

INSIDERS' GUIDE: FPGAs, TOOLS, AND BOARDS



FEATURED INTERVIEW:

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Prepared by:

eg3.com

Jason McDonald, Senior Editor

eg3.com

tel: 510.713.2150

email: info@eg3.com

web: <http://www.eg3.com>



XILINX: FPGA LEARNING & EVALUATION OPPORTUNITIES

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INTERVIEWEE. STUART ELSTON
 TEL. 720 652 3880
 EMAIL. stuart.elston@xilinx.com
 COMPANY. XILINX, INC.
 WEB. <http://www.xilinx.com/>

Q. First of all, tell us a little bit about yourself and your position at Xilinx.

- A. I'm the senior manager of World Wide Customer Education at Xilinx, where I'm responsible for managing an education program that trains about 15,000 students per in a classroom setting.

I've been with Xilinx education services for 13 years and my previous roles have included Applications Engineer, Managing European Technical Support Group, Managing European Strategic Applications Team and Titanium Services, Managing European Services Business Development and XPA program, and World Wide Services Research and Development

Q. We want to dive into helping our audience learn and evaluate FPGAs at Xilinx, but first just give us a very quick sketch of Xilinx's FPGA offerings.

- A. Xilinx FPGAs fall into two categories; the *Virtex*[®] series of high-performance FPGAs and the low-cost *Spartan*[®] series of FPGAs, which targets high volume applications.

The *Virtex-5* family is the fifth generation in the award-winning *Virtex* series. Built upon the industry's most advanced 65nm triple-oxide technology, breakthrough new *ExpressFabric*[™] technology and proven ASMBL[™] (Advanced Silicon Modular Block) architecture, the *Virtex-5* family includes five domain-optimized platforms for high-speed logic, digital signal processing (DSP), embedded processing and serial connectivity applications.

The *Virtex-5* family's five distinct platforms gives designers the most choice offered by any FPGA family. Each platform contains a different ratio of features to address the needs of a wide variety of advanced logic designs. In addition to the most advanced, high-performance logic fabric, *Virtex-5* FPGAs contain many system-level hard-IP blocks, including powerful 36-Kbit block RAM/FIFOs, second generation 25 x 18 DSP slices, *SelectIO*[™] technology with built-in digitally controlled impedance, *ChipSync*[™] source-synchronous interface blocks, system monitor functionality, enhanced clock management tiles with integrated DCM (Digital Clock Managers) and phase-locked-loop (PLL) clock generators, and advanced configuration options.

Additional platform- dependant features include power-optimized high-speed serial transceiver blocks for enhanced serial connectivity, PCI Express[™] compliant integrated Endpoint blocks, tri-mode Ethernet MACs (Media Access Controllers), and high-performance *PowerPC*[®] 440 microprocessor embedded blocks. These features allow designers to build the highest levels of performance and functionality into their FPGA-based systems to offer a programmable alternative to custom ASIC technology. Customers can use Xilinx *EasyPath* FPGAs to achieve significantly lower unit costs for volume production once their design is fixed and no longer requires the full programmability of standard *Virtex* FPGAs.

The Extended *Spartan*[®]-3A family of Field-Programmable Gate Arrays (FPGAs) solves the design challenges for many high-volume, cost-sensitive electronic applications. With 12 devices ranging from 50,000 to 3.4 million system gates, the *Spartan-3A* family provides a broad range of densities and package options, as well as integrated DSP MACs to deliver lower total system costs when compared to alternative solutions. The low-cost family also includes the non-volatile *Spartan-3AN* devices, which combine leading-edge FPGA and Flash technologies to provide a new evolution in security, protection and functionality, ideal for space-critical or secure applications.

The Extended *Spartan-3A* family improves system performance and reduces the cost of configuration. These enhancements, combined with proven 90nm process technology, deliver more functionality and bandwidth per dollar than ever before, setting a new standard in the programmable logic industry. Because of its exceptionally low cost, the Extended *Spartan-3A* family is ideally suited to a wide range of consumer electronics applications, including broadband access, home networking, display/projection, and digital television equipment.

- Q. Many people in our readership are investigating FPGAs for the first time. Let's focus first on the Web. Where do you recommend they begin investigating FPGA technology at Xilinx.com?**
- A. We've set up our Web site in a fashion that recognizes that not all users of FPGA technology approach their design challenges in the same way. So we've organized our homepage to take visitors directly to one of three high-level overviews to begin with. They can engage with our Web site by either starting with [Technology Solutions](http://www.xilinx.com/technology/index.htm) (<http://www.xilinx.com/technology/index.htm>), where they can begin learning about Embedded Processing, DSP, Connectivity, Memory, Power and other horizontal solutions; [Products & Services](http://www.xilinx.com/products/index.htm) (<http://www.xilinx.com/products/index.htm>), where they can learn about specific FPGA families or development kits; or [Market Solutions](http://www.xilinx.com/esp/index.htm) (<http://www.xilinx.com/esp/index.htm>), where they learn how Xilinx FPGAs can be used in Consumer, Automotive, Broadcast, Consumer, Data Processing and Storage, Industrial, Scientific and Medical, Wired and Wireless Communications applications.
- Q. Tell us about the "free" software development tools that one can download from Xilinx.com. What are they? How are they meant to convey the "Xilinx FPGA experience" before actually committing to using a Xilinx FPGA? Can you give us a URL where they can go to download the free software and demos?**
- A. If the customer is looking at Xilinx for the first time or considering additional ISE Design Suite products for their FPGA design environment, a free, downloadable 60-day evaluation gets them started quickly. In addition, Xilinx offers ISE[®] *WebPACK*[™] software. This is the ideal downloadable solution for FPGA and CPLD design offering HDL synthesis and simulation, implementation, device fitting, and JTAG programming. *ISE WebPACK* provides the tools and features along with the same easy-to-use design environment as our award winning ISE *Foundation*[™] design tools providing instant access to the ISE features and functionality at no cost.
- Q. Xilinx seems to work very hard at providing "evaluation kits" for your FPGAs. Where is the best place to browse the available evaluation kits? And, also what is the relationship with Avnet or other distributors in terms of evaluation kits?**

