Model Transformations in Embedded System Development: Why and how?

Gabor Karsai
Institute for Software-Integrated Systems
Vanderbilt University
USA
Why?

- **Goal**: Design Automation for Embedded System Development
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
- Model transformation tool suite

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

[Graph-transformation-based language](http://repo.isis.vanderbilt.edu)