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WHAT'S ON THE HORIZON?

How Do You Know You Have the Right Tool for the Right Job?

By Tom Fitzpatrick, Editor and Verification Technologist

As I write this, spring appears to have finally arrived here in New England – about a month and a half later than the calendar says it should have. As much as I love warm spring weather, though, it means that I now have to deal with my lawn again. I know that many people actually enjoy working on the lawn, but as far as I'm concerned, the greatest advance in lawn-care technology happened last year when my son became old enough to drive the lawn mower. If you've ever seen a 13-year-old boy driving a lawn tractor, you'll understand my characterizing him as "constrained-random" when it comes to getting the lawn cut. I handle the "directed testing" by taking care of the edging and hard-to-reach spots, and together we manage to get the lawn done in considerably less time than it used to take me alone.

Of course, cutting the lawn isn't the only problem. We also have a rather healthy crop of dandelions this year that have to be pulled. Just like bugs in a design, they'll spread if you don't get them. Believe it or not, I actually found a tool at the hardware store specifically for pulling dandelions, so the other evening I went on a "search and destroy" mission to pull up all the dandelions on my lawn. Different classes of bugs require different tools, you see.

Our first article this month came out of a discussion I had with a colleague at DVCon. He was looking for some ideas on how to justify an investment in "methodology" to his management team who, of course, were not as steeped in these ideas as many of us are. The resulting questions and answers will hopefully serve to remind all of us of the "First Principles" behind the technologies, techniques and tools that we've come to rely on to verify our ever more complex designs.

"As a special treat in this issue, we next introduce you to the Online UVM/OVM Methodology Cookbook."

—Tom Fitzpatrick

We next introduce you to the *Online UVM/OVM Methodology Cookbook*, a new online resource from our **Verification Academy**. The biggest problem with methodology textbooks is that they often become out of date as soon as they are published. We published online to mitigate that risk and commit to update the Cookbook as the Universal Verification Methodology (UVM) from Accellera evolves. Evolution is inevitable as users and vendors explore features in UVM, and the Cookbook

will be a great way for you to keep informed. This particular article is the overview page for the new UVM register modeling facility. In it, you'll see a high-level explanation of the functionality along with links to other more in-depth discussions of specific pieces of the package, a format used throughout the Cookbook. Registered users will also be able to provide feedback and updates to the articles, which we'll review and pass along as necessary.

Our next article is the conclusion of Hans van der Schoot's "*A Methodology for Hardware-Assisted Acceleration of OVM and UVM Testbenches*," which we started in the previous issue. Part two takes us through the mechanics of implementing the transaction-level interface between simulation and emulation. You'll be impressed by the results that our users have seen in adopting this powerful combination of technologies.

With the recent announcement of our Questa Ultra platform, we continue to enhance our Intelligent Testbench Automation (Questa InFact) capability. In "*Combining Algebraic Constraints with Graph-Based Intelligent Testbench Automation*", you'll see how the addition of algebraic constraints enhances the Questa InFact stimulus generation by simplifying the stimulus definition. The new import feature also allows Questa InFact to react to the current state of the design and/or testbench when producing a new stimulus item. Again, you'll see some rather impressive results from actual users of this exciting new technology.

In "*Data Management: Is There Such Thing as an Optimized Unified Coverage Database?*" my colleagues Darron May and Gabriel Chidolue show yet another example of Mentor's leadership in both technology and standardization. The article provides an overview of the Unified Coverage Database (UCDB), which provides a platform for the collection and analysis of coverage data from multiple tools and verification engines. I think you'll see why the UCDB was chosen by Accellera as the basis for the upcoming Unified Coverage Interoperability Standard (UCIS).

We have four articles in our "Partners' Corner" this issue. The first, "*A Unified Verification Flow Using Assertion Synthesis Technology*", written in conjunction with our friends at NextOp, shows how their Bugscope assertion synthesis tool can be integrated into a unified verification flow with Questa and Veloce. In "*Benchmarking Functional Verification*", our friends at Test and Verification Solutions expand on the June 2009 article by Harry Foster and Mike Warner to introduce their new Functional Verification Capability Maturity Model, which helps you measure the maturity of your verification process and provides a framework for planning improvements. Putting standards into practice, our colleagues at HDL Design House next share with us their experience in creating "*UVM-Based SystemVerilog Testbenches for VITAL Models*". Find out the "four Cs" of reusability and how they've used UVM to create a family of testbenches for VITAL models while minimizing the amount of code they needed to write. We round out the Partners' Corner with "*Efficient Failure Triage with Automated Debug: a Case Study*" from our partners at Vennsa Technologies. The article shows you how Vennsa's OnPoint tools can be used with Questa to automate the identification of error sources, whether there are multiple failures from the same source or multiple sources for a given failure.

We close this issue with a special treat. We are reprinting a copy of "*Are Macros in OVM & UVM Evil?—A Cost-Benefit Analysis*", by my friend and colleague Adam Erickson. This paper won the Best Paper award at DVCon back in March, and we wanted to make sure that you saw it. Without giving away the ending, the answer is "yes." You'll find a great explanation of why, and which macros are okay to use.

I hope you'll all get a chance to stop by the Mentor booth at DAC to say "hi." I'll be happy to take any lawn care tips you might have, too!

Respectfully submitted,
Tom Fitzpatrick
Editor, *Verification Horizons*