SYNPLICITY BUSINESS GROUP: TOOLS FOR FPGA INDEPENDENCE

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Q. **First of all, tell us a little bit about yourself and your responsibilities at Synplicity.**

A. I am the director of product marketing for the FPGA implementation products at Synopsys, Inc. In this role, my responsibilities include product strategy, definition, and launches for Synopsys's FPGA solutions. Prior to the acquisition of Synplicity Inc. by Synopsys, I was the director of product marketing at Synplicity; prior to that, I was a marketing manager at Cadence Design Systems.

Q. **Many of our readers, both customers and others alike, will be curious about the acquisition of Synplicity by Synopsys. What impact does this have on engineer / users of the products, if any? What new values might be created for developers of FPGA-based products?**

A. When Synopsys acquired Synplicity, a new business group called the Synplicity Business Group (SBG) was created. Synplicity's CEO Gary Meyers leads this new business group within Synopsys. Synplicity's senior management and over 90 percent of engineering, marketing and sales personnel were also retained; therefore, it's business as usual for users of SBG products. All of the existing products continue to be developed and well supported. And with the additi0n of Synopsys' large technology base, we are working towards integrating several products specifically for FPGA designers. Our customers can look forward to us providing an expanded solution for FPGA design.

Q. **The major FPGA vendors like Altera and Xilinx provide "free" tools for their FPGAs, whereas other vendors like Mentor or Synopsys/Synplicity provide tool chains for purchase. What advantages do you see for the developer in going the route of the "paid" FPGA tools?**

A. There are several advantages to using "paid" FPGA tools, with the top two being 1) Quality of Results and 2) technology independence. For high performance FPGA applications, such as those used in communications, timing performance is a key advantage. Customers find great value in being able to run their design faster than they could achieve with other tools. For high volume applications, such as HDTVs, a synthesis tool that can fit a design into the next smaller device size can save customers significant part cost. The resulting performance increase and/or area reduction can easily pay for the relatively small cost of the "paid" tools. Technology independence is also extremely valuable because it allows customers to develop a single RTL source and design constraints, then target them to any FPGA device in order to see what the best choice for their particular project is. In addition, they only have to learn how to use one tool. Productivity features, such as runtime, debug and HDL code analysis, also add value beyond that provided by "free" FPGA vendor tools.

Q. **How is Synplicity differentiated from Mentor Graphics, another EDA vendor with a strong focus on FPGAs? Can you provide a brief "competitive position" for users who might be considering both? In what areas are they competitive? In what complementary?**

A. *Synopsys' Synplify*® product line is the clear market leader in FPGA synthesis among EDA providers, with over 75 percent of the market share. As with FPGA vendor tools, a top concern is the quality of results. Customers that have compared synthesis alternatives frequently tell us the Synplify product line produces the best results on average among FPGA synthesis tools. Because synthesis tools have a direct impact on the customer's final end product in terms of performance and part cost, choosing the tool that produces the best results is typically a primary concern. Synopsys also offers a unique RTL debug tool called *Identify*®, which can be purchased as a standalone product or it also comes standard with the Synplify Premier product. Identify allows designers to debug a live, operating FPGA by viewing real signal values embedded directly in the RTL code, with which they are most familiar. The majority of other debug tools operate on synthesized gates using signal names, which designers are often not familiar with causing guesswork with the debug task. Technical support is also a strong differentiator for Synopsys SBG products. Synplicity, and now Synopsys SBG, have been recognized as the leader in customer satisfaction for FPGA design tools based on 3rd party surveys.

Mentor Graphics *HDL Designer* & *ModelSim*® products can be used to complement the Synplify synthesis products. *HDL Designer* is a product that helps manage design projects and feature integration with Synplify Pro. The *ModelSim* product is used by many Synplify users for RTL & gate-level simulation of FPGAs.

Q. **At the April, 2008, Embedded Systems Conference, Synplicity announced your "Ready IP" program. "Intellectual Property" acquisition from third parties, integration, and of course reuse are both one of the major benefits of FPGAs and a source of design trouble at the same time. Can you explain this program and how it hopes to help designers with IP?**

A. The ReadyIP program was designed to provide FPGA designers with a way to easily identify and evaluate 3rd party IP for use in their FPGAs. We created this partner program along with ARM, Tensilica, Gaisler Research & CAST. Each of these IP vendors provides IP that can be accessed on-line through the *Synplify Pro*® product for evaluation via synthesis. The IP is protected with encryption for these evaluations. Once the customer views the synthesis report and decides that the IP is appropriate for their design, they work directly with the IP provider to purchase the IP and implement it into their FPGA. ReadyIP uses a new tool called *System Designer*™, which is a standard feature of *Synplify Pro* and *Synplify Premier*. This tool is used to assemble and configure ReadyIP (IP-XACT format) components and busses. The output is top level RTL code that is then passed to *Synplify Pro* for synthesis into an FPGA. We think this "try before you buy" approach to 3rd party IP use will help designers accelerate design schedules that use common IP such as processors, USB, PCI, SATA and the like.

Q. **DSP is another area in which FPGAs are used more and more. What sort of DSP-specific solutions are offered by Synplicity? How are these unique?**

A. DSP is quite common in today's FPGAs as evidenced by all of the top FPGA vendors' incorporation of special DSP blocks into the architecture of their devices. One concern is that DSP algorithm designers do not typically write RTL code and run synthesis tools for implementation in hardware. DSP designers usually use higher-level languages, like M or block-level tools such as *Simulink*® from The MathWorks®, to design and validate their algorithms and

then hand them off to an RTL coder for implementation. These customers need a way to bridge the gap between algorithm design and an efficient implementation into hardware like an FPGA or ASIC. Synopsys' Synplify DSP product addresses this issue by allowing designers to construct and validate their DSP algorithms in *Simulink* using common DSP IP such as FIR filters, FFTs, Viterbi decoders and so on. Using this *Simulink* model as input, Synplify DSP then performs system level optimizations such as re-timing and folding, and finally produces synthesizable RTL code optimized for the target FPGA or ASIC device. No other tool has the ability to perform such system level optimizations with consideration for the target hardware architecture (FPGA or ASIC). The ability to quickly retarget from one FPGA to another using the same *Simulink* model as input provides technology independence and high designer productivity.

Q. **How much do the FPGA products from Synplicity cost? Can you share with us the business models of engagement by which a customer can commit to a Synplicity design flow?**

A. Prices vary by configuration, but perpetual licenses start at $10,800. Depending on configuration, time-based licenses of 1, 2 & 3 years are also available.

Q. **What sorts of "learning" opportunities are provided by Synplicity for customers to try out your products before making a formal commitment? Since our audience is international, we are particularly interested in Web-based learning opportunities like webinars or demos.**

A. SBG has always made full-featured evaluation software available to prospective customers at no charge. The *Synplify Pro* and *Synplify Premier* software can be downloaded from Synopsys at http://www.synplicity.com/downloads/download1.html, and a temporary evaluation license can be requested. This gives interested customers a chance to try out the software on their particular design and see how it works for them. Self-paced on-line training is also available for free to customers, as well as in-classroom training for a fee.

Q. **Thank you for this interview.**