Improving Reuse of Tools by means of Model Migrations

Paola Vallejo, Mickaël Kerboeuf, Jean-Philippe Babau
Univ. Bretagne-Occidentale, Lab-STICC, Brest, France

Context :

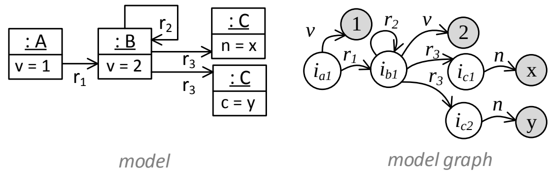
Legacy code of a dedicated tool handling domain specific data gathers valuable expertise. However, in many cases, this code must be rewritten in order to make it apply to semantically equivalent but incompatible data. This update can be complex and error-prone.

How to improve the reuse of legacy tools?

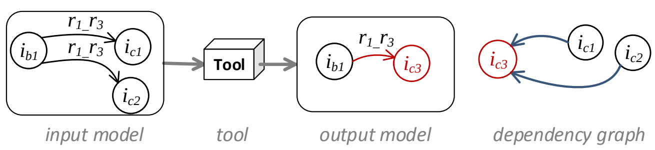
Approach : Automatic adaptation of models, instead of rewriting or adapting the tool itself

- Based on co-evolution operators (rename, remove, flatten, hide, etc.).
- Refactoring at metamodel-level.
- Migration round-trip at model-level.
  - Graph based model semantics.
  - Asymmetrical onward and reverse migrations.
  - Tool characterized by a dependency graph.

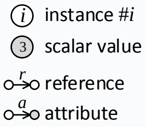
Model graph:



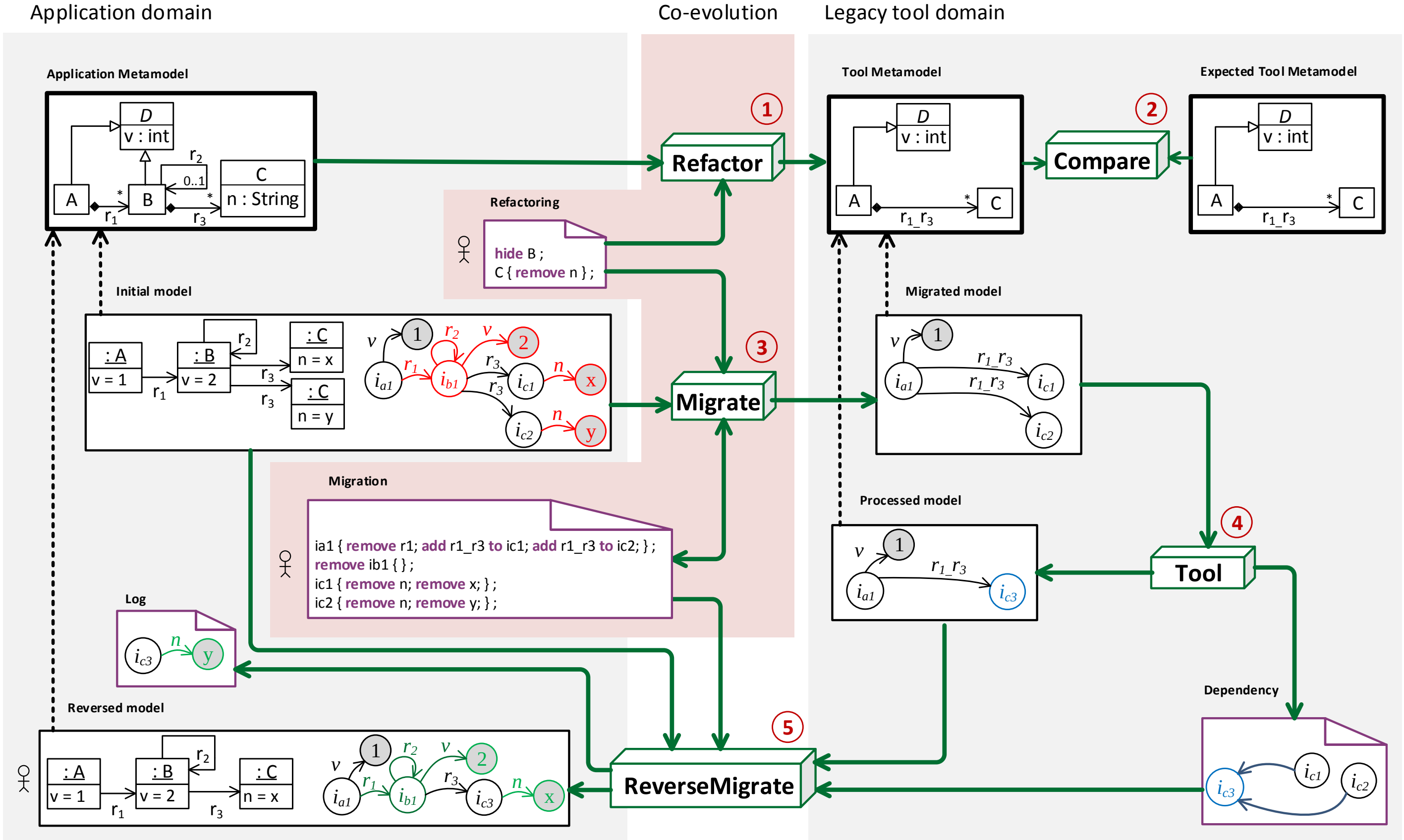
Dependency graph



Notation:



Round-trip and Example:



Refactoring:

```
hide B ;
C { remove n } ;
```

Migration:

```
ia1 { remove r1; add r1_r3 to ic1; add r1_r3 to ic2; } ;
remove ib1 { } ;
ic1 { remove n; remove x; } ;
ic2 { remove n; remove y; } ;
```

Notation:

Metamodel
Model
Specification
Engine
Conformance
Workflow
Customization

Publications:

- J.-P. Babau and M. Kerboeuf. Domain Specific Language Modeling Facilities. In ME@MoDELS, pages 1–6, 2011.
- M. Kerboeuf and J.-P. Babau. A dsml for reversible transformations. In Proceedings of the 11th OOPSLA Workshop on Domain-Specific Modeling, pages 1–6, 2011.
- M. Kerboeuf, P. Vallejo, and J.-P. Babau. Formal framework of recontextualization by means of dependency graphs. Research report, Lab-STICC UBO CACS MOCS, 2015.
- P. Vallejo, M. Kerboeuf, and J.-P. Babau. Specification of a legacy tool by means of a dependency graph to improve its reusability. In ME@MoDELS, pages 80–87, 2013.
- P. Vallejo, M. Kerboeuf, and J.-P. Babau. Adaptable model migrations. In MODELSWARD 2015 - Proceedings of the 3rd International Conference on Model-Driven Engineering and Software Development, 2015.