Toward a Model Architecture for Model Composition Techniques

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• **Model composition**: MA and MB, in order to produce an output-intended model, MAB.

• It is an important task in MDE (Model Driven Engineering)
  • Evolving design models
  • Reconciling multi-view models (*parallel development*).

• Actually, Merging is a “*time-consuming, complicated, and error-prone process*” [Ton Mens];

• Current composition tools are limited and closed to a set of particular composition cases;

• To overcome these shortcomings: We proposed an model architecture.
Background

- Model Matching Strategies
  - Default: Find the model correspondence between component names;
  - Partial: Matches the elements according its syntactic properties;
  - Complete: Comparison using syntactic and semantic model properties;
MoCoTo Composition Process

Analysis Phase

- Model A
- Model B

Analyze the input models

[Invalid input models]

Comparison Phase

[Valid input models]

Define the comparison strategy

Compare the input models

Matching models

Equivalence description

[Without matching models]

[With matching models]

Define the composition strategy

Threshold

Synonym dictionary

Comparison strategy
MoCoTo architecture feature model

Legend:
- Mandatory
- Optional
- Alternative
- Or
MoCoTo architectural components

Legend:
- Component
- Provided interface
- Required interface
- Aspectual component
- Aspectual connector

- Features: Analysis, Comparison, Composition, Evaluation, Persistence

Diagram:
- ANALYSIS
- COMPARISON
- EVALUATION
- MOCOTO ENGINE
- PERSISTENCE
- COMPOSITION

Comparison Strategy

Composition Strategy

Persistence Strategy

Evaluation Strategy

Analysis Strategy
MoCoto Eclipse Plugin
Conclusion and future work

• This paper introduced a flexible, component-based architecture for supporting the development of model composition techniques;

• The preliminary results have indicated that the proposed architecture is able to support the development of composition tools for UML models.

• The future investigations:
  • Do developers invest significantly more effort to develop a new composition technique than derive one from MoCoTo-Arch?
  • How effective is MoCoTo to combine realistic, semantically richer design models?
References


