

Xcell journal

PUBLISHER	Forrest Couch forrest.couch@xilinx.com 408-879-5270
EDITOR	Charmaine Cooper Hussain
ART DIRECTOR	Scott Blair
DESIGN/PRODUCTION	Teie, Gelwicks & Associates 1-800-493-5551
ADVERTISING SALES	Dan Teie 1-800-493-5551 xcelladsales@aol.com
TECHNICAL COORDINATORS	Larry Caputo Jay Gould
INTERNATIONAL	Piera Or, Asia Pacific piera.or@xilinx.com Christelle Moraga, Europe/ Middle East/Africa christelle.moraga@xilinx.com Yumi Homura, Japan yumi.homura@xilinx.com
SUBSCRIPTIONS	All Inquiries www.xcellpublications.com
REPRINT ORDERS	1-800-493-5551



www.xilinx.com/xcell/

Xilinx, Inc.
2100 Logic Drive
San Jose, CA 95124-3400
Phone: 408-559-7778
FAX: 408-879-4780
www.xilinx.com/xcell/

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Integrated System Platforms: The Next Wave in FPGA-based Innovation for Embedded Processing Applications

FPGAs have come a long way since the days serving as prototypes to test design concepts before committing them to 'permanent' silicon. FPGAs have now become the foundation for many of the most innovative products that improve our lives everyday. Driven by diverse and demanding market requirements, FPGAs are valued above all else for their flexibility. Their inherent programmability is the insurance policy product developers depend on to quickly and efficiently meet market windows and keep products current in fast moving, evolving markets.

As many of the articles published in *Xcell Journal* illustrate, FPGAs are no longer a single-function device. These programmable devices have emerged as the preferred platform for the highly integrated world of systems-on-chip (SoC) and embedded system design. Therefore, it is no coincidence that many of you will see this issue of our magazine at the Embedded System Conference in San Jose, CA, one of the largest gatherings of hardware designers and software developers.

It's also appropriate that this theme is highlighted as Xilinx introduces its ultimate system integration platform – the Virtex™-5 FXT FPGA. Comprising the fourth platform in the 65-nanometer Virtex-5 family, Virtex-5 FXT devices combine flexibility with very high-performance embedded processing, digital signal processing and connectivity capabilities into a single chip to reduce total system cost, power, and board real estate.

In this Issue

The significance of the Virtex-5 FXT platform for embedded developers is underscored in the cover article, which describes in detail the industry's first FPGAs with embedded PowerPC® 440 processor blocks, high-speed RocketIO™ serial transceivers, and dedicated XtremeDSP™ processing capabilities. These devices deliver an optimal system integration platform that meets market and bandwidth requirements of transporting voice, video, and data for a wide range of applications in wired and wireless communications, audio/video broadcast equipment, military, aerospace and industrial systems, along with many others. This issue provides a "behind-the-scene" look into a variety of FPGA-based embedded system applications, ranging from outer space and aerospace to more earthly scientific and automotive innovations.

In addition, you'll learn how every aspect of Xilinx embedded processing solutions has been substantially upgraded and usability drastically simplified through intuitive hardware and software tools. Advancements include the v7 release of the MicroBlaze™ 32-bit soft processor with configurable memory management unit, the new high-performance processor interconnect architecture, and the ISE™ Design Suite 10.1 development environment with unified access to all logic, embedded, and DSP design tools. Of course, our expansive ecosystem of third-party embedded technology and service providers, several of whom are featured in this issue, also play a key role in helping developers maximize the benefits of Xilinx embedded solutions.

At the end of the day, the goal of these efforts is to enable rapid design of high-performance embedded systems with highly integrated, scalable hardware platforms, customizable embedded processors, and pre-verified IP cores. Designers can then focus their efforts on creating differentiated value, thereby getting products to market in time to extract maximum return and ultimately realizing the full potential of their own inspirations.



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