

PACE IN ACTION

Partners for the Advancement of Collaborative Engineering Education

2005



Alias Becomes PACE Contributor

Alias has joined PACE as a new "PACE Contributor!" Joining a host of innovative PACE supporters, Alias will provide resources ensuring that PACE-affiliated design and engineering institutions worldwide are working with state-of-the-art creative design technology. Alias designs can also be imported into NX (Unigraphics) for adding engineering functionality, manufacturing process planning, and other applications. Alias' contribution to the PACE program is not a one-time contribution of products and services, but rather an ongoing relationship to foster strength in design.

"PACE's winning combination of highly developed technology and determined students supports a shared initiative of improved research and advanced learning," explains Doug Walker, President of Alias. "Aligning with PACE ensures Alias software and service solutions are part of the education process for students in design and engineering institutions around the world. The PACE and Alias partnership is fitting, as we challenge the boundaries of the design industry, beyond the limits of our imagination."

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Doug Walker, President of Alias



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Engineous iSIGHT Integration Software Offered through PACE

The PACE Program is pleased to introduce Engineous Software, based in Cary, North Carolina, as its newest "PACE Contributor," providing its integration software entitled, "iSIGHT" to PACE Institutions globally at a nominal cost.

iSIGHT enables the rapid integration of many of the other PACE software tools and technologies, and automates their execution to accelerate the evaluation of many design alternatives. The iSIGHT software enables engineers to rapidly apply:

Design of Experiments (DOE) | Optimization | Approximation Methods | Quality Methods (DFSS)

"We have always been proud of our association with academic institutions, whether it's collaboration on innovative research and development, or the use of our products in a classroom setting," said Janet C. Wylie, President and CEO of Engineous Software. "We truly understand the value of continued interaction with today's thought leaders and tomorrow's industry leaders. The PACE program provides the ideal environment for this type of alliance between universities and industrial partners, and we are delighted to be a contributing member."

Effective immediately, PACE Institutions can apply for the Engineous iSIGHT software using the request located on the PACE website: www.pacepartners.org, or by contacting the PACE Office.



For more complete information on the software, visit the Engineous website at www.engineous.com. Technical questions can be addressed to Jeff Bond by e-mail at jeff.bond@engineous.com.

Partnering Globally With:



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www.PACEpartners.org

(continued from cover)

Alias is best known for its award-winning software, but also provides custom development and training solutions for the film and video industries, games, web, interactive media, automotive, industrial design, education and visualization markets. Alias has over 20 years of experience as a pioneer and innovator in design technology, supporting the design industry through the quality and reliability of Alias software throughout the design process.

Design software and service solutions bundles are available to PACE institutions – including Alias’ Maya, AutoStudio and Platinum Membership;

- Alias’ Maya software provides an integrated 3D modeling, animation, effects, and rendering solution. Maya allows designers to present design ideas through various simulations and animation in a wide range of media. Maya’s texturing, dynamics, lighting and rendering tools help designs come to life.
- Used throughout the world by leading automotive manufacturers, Alias AutoStudio is the industry standard for automotive design and styling. AutoStudio allows transportation designers both freedom and flexibility for total creativity, and the precision and accuracy of CAD software. AutoStudio provides a comprehensive suite of tools that enable complete integration throughout the entire shape definition process, from concept sketches through Class-A surfacing.
- The Alias Platinum Membership program is designed to help get the most out of the Alias software. Offering live and online technical support, access to key technical information, priority access to upgrades and exposure to a large community of users, this top-tier Membership program helps to maximize investment in Alias design products.
- Alias UGNX Direct Connect provides a smooth transition of designs from Alias products to UGS’ NX CAD/CAM software for engineering design and many other downstream applications.

The offer also includes:

- Future year software upgrades and support packages
- Free and reduced cost training opportunities; discounts on Alias-hosted instructor training classes
- Discount on Alias Learning Tools
- UG Direct Connect Licenses
- Portfolio Wall seats

For more complete information on the software and services, access the Alias website at www.alias.com. PACE Institutions may request this software by contacting the PACE Office or accessing the PACE website: www.pacepartners.org.

PACE SOFTWARE – CURRENT VERSIONS

Below are the current versions of the software that PACE Institutions should be utilizing effective November 2005.

SOFTWARE	VERSION
NX (formerly Unigraphics)	NX v3.0.2 Rev A
Teamcenter Engineering	v9.1.2.9d
Teamcenter Community	v5.1.1.a
MSC.ADAMS	v2003
MSC.Nastran	v2005.1.2
Altair Hypergraph	v7.0sp1
Altair Hyperview	v7.0sp1
Altair Motionview	v7.0sp1
FLUENT	v6.1.16
GAMBIT	v2.2.30
LS-DYNA	v970 Rev 5434
Alias AutoStudio	v 12.0.23
Alias Maya	v6.5

PACE Continues to Expand Worldwide

The PACE Program continues to announce institutions that have been selected to join the program—institutions from a variety of countries, each with unique qualifications.

First Institution in Australia

On November 5, 2004, PACE announced Monash University as the first Australian PACE Institution. This pilot institution will help Holden (GM's Australian operations) and the other local PACE companies to define PACE in Australia.



