

Supercomputers may be key to stay ahead

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The technology used in aerospace engineering and weather forecasting is being used these days to produce better laundry-detergent bottles and animated movies too, thanks to high-performance computing.

So perhaps it's no surprise that the use of supercomputers to conduct research and product testing is being heralded by those who use it as essential to the functioning of their business. Supercomputing experts are joining forces with some policy analysts and politicians to increase the use of HPC in U.S. industry, with the loftier goal of keeping the U.S. manufacturing industry competitive globally.

"The country that wants to out-compete must be able to out-compute," said Suzy Tichenor, vice president and director of the high performance computing project at the Council on Competitiveness.

A survey commissioned by the council, which is a non-profit organization that raises awareness for the need for national competitiveness in the world market, found that those currently using HPC systems in their business activities considered them "indispensable." It also reported that what prevents companies from using HPC technology is a combination of education and accessibility.

Enter the Blue Collar Computing Initiative. The program began at the Ohio Supercomputer Center, which focuses on introducing businesses to, and educating them about, high-performance computing.

"We came up with the idea of Blue Collar Computing because we lost a

number of manufacturing jobs in Ohio," said Stanley Ahalt, executive director of the Ohio Supercomputer Center, which provides computing services and research to companies, universities and other organizations.

"OSC tried to figure out how to improve the economy in Ohio," Ahalt said. There already are large companies that used HPC systems including Procter & Gamble and Goodyear, Ahalt said. Blue Collar Computing was created to introduce HPC as a means of solving the most common problems in industry.

The use of HPC to solve industry problems is illustrated clearly with the example of Procter & Gamble. The Ohio-based company uses HPC in their research and development phases to improve the quality of its commercial products that include Tide washing powder, Pampers disposable diapers, and Pringles potato chips.

"The software and computing technology used for automobile crash tests is very similar to the technology we are going to use to see if a bottle of Tide will split open if it falls off your washing machine and onto the floor," said Tom Lange, director of modeling and simulation, corporate research and development at Procter & Gamble.

Currently, only large companies such as P&G as well as Goodyear and General Motors have the type of resources necessary to utilize HPC. With the BCC, OSC hopes to improve software, training, outreach and partnerships necessary to bring those types of technologies to small and medium-sized businesses as well.

The efforts of OSC to integrate HPC to Ohio businesses may soon expand to the national level. On June 1 Sens. Mike DeWine, R-Ohio, and Herb Kohl, D-Wis., introduced Senate Bill 3527, known as the Blue Collar Computing and Business Act of 2006. The bill, supported by OSC, calls for the creation of the Advanced Multidisciplinary

Computing Software Institute, which would develop and compile HPC software into an easier format for small businesses, introduce new sciences and technology to small businesses and aid the businesses in using HPC.

"We've seen small and mid-sized manufacturers, which provide good paying, family-supporting jobs for skilled workers, dwindle in number and decline in productivity because they don't have access to the same high-tech equipment that giant companies rely on. It makes sense to establish these regional high-tech centers where expertise can be shared and experience can be tapped -- one-stop shopping for small businesses and manufacturers who want to make sure their enterprises thrive in an evolving marketplace," Kohl said in a news release regarding the bill.

The act would authorize up to \$25 million per year for five years for the Department of Commerce to create up to five new supercomputing centers across the country. The goal of these centers would be to help businesses realize the potential for HPC within their industry, educate employees to use the technology and to develop software to allow businesses to conduct research from their own sites.

Ahalt sees three improvements that will arise from the Blue Collar Initiative. "It will introduce products faster, introduce better products and will make those products more profitable," Ahalt said. "Three benefits: speed, quality and cost."

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