STIL: THE DEVICE-ORIENTED DATABASE FOR THE TEST DEVELOPMENT LIFECYCLE

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Abstract

STIL is uniquely positioned among the plethora of circuit interaction databases offered by the various EDA and ATE companies because of its device-oriented approach to data representation. This freedom from platform allegiance allows STIL to be used at any, or all, of the stages of the product test development lifecycle.

Generating Functional Test Data

When simulating with the intent to generate test vectors, one of the biggest problems is the incompatibility of the data for device stimulus and response with the target ATE platform. This information includes event timing, input levels, strobe placement, and measured values. This problem contributes to higher test cost because of the increased engineering time and tools needed to manipulate the data from one environment to another.

Another problem that arises from the data manipulation process is the loss of critical information that reflects the intent of the test designer.

Current Test Generation Flow

One way that this problem is addressed today, is to leverage existing simulations without any modification for test generation. This is done by having a separate process “watch” the simulation looking for sequences of events that could be fit into a timing template. The templates are then overlaid onto the simulation output to try to force it into a format that would be more tester-friendly. This can also be accomplished by post-processing the simulation output files.

This process requires the use of several different data languages, and processes. A typical test development might include the steps outlined in Figure 1.

STIL-Based Test Generation Flow

STIL is unique in that it is a “device-oriented” data language rather than a tester, simulator, or translator specific language. This means that it can ideally represent device interactions without regard to who or what is doing the interacting.

Figure 2 represents a device development lifecycle where STIL is used as the container for device interactions. This new process represents at least three fewer steps, but more importantly, it means that a single database was used throughout. With a single database, there is no lost information, and no lost expertise.

Work In Progress

IEEE P1450.1 has been organized to address issues related to the use of STIL in the semiconductor design environment. This working group will analyze the various test development techniques, and offer extensions to STIL to allow it to be used throughout the product lifecycle.

With these extensions, STIL can be a major contributor to the reduction of test development time in the semiconductor industry. This will be achieved through the reduction of the need to translate between data formats.