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### Paper Information

Status of work: regular paper

Paper Title: Towards semantically consistent integration of analysis tools in model-based embedded systems design

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Abstract: High-confidence design of embedded systems demands multiple types of analysis in order to validate properties of the system design. Integrating disparate analysis tools into a unified tool chain has proven to be problematic due to the difficulty of maintaining semantic consistency of the design across the translation both to and from the domain of each analysis tool. Poorly integrated tools and processes result in incorrect designs, decreased system performance, and increased design cost.

In this paper we discuss a model-based approach to integrating analysis tools into a unified embedded system design workflow. Our two-stage modeling language approach provides abstraction at both the model design and analysis tool integration points. Semantic consistency when mapping into alternate domains is more easily maintained because the first stage (to an abstract intermediate language) contains all semantically relevant transformation details, reducing the second stage (generators) to simplified syntax-only translations as much as possible. The transformations explicitly address the consistency of both structural and behavioral semantics. We illustrate our supported design flow with a

simple control design example and discuss the integration of a few particular analysis tools.

Topic Area: E3. Model-Based Design for Embedded Systems

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## Extra Comments

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