

Reactis One-Page Product Documentation

Steve Sims, Reactive Systems, February 28, 2005

What it is: Reactis automates the generation of test data from, and validation of, Simulink and Stateflow models. If you currently build such models, then Reactis will help you cut both the costs and time associated with model-based validation and development tasks, such as the following: model validation, unit and system testing, model debugging and revision. By automating testing and validation, Reactis enables you to do more thorough analysis of models and systems much more quickly.

Features: Reactis consists of three main components: Tester, Simulator, and Validator. *Reactis Tester* generates test data automatically from models. The tool uses structural-coverage criteria, such as branch coverage, in selecting test data, and it also stores model-generated outputs in the test cases. *Reactis Simulator* provides a flexible interface for executing models. *Reactis Validator* allows users to instrument models with checks for assessing model behavior and targets for guiding the generation of test data. Validator can be used to automate requirements-driven testing and to validate model behavior.

Benefits: Reactis enables engineers to construct better models more quickly through requirements checking with Validator and through model-debugging with Tester and Simulator. Reactis also facilitates the quicker deployment of more robust programs through automated conformance testing of code to models.

Successes: Reactis is now used at 5 of the worlds top 6 automotive OEMs and many Tier 1 suppliers. Customers report a 25-75% reduction in testing costs as a result of using Reactis. The tool is also in the early stages of deployment for commercial aerospace applications. An early aerospace success story touts the detection of dead code in a model previously certified to have none.

Contexts in which it is best used: Reactis can be most effectively deployed within development processes that already use Simulink (and perhaps also Stateflow) to model system behavior. Some experience with formalizing system requirements (for example, when using a model checker) is helpful for using Validator; however, not required for using Tester and Simulator.

Compare with alternative known products or technologies. T-VEC is a competitor of Reactis Tester. The primary advantage of Reactis over T-VEC is that for Reactis a test consists of a simulation run, but for T-VEC, a test is a single step within a simulation run. Also Reactis handles both Simulink and Stateflow, whereas T-VEC supports only Simulink.

What will a successful collaboration look like?

- a. **What will you as the technology provider do?** To help learn Reactis, we offer a 2-day training course at your site, as well as customer support via phone and email.
- b. **What should the development team do?** During the collaboration the NASA development team will learn the basics of Reactis and validate an existing model and program.
- c. **How will you, as technology provider, work together with the development team to ensure a successful collaboration?** Reactive Systems will work closely with the NASA team at all stages of the project to ensure the maximum possible benefits are realized from the application of Reactis to a NASA example.