Advanced Tooling for Domain-Specific Modeling: MetaEdit+

Juha-Pekka Tolvanen, Risto Pohjonen, Steven Kelly

MetaCase
Motivation and background

- First metatool described in 1980
  - Followed by over 40 other metamodel-based tools
- Tools follow a common use pattern
  1. Describe the metamodel
  2. (Add constraints)
  3. Add notation
  4. "Compile"
  5. Run in a separate modeling tool
- Usually focus on editor creation only
  - One language (diagram, matrix, table)
  - One modeler
  - One metamodeller
- Our background
  - MetaEdit+ (1996-)
Steps for implementing DSM

1. Enter language concepts and their properties
2. Choose rules from templates
3. Draw or import the symbols
4. Specify generators via templates or API

Concepts

Rules

Symbols

Generators
Advanced tool features

- **Language definition**
  - Graphical and form-based metamodeling: no programming
  - WYSIWYG symbol editor with conditional and generated elements
  - Integrated, incremental metamodeling and modeling
  - Multiple integrated modeling languages
  - Multiple simultaneous language developers (metamodelers)

- **Generator development**
  - Generator editor and debugger integrated with metamodel and models
  - Straight model-to-code transformations: no need for intermediate formats
  - Generator can map freely between multiple models and files

- **DSM use**
  - Multiple simultaneous modelers, free cross-model reuse
  - Runs on all major platforms, integrate with any IDE
  - "Live code": click generated code to see the original model element
Demo is available as 3 videos (flash videos)

1. Defining modeling languages and code generators
   - Outlines the steps of defining a DSM solution: defining the modeling language concepts and rules, drawing the notation and making the code generators. (16 min)

2. Graphical metamodeling
   - This video shows how an abstract syntax of a modeling language is designed in MetaEdit+.

3. Model animation and debugging
   - This webcast demonstrates animating models in MetaEdit+ while running the generated code.
Thank you!

Questions, please

info@metacase.com
www.metacase.com

USA:
MetaCase
5605 North MacArthur Blvd.
11th Floor, Irving, Texas 75038
Phone (972) 819-2039
Fax (480) 247-5501

Europe:
MetaCase
Ylistönmäentie 31
FI-40500 Jyväskylä, Finland
Phone +358 14 4451 400
Fax +358 14 4451 405

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