Tuskegee University Deployed
New Partner Highlights the Diversity of PACE

Tuskegee University, in Tuskegee, Alabama, joined the ranks of PACE Institution Partners last month when General Motors Corporation, UGS, Sun Microsystems and Electronic Data Systems (EDS) donated over $12 million in computer-aided design, manufacturing, and engineering (CAD/CAM/CAE) software, hardware and training to the institution. This is the largest donation of its kind ever to the university.

"By introducing this technology to the classroom, we’re providing students with a significant competitive advantage and building a future workforce that is more highly skilled, trained and experienced," said Rod Gillum, GM Vice President of Corporate Relations and Diversity.

"These students will leave college with firsthand knowledge of the systems and technology they will encounter on the job and will be able to quickly apply their knowledge to influence engineering and design initiatives leading to more innovative and technologically advanced products and services."

Tuskegee University joins an elite list of universities in the United States, Mexico and Canada benefiting from a donation of leading-edge technology that will help prepare students for careers in engineering and manufacturing.

"As a leading producer of African American graduates in aerospace, chemical, electrical and mechanical engineering, the PACE donation of cutting-edge software, hardware and training will make our graduates even more attractive," said Dr. Legand Burge, Dean of the College of Engineering, Architecture and Physical Sciences of Tuskegee University.

Tuskegee is the sixth university to receive a PACE donation. PACE creates networks for research, curriculum development, textbook development and other forms of collaboration between GM, UGS, Sun Microsystems, EDS and academia.

Tuskegee University applied to the PACE Program in partnership with the University of Missouri-Rolla, which was deployed last fall. The two universities plan to collaborate in the use of their PACE donations on several projects, including the development of a rapid prototyping lab, distance education courses, and joint design teams for student competitions, such as the SAE Formula Car Race.
Leadership from PACE’s industrial and academic partners gathered on February 22 for a retirement celebration dinner for GM Executive Sponsor Jay Wetzel. Wetzel, Vice President and General Manager of the GM Technical Centers, was a key figure in the inception of PACE in 1999, and has continued to provide vital support to the program. He retires from GM after more than 30 years of contributions to GM engineering. Leaders from GM, GM de Mexico, GM of Canada, EDS, UGS, Sun Microsystems, Michigan State University and ITESM-Toluca gathered to bid Wetzel a fond farewell at a dinner at Andiamo Italia Restaurant in Warren, Michigan.

Doug Hoover, Senior Vice President at EDS, shared his perspective of PACE and Wetzel’s impact on the program. “PACE has become an important way for EDS to support design and engineering education at universities across North America and the globe. The prospect of continuing to take this program to universities in other parts of the world is very exciting. Your incredible insight and leadership have been instrumental in the success of PACE.”

The PACE team gave Wetzel a shadow box to commemorate his service at GM. The shadow box titled “Designing for the Future,” featured a slide rule, scientific calculator and Space Mouse, representing the various tools automotive engineers have used over time.

“It was a pleasure working with Jay on the PACE Program,” said Willard Richart, Automotive Region Director for Sun Microsystems. “He provided great insight into GM’s vision of the engineer of the future, and his enthusiasm for the success of the program was an inspiration to all of the participating partners. Sun is proud to be included in this partnership and will miss the rich history and forward thinking Jay brought to the PACE Executive Sponsor Committee.”

Wetzel, a registered professional engineer, earned a bachelor of science degree in mechanical engineering from the University of Michigan in 1963 and a master’s degree in management from the Massachusetts Institute of Technology in 1973 under the Sloan Fellowship program.

In 1993, Wetzel received the prestigious “Engineering Quality Award” from Design News magazine for excellence in design, engineering and manufacturing of the Saturn line of automobiles. In February 1998, Wetzel was honored by the Automotive Hall of Fame with a “Distinguished Service Citation” for his successful innovation and meaningful contributions to the automotive industry. In October 2000, he was inducted as a member of the National Academy of Engineering (NAE), an elite professional society.

Wetzel will continue to serve GM as a member of GM’s Science Advisory Board. “Jay has set the standard for these qualities and characteristics that we should strive to achieve. We are committed to further enhance the PACE program that he helped conceive,” said Ed Arlin, Vice President, Global GM Account, UGS.

Faculty Design Visits will be set up this summer in Warren, Michigan. All PACE Institutions are encouraged to send their faculty. Contact your Institution PACE Administrator or Sara Patel at sara.patel@gm.com for more information.

The PACE team connected with hundreds of users of Unigraphics® software from all over the country at last month’s UG Users Conference in Buena Vista, Florida. The conference served as a forum for sharing experiences that build knowledge in UG use, mechanical design and manufacturing.

In May PACE also participated in the Formula SAE Event held in Pontiac, Michigan.
Dr. Bob Chalou, professor of material science and mechanics at Michigan State University, and the PACE Program are jointly celebrating an important “first”—the publication of Chalou’s book, Engineering Design Modeling with Unigraphics. It is also the first text created by a professor working with the PACE Program.

“The book is intended to give students the tools to explore the software and the courage to try new functionality, as they become more versatile designers,” states Chalou. It provides a sound, basic knowledge of 3-D solid modeling and assemblies using Unigraphics software. Chalou has incorporated the text into his freshman-level Unigraphics-based course, “Engineering Graphic Communications.”

