of the "subfields"

(… going top down)

- Metamodeling through environment approaches
  - N. Revault
- Adaptive Object-Models (AOMs)
  - J.W. Yoder

Metamodeling "à la MétaGen"

- 2 "orthogonal" directions
  - Program generation by model transformation
  - Model edition and metamodel prototyping (model / metamodel dynamic articulation)
- See other presentation: "NR-etc."

AOMs

- J. W. Yoder
  - …

- See other presentation: "JY-etc."

Some works in the "subfields"

- Reflection at the language level
  - F. Ortin et al
- Grammar-oriented Object Design (GOOD)
  - (A. Arsanjani)
- Meta-CASE tools and environments approaches
  - A. Ledeczi
- OMG's MDA & (meta)modeling standards
  - (J. Poole)

Reflection at the language level

- F. Ortin et al
  - ...

- See other presentation: "FO-etc."

Meta-CASE tools and environments approaches

- A. Ledeczi
  - ...

- See other presentation: "AL-etc."

Towards discussions…

- Prerequisites or needs for each technique
- Pros and Cons of the different techniques
- Comparison of the different techniques showing overlapping and non-overlapping areas
- Location of the techniques vs. OMG's standard 4 layers architecture

Claims

- "Some" reflection at the language (RaLL) level eases
  - Building AOMs
  - Creating meta-environments (ME)
- Commonalities between techniques
  - Inventing languages
    - ME approaches and RaLL: even though not the same scope
    - AOMs and GOOD: for allowing (domain) user specifications

Topics for (group) discussions (?)

- Each technique ?
- A reference framework for presentation ?
- Any proposition ?

Lunch…

- It was around 12:30 !?!

Discussions

- Each technique ?
- A reference framework for presentation ?
  - Vs. OMG's standards**
  - Use of them (MOF, XMI)
- Any proposition ?
  - …

Final organisation

- Propositions
  - Combining ME & AOMs**
  - Does it worth doing this ? Vs. lyfe cycle of software…
  - Applicability ?
    - Vs. development team size
    - When should you do not do it ?
    - Need for validation
    - Need for mapping between metamodels
- Locate each technique vs the "4 layers"
- Set how to combine AOMs and ME
- Individual summaries
- Look at agreements / disagreements