Model Transformations in Embedded System Development: Why and how?
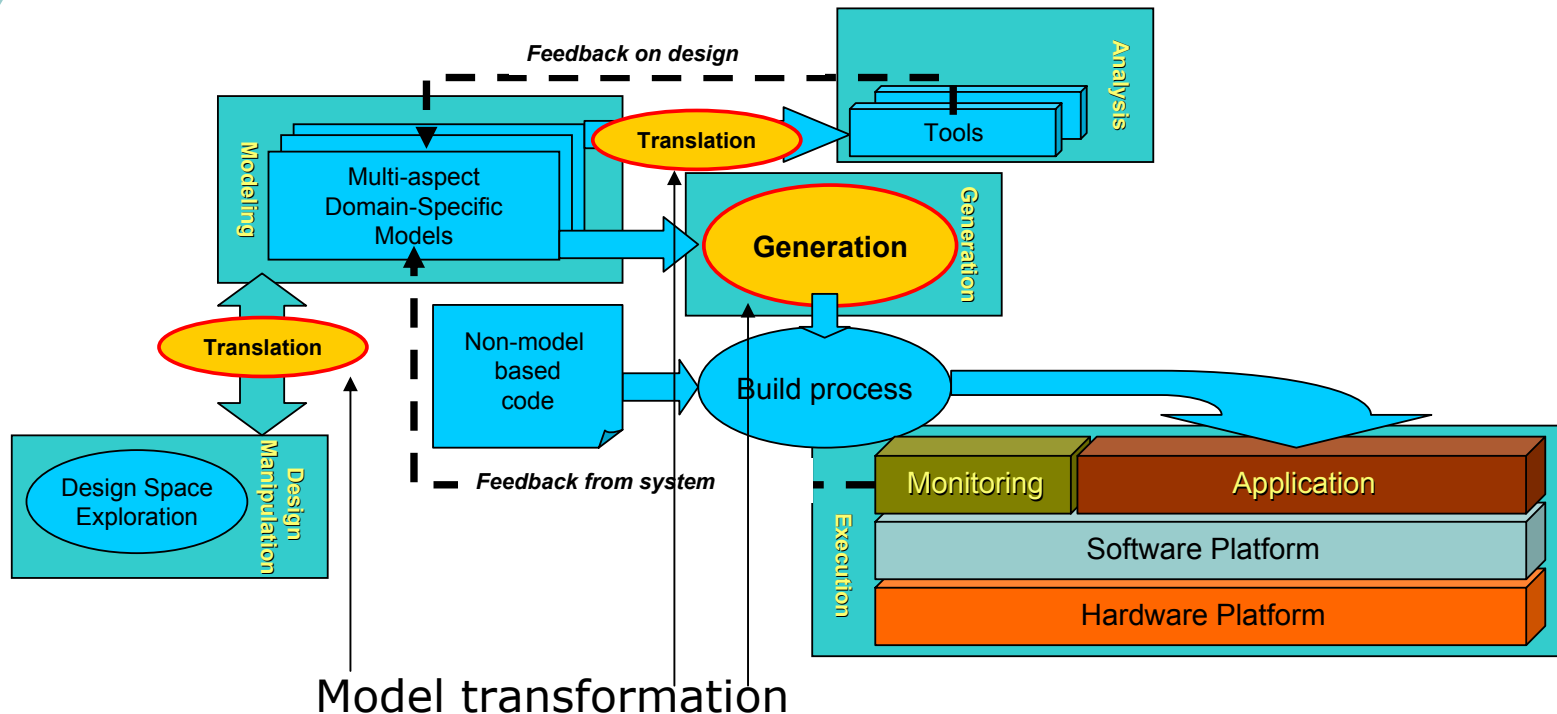
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Why?

○ **Goal**: Design Automation for Embedded System Development

Model transformation

Where?

Design tool integration
- Translation between the design language and the
  - Analysis language
  - Design space representation language
  - Implementation language

Design manipulation
- Model weaving
- Model refinement
- Pattern application
- Platform modeling
- Component adaptation

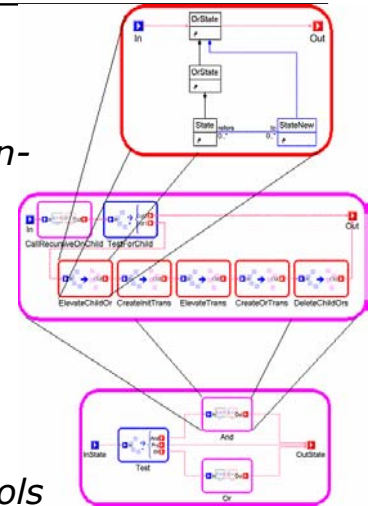Semantics definition
- Semantic anchoring

How?

Needs:

- Higher-level programming constructs → *Graph-transformation-based language*
- Model transformation tool suite

Model transformation tools

Research issues:
1. Semantics of transformations
2. Correctness
3. Verification/certification
4. Defining semantics via transforms
5. Design optimizations
6. Efficiency
7. Usability

| | MetaModel of Source | uses | MetaModel of Domain-to-Target Mapping | uses | MetaModel of Target |

http://repo.isis.vanderbilt.edu