A. The best place to start is the [Board & Kits](http://www.xilinx.com/products/devboards/index.htm) page on Xilinx.com (<http://www.xilinx.com/products/devboards/index.htm>). Here they can quickly find our features kits, as well as links to third-party kits. Our kits range from evaluation and starter kits that enable designers to begin designing with specific FPGA families, to full on development kits like our [XtremeDSP Video Starter Kit – Spartan-3A DSP Edition](http://www.xilinx.com/products/devkits/DO-S3ADSP-VIDEO-SK-UNI-G.htm) (<http://www.xilinx.com/products/devkits/DO-S3ADSP-VIDEO-SK-UNI-G.htm>) that gives developers the hardware and software they need to kick-start their designs targeting specific applications. We work closely with our distributors and other third parties so that they can also deliver development kits that meet specific customer needs. We like to work with these third parties because it gives our mutual customers a broad range of systems to choose from within the Xilinx ecosystem. It also provides us with a scalable model for delivering a broad range of kits.

Q. On the training front, we notice that you have “curriculum paths” on Connectivity, DSP, Embedded, and FPGA. Tell us about this training. What does it cover? How much does it cost? Where and when is it offered? Basically, how can an engineer use this training to educate himself about FPGAs?

A. Xilinx’s programmable devices are extremely flexible and powerful. As a result, they are used in many different products and in many different industries. Depending on the product, some customers might want to exploit the DSP power of our technology whilst others focus on the benefits of an embedded solution. To help FPGA designers get straight to the knowledge they need for the functions they are designing, we have created curriculum paths that suggest the right courses in the right order. The curriculum paths generally take a student from no knowledge through to advanced level. On the Xilinx training website (<http://www.xilinx.com/support/education-home.htm>) we not only publish our curriculum paths, but also describe pre-requisite knowledge needed to get the best from a class and also self-assessments to help engineers make the right choices.

Q. What are Xilinx “Authorized Training Partners” (ATPs)? When would you recommend that someone turn to a Xilinx partner for training?

A. ATPs are Xilinx’s industry-leading network of dedicated training providers. These companies are chosen for their dedication to and knowledge of Xilinx products, a history of delivering high quality services and a passion for delivering the best quality education experience for our customers. These far-reaching networks of 23 providers understand the needs of the local markets and can provide a tailored learning experience. We recommend that engineers wanting to take Xilinx classes turn to their local training provider first (<http://www.xilinx.com/support/training/atp.htm>).

Q. Tell us about Xilinx real-world seminars. What sorts of seminars do you provide, and what is the best way to find out about them in advance? Do you offer seminars with your distributor partners like Avnet or Nu Horizons?

A. We offer seminars on a wide range of topics, from embedded and DSP systems design, to specific applications such as automotive. These seminars will either take place in the form of workshops at the various trade shows we participate in, to Mobile Workshops we run ourselves, and seminars run by our distributors which might often cover technologies from some of our partners. The [Events](http://www.xilinx.com/events/index.htm) page on Xilinx.com has a listing of Events, Seminars, Webcasts and training programs (<http://www.xilinx.com/events/index.htm>). Our distributors also run a variety of

seminars, workshops and even online demonstrations. Information can be found on their web sites.

Q. Finally, tell us a little bit about pre-sales technical support. What is the recommended way to engage with a Xilinx FAE? What sorts of customers can contact Xilinx for pre-sales issues in terms of an FPGA design, and how do you recommend that they do that?

A. When a user needs help, the best place from them to start is signing up for [My Support](http://www.xilinx.com/support/services/mysupport.htm) (<http://www.xilinx.com/support/services/mysupport.htm>) on Xilinx.com, which provides designers with award winning online support, with the added benefit of personalization. Key Features of *MySupport* include:

MyAlerts – Users are instantly informed when any new information is posted that meets their specific needs

Support News – Users can access the latest information about Xilinx software and IP cores

What's New – Users can access the latest information about products, silicon solutions, and design resources

Tech Tips – Users can access the latest technical information about development tools, device families, interface tools, etc.

Forums – Users can collaborate with other designers in discussion groups or chat rooms; join the popular newsgroup comp.arch.fpga

Answer Database – Customers can use our Advanced Search or Answer Browser tools to search our database archives, technical tips, application notes, or software manuals. Easily access the latest technical answers from our huge database of over 4,000 answers, indexed in logical categories

Problem Solvers – Users can get instant help for installation and configuration, PCI applications, JTAG implementation. They can troubleshoot their configuration or installation problem using a series of diagnostic questions within an interactive tool that can save you hours of work.

If a user still needs help, they can open a [WebCase](http://www.xilinx.com/support/clearxpress/websupport.htm) (<http://www.xilinx.com/support/clearxpress/websupport.htm>) to submit a technical support request and they will be contacted by the appropriate field office.

Q. Thank you for this interview.