

## Mercury Computer Systems and Mentor Graphics Team Up on First Cell-Based EDA Platform

Order-of-magnitude faster processing

Dramatic cost reduction

Cutting-edge hybrid co-processor acceleration platform

Mercury and Mentor Graphics have collaborated to develop and deliver a fully integrated electronic design automation (EDA) platform for computational lithography applications based on the Cell Broadband Engine™ (BE) processor. This partnership combines the two companies' respective strengths in hardware and software innovation for the EDA industry. Mentor, a world leader in EDA solutions, brings over 10 years of expertise in computational lithography and the Calibre® nmOPC optical proximity correction (OPC) tool. Mercury is leveraging 23 years of experience in optimizing application performance and the Mercury MultiCore™ Plus SDK (Software Development Kit). Together, the companies have achieved more than an order-of-magnitude performance improvement using this new-generation EDA platform.



25U/42U Dual Cell-Based Blade System

### Turning Compute Days into Compute Hours

Co-processor acceleration techniques are increasingly implemented in specialized applications that are computationally intensive with rapid turn-around time. The amount of computation required to complete the 45-nm and below RET flow has increased dramatically, compared to that of the 65-nm node. Higher density chips, larger optical diameters, more model kernels, through-process simulation, and more compute-intensive process modeling have pushed computation requirements for the 45-nm node from 5 to 20 times that of the 65-nm node. Even if critical layer jobs can complete on standard farms, the turn-around time (TAT) is unacceptable, and the number of CPUs and licenses is too costly. Additionally, companies moving to 45 nm want to preserve their current hardware investment. Clearly, software innovation in tandem with a new, innovative HPC platform is needed to address all these issues.

Mentor and Mercury partnered to research and develop the next-generation architecture. The combined team evaluated

FPGAs, PowerPCs, Cell, and other processors before settling on the Cell BE processor as the optimal acceleration solution for Mentor's computational lithography applications. They decided to add a co-processor acceleration (CPA) cluster of Cell processors to a system with 100 to 200 general-purpose CPUs. This new solution outperforms a system of 750 to 1,000 CPUs, achieving more than an order-of-magnitude improvement in performance.

Mercury is providing the Cell-based high-performance compute cluster and enabling middleware, and Mentor offers an option to Calibre nmOPC that offloads the computationally intensive portions of a run to the Cell BE processor cluster. The resulting optimized solution reduces racks of commodity servers into a single rack, while scaling to performance levels not economically possible before. The resulting hybrid platform delivers equivalent gigaflop performance at about half the cost, power, and space of a standard compute farm.

## Revolutionary HPC Platform Based on Cell Architecture

The HPC platform resulting from the Mentor and Mercury collaboration is based on the Cell BE processor, which processes the simulation operations of the OPC application 30 to 100 times faster than conventional microprocessors. The revolutionary Cell architecture came about as a joint development project by Sony, Toshiba, and IBM, specifically for the PlayStation® 3 gaming system. When these companies realized the processor's potential for HPC applications outside the gaming industry, IBM approached Mercury to take on this challenge. Mercury began shipping Cell-based systems and software in prototype in 2005, and production units in October 2006. Mercury offers Cell-based solutions for a variety of industries, including semiconductor, medical imaging, aerospace and defense, video processing, seismic processing, universities, and national laboratories.

“Our partnership with Mercury combines two companies’ strengths that bring unprecedented software and hardware innovation to the EDA industry. Increasing complexity across the entire IC design flow puts tremendous pressure on hardware platforms. Mercury’s Cell BE compute cluster holds great promise to relieve this pressure, while protecting the existing investment in hardware.”

*Walden Rhines, CEO  
Mentor Graphics, Inc.*

“Working with innovative market leaders like Mentor Graphics is an important part of Mercury’s strategy to expand our market presence. Mercury’s demonstrated leadership in architecting ultimate performance computing solutions that are optimized for specialized applications together with Mentor’s EDA market leadership is an ideal combination to drive value for our mutual customers.”

*Jay Bertelli, President and CEO  
Mercury Computer Systems, Inc.*

### About Mentor Graphics

Mentor Graphics Corporation (Nasdaq: MENT) is a world leader in electronic hardware and software design solutions, providing products, consulting services and award-winning support for the world’s most successful electronics and semiconductor companies. Established in 1981, the company reported revenues over the last 12 months of about \$750 million and employs approximately 4,100 people worldwide. Corporate headquarters are located at 8005 S.W. Boeckman Road, Wilsonville, Oregon 97070-7777. World Wide Web site: <http://www.mentor.com/>.

### About Mercury Computer Systems, Inc.

Mercury Computer Systems ([www.mc.com](http://www.mc.com)) is the leading provider of computing systems and software for data-intensive applications that include image processing, signal processing, and visualization. We work closely with customers to architect comprehensive, purpose-built solutions that capture, process, and present data for medical, defense, seismic, scientific, and other computationally challenging markets.

Mercury is based in Chelmsford, Massachusetts and serves customers worldwide through a broad network of direct sales offices, subsidiaries, and distributors. We are listed on the Nasdaq National Market (NASDAQ: MRCY). Visit Mercury at [www.mc.com](http://www.mc.com).

Calibre is a registered trademark of Mentor Graphics Corporation. Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. MultiCore Plus and Challenges Drive Innovation are trademarks of Mercury Computer Systems, Inc. Other products mentioned may be trademarks or registered trademarks of their respective holders. Mercury Computer Systems, Inc. believes this information is accurate as of its publication date and is not responsible for any inadvertent errors. The information contained herein is subject to change without notice.

Copyright © 2007 Mercury Computer Systems, Inc.

1011.00E-0207-MRCY\_Mentor

Computer Systems, Inc.  
**MERCURY**

*Challenges Drive Innovation™*

#### Corporate Headquarters

199 Riverneck Road  
Chelmsford, MA 01824-2820 USA  
+1 (978) 967-1401 • +1 (866) 627-6951  
Fax +1 (978) 256-3599  
[www.mc.com](http://www.mc.com)

#### Worldwide Locations

Mercury Computer Systems has R&D, support and sales locations in France, Germany, Japan, the United Kingdom and the United States.

For office locations and contact information, please call the corporate headquarters or visit our Web site at [www.mc.com](http://www.mc.com).