Since its inception, PACE industrial partners have provided contributions valued at over $200 million, enhancing engineering education at academic institutions in the U.S., Mexico and Canada. The PACE academic institutions, in turn, raise the bar on engineering education in many ways—one of which is to create textbooks, like Chalou’s and other courseware that provide improved learning tools for students.

Jerry Elson, Vice President and General Manager, GM Vehicle Operations and a member of the PACE Executive Sponsor Board, was a keynote speaker at an April manufacturing forum held at Michigan State University. Representatives from industry, state government agencies and seven universities attended the forum titled, Workshop on Future Directions for Manufacturing Research.

Elson spoke of the vital need for further development of mathematical models for manufacturing processes and for integration of manufacturing constraints and costs as factors in the product design process. He noted that, “As a PACE Institution Partner, MSU is an example of how the introduction of tools and concepts is helping universities more effectively address industry needs and make university manufacturing research directly accessible to industry.”

“One of the key outcomes of the workshop is the focus it has provided to MSU in its recruitment of a new senior faculty member in the area of manufacturing research,” said Erik Goodman, Director, MSU Manufacturing Research Consortium. “Building upon the needs identified through this workshop, the college is seeking to recruit additional new faculty members as part of its growing emphasis on manufacturing.”

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GM VABA to Donate Parts to PACE Institutions

Engineering students at PACE Institutions will be provided the opportunity for hands-on work using actual parts of GM vehicles. Responding to a request from PACE Institution Partners, GM is donating vehicle parts to PACE schools for hands-on assembly and disassembly practice. The Vehicle Assessment & Benchmarking Activity (VABA), a division of the GM Knowledge Center, is responsible for the disassembly, analysis and display of vehicle parts, and will provide disassembled VABA vehicles to PACE Institutions. Two vehicles are currently in line for donation to PACE Institutions—a GMC Yukon and a Saturn.

“Having real parts, especially GM parts, will help promote learning designed to improve the skills of future designers and engineers,” said Ella Reevers, Manager of VABA. “This program is an investment in our future.”

“The donation of GM parts to PACE Institutions will be of significant support to math-based approaches of 3-D Solid Modeling,” noted Joe Joseph, Director, GM Knowledge Center.
Mechanical Dynamics, Inc., a worldwide provider of functional virtual prototyping software and services, will donate the ADAMS Full Simulation package and seven additional software modules, as well as the ADAMS/Car and ADAMS/Tire software to current and future PACE Institutions in North America. This package includes the functionality to effectively interface to Unigraphics. Additionally, Mechanical Dynamics provides Dynamic Designer Motion Professional, the leading mechanical design simulation software for use within the Solid Edge CAD environment, free of charge. Mechanical Dynamics also freely licenses its OEM tool kit inside of Unigraphics as “Scenario for Motion+” for academic customers.

Engineering teams use ADAMS to build and test functional virtual prototypes of their complex mechanical system designs and facilitate the modeling and evaluation of ground vehicle systems. A request by Michigan State University and the ITESM-Toluca for software from PACE and UGS played a major role in encouraging Mechanical Dynamics to make this contribution.

“We are excited by the opportunity to make our software more accessible to key academic institutions worldwide,” said Bob Ryan, President of Mechanical Dynamics. “Because of the serious commitment made by the PACE institutions to implementing CAD/CAM/CAE, we are confident that a good environment is being established to introduce our Virtual Prototyping and Functional Digital Car software to these educational institutions.”

Using ADAMS/Car, automotive engineers can build and test computer models of entire vehicles, complete with suspensions, powertrains, engines, steering mechanisms, anti-lock braking systems and other complex assemblies. Engineers can use ADAMS/Tire to model forces acting on a tire moving down a roadway or over irregular terrain. The ADAMS Full Simulation package is a general mechanical system analysis tool, widely used in the aerospace, automotive, and general machinery industries, as well as in the classroom, upon which specialized products such as ADAMS/Car are built.

PACE Institutions receive ADAMS Software

PACE in Action at Michigan State

The Department of Mechanical Engineering at MSU held its 13th Student Design Conference last month, in cooperation with 16 corporate partners. The Conference, held semiannually at the close of the fall and winter semesters, offered plenty of opportunities for hands-on experimentation and interaction between students, professional engineers and leading businesses. In addition, a large group of middle school students were on hand to participate in hands-on activities designed just for them.

MSU student teams made use of Unigraphics technology in the on-campus PACE Laboratory, equipped with Sun workstations and Unigraphics software. Projects included “Sound and Vibration Analysis of Automotive Seat Power Track Torque” and “Cost-Effective DFM of Thin-Shelled High-Strength Steel Automobile Parts.”

PACE in Action at Michigan State Continued from page 3

PACE Institutions receive ADAMS Software

PACE in Action at Michigan State

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Coming up in PACE In Action…

- PACE deploys two Canadian institutions

This year PACE will deploy at least two institutions in Canada, broadening our reach and furthering our mission to integrate math-based CAD/CAM/CAE (Unigraphics) into the curricula of strategically selected academic partners worldwide. Look for more details about PACE in Canada in the next issue of PACE In Action.

Look for the next issue of PACE In Action in September 2001!