

Xilinx Offers End-to-End Solutions

For anyone who has been following the history of programmable logic, it's pretty clear that the industry has seen more changes in the course of the past year than it has perhaps in its entire 19 years of its existence.

Robert Bielby, Senior Director
Strategic Solutions Marketing
Xilinx, Inc.
robert.bielby@xilinx.com

With the recently introduced Virtex-II Pro™ product family, the much awaited and highly debated immersion of a micro-processor into a programmable logic fabric has finally occurred. With up to four IBM® PowerPC™ 405 microprocessors in the highest density family members, Virtex-II Pro Platform FPGAs deliver more than 2,000 Dhrystone MIPS, a number that is unchallenged in the industry.

Complemented by the integration of multi-gigabit serial I/O signaling technology capable of supporting more than 3 Gbps per I/O pin pair, the Virtex-II Pro family delivers the industry's first truly high-performance Platform FPGAs. These advanced programmable logic devices are unparalleled in their capabilities not only to address a wide range of the most demanding applications – but also to adapt and adopt emerging I/O standards and protocols as they become available.

Advances in semiconductor and programmable logic fabrication have not only made families like the high-end Virtex-II Pro Platform FPGAs possible, but on the other end of the spectrum, technology advances have also enabled the recent delivery of Spartan™-IIE FPGAs and CoolRunner™-II RealDigital CPLDs. The Spartan-IIE family sets a new standard for low cost within the programmable logic industry, and the CoolRunner-II series sets an equivalent benchmark in the industry for ultra low power consumption.

This premiere portfolio of programmable logic solutions gives Xilinx the power to address a wide range of new markets and applications, including consumer electronics and handheld devices. In this issue of Xcell Journal, we discuss some of the markets we've opened and applications we've enabled.

Metropolitan Area Networks

The hottest areas in networking today are metropolitan area networks (MANs) and “edge access” markets. Driven by the explosive growth of data traffic in metropolitan regions, this networking market segment is expanding at a 34% CAGR (compound annual growth rate).

New products and technologies based upon standards proposals that leverage the combined benefits of Ethernet and SONET are now being rushed to market to address this rapidly growing demand for data services. However, the uncertainty surrounding the overall acceptance of these new standards – and the rigorous requirements of supporting line rates in excess of 10 Gbps – have given rise to the need for solutions like Virtex-II Pro Platform FPGAs that offer both flexibility and high performance.

In addition to articles discussing the challenges of developing solutions for the MAN, we are also pleased to present – in conjunction with Avnet Design Services, Avnet Cilicon, and Reed Electronics Group – an industry-wide event: the Metro-Optical Networking Forum to be held July 25 at the Santa Clara Convention Center in California. This free one-day event (which be simulcast to more than 40 North American venues) is focused entirely on the latest developments in metropolitan and edge access networking. For more information, see the article and ad in this issue of Xcell Journal. To register for this event, visit www.xilinx.com/metro.

Consumer Electronics

Consumer electronics continue to grow at a very healthy pace, fueled by the trend towards digitization. Consumers perceive that anything digital is better. This consumer perception started with the introduction of the digital clock. The digital clock was more accurate than the analog clock and over time, more desirable.

Miniaturization drove the development of the digital watch, handheld calculator, and a myriad of other consumer products based upon digital technologies. Naturally, a plethora of new standards and protocols have emerged.

Multiple standards, changing protocols, high-performance processing, low power requirements at cost-conscious consumer prices – these are the challenges where the low cost Spartan™ series of FPGAs and the ultra low power CoolRunner™ CPLDs shine.

Digital TV

With a heightened awareness and demonstrated demand for digitized electronics, the television industry logically went about defining a new television format based

consumer electronics products in history. According to International Data Corp, DVD had penetrated 23% of US households by end of 2001.

The success of the DVD is attributed to several factors: the significant improvement in image quality, the industry-wide standardization that reduced consumer confusion, and high-volume sales, which led to accelerated cost reductions. Another key factor in the widespread acceptance of DVDs was that they can be viewed on existing analog televisions.



entirely upon digital technology. The results of high-definition digital TV (DTV) were astounding, but the price tag was prohibitively expensive, and consequently, consumer interest was low. Until just recently, it was hard to pinpoint exactly why consumer interest in DTV languished – was it because of price, or did consumers just think that digital video was not interesting?

Actually, it has only been in the past five years that the story has slowly unraveled. Consumers have, in fact, voted strongly in favor of digital video – but this has come, not in the form of an end-to-end digital system, but rather in the form of a single video component: the digital video disc, or DVD. Never, in the history of any consumer electronics product, has there been such a wide and rapid acceptance of any new medium or format as there has been with the introduction of the DVD. The DVD represents one of the most successful

Now, as digital video has grown in popularity, it is spawning a host of new digital products – and formats – including plasma displays, personal video recorders, read/write DVDs, and set-top boxes.

DTV has also spawned a widespread concern in the “infotainment” industry over video piracy. This concern is giving rise to a suite of new encryption standards, including 5C, 4C, CPTWG, and TCPA (to mention a few) that are being proposed by a wide range of interested parties, including the motion picture industry.

Conclusion

In this issue of *Xcell*, we discuss some of the exciting Xilinx solutions for consumer electronics, with a special emphasis on digital video applications, such as video image processing, navigating changing standards, and addressing encryption challenges. We hope you enjoy these articles. ❧