Speakers at the event included: Richard Larkins, Vice Chancellor, Monash University; Dennis Mooney, Chairman and Managing Director, Holden; Al Jones, Client Executive, GM Holden Account, EDS; Dinesh Bahal, Regional Executive Director, Sun Microsystems; and Hulas King, Director, Global Opportunities in PLM, UGS.

Professor Larkins welcomed the arrangement, saying, “Monash is a major supplier of graduates to the design and manufacturing industries. PACE facilities will support the training of students in industry-specific design applications resulting in better employment outcomes for our undergraduate and postgraduate students.”

The PACE Contribution to Monash included products and services from: UGS, MSC.Software, Altair Engineering, Fluent, LSTC, Hewlett Packard, Sun Microsystems, and Holden.



Lehigh Joins PACE

On February 15, 2005, Lehigh University officially announced its acceptance into PACE, receiving an initial, in-kind contribution, commercially valued at \$31 million. The contribution is one of the largest in the University's history and will enhance academic programs in engineering, business, and design arts, as well as Lehigh's distinctive interdisciplinary programs that span colleges and departments.

According to Lehigh president Gregory Farrington, the gift underscores Lehigh's commitment to collaborative learning, entrepreneurship and such emerging fields as integrated business, engineering, and design arts. “The PACE partnership reflects our joint commitment to multi-disciplinary learning and enhances our relationships with these leading companies,” said Farrington.

Other speakers at the event included: Robert Kruse, Executive Director, Vehicle Integration, General Motors North America Engineering; Joseph Blannett, Client Executive, UGS; Tom Brady, Client Executive, GM Global Manufacturing & Quality, EDS; Barry Williams, Regional Executive Director, Sun Microsystems; and Josh Colistra, Graduate Student Mechanical Engineering, Lehigh University.

The PACE contribution to Lehigh included products and services from: UGS, Altair Engineering, LSTC, MSC.Software, and Hewlett Packard.

In addition to the in-kind contribution, Lehigh has also received a grant through PACE from the GM Foundation for the CHOICES program (Charting Horizons and Opportunities in Careers in Engineering and Science for middle school girls).that enable Lehigh graduates to succeed in both the academic and corporate worlds.



LEHIGH
UNIVERSITY.

First Hispanic PACE Institution

On April 15, 2005, the University of Texas at El Paso (UTEP) held its PACE announcement event. UTEP has a special significance to the program as the first Hispanic institution. This in-kind contribution of software, hardware and training had a commercial value of \$169 million.

Roderick D. Gillum, GM's vice president of Corporate Responsibility and Diversity, and officials from other PACE corporations toured UTEP's engineering laboratories, visiting with students and faculty. Gillum commented, "In today's world, especially in the automotive industry, employees are required to have a firm grasp of computer-based design and analysis tools; GM is proud to be able to help students gain that expertise."

The PACE software, including UGS' NX, Teamcenter Engineering, and Tecnomatix, as well as MSC.Software's MSC.ADAMS, will be used primarily by engineering students and faculty. Additional software and training provided by PACE includes Altair Hyperworks, Fluent, and LSTC's LS-DYNA. Computer workstations were made possible through donations by EDS and Hewlett Packard.



*(L-R) Diane De Hoyos, Manager (GM),
Rod Gillum, VP (GM),
Diana Natalicio, President (UTEP)*

First PACE Institution in Brazil

The Polytechnic School of the University of São Paulo (USP) is the first institution in Brazil—and the only one in South America currently—to be invited to join PACE. The institution was officially announced on August 17, 2005.

The head of USP, Prof. Vahan Agopyan, remarks, "Students will have access to tools and engineering resources that are currently used by car manufacturers, and with little or no cost to the institution." He noted with pride that Brazil was chosen by the PACE Team as the first South American country to receive a PACE partnership.

Speakers at the event included: Ray Young, President and Managing Director, GM do Brasil; Cleber Morais, Brazil Country Manager, Sun Microsystems; Roberto A. Trinconi, President, UGS Latin America; Chu Tung, President, EDS Brasil; Prof. Vahan Agopyan, Dean, University of Sao Paulo; and Prof. Ronaldo de Breyne Salvagni, Head of Mechanical Engineering Dept, University of Sao Paulo.

The PACE contribution to USP included EDS's consulting support in the development of a PACE Laboratory. Other products and services were provided by: UGS, Altair Engineering, LSTC, Fluent, MSC.Software, and from GM do Brasil.



**ESCOLA POLITÉCNICA DA
UNIVERSIDADE DE SÃO PAULO**

First Purely Design PACE Institution

On September 27, 2005, the College for Creative Studies (CCS) became the first purely art and design college to join PACE. The invitation to join reflects the automotive industry's recognition of creative design's importance in the evolving vehicle development process.

"This is a testament not only to how important design has become to automakers, but to how creativity is shaping the world we live in through products we use everyday," CCS President Rick Rogers said. "We are extremely pleased that these major corporations recognize the strength of our programs and understand the value of investing in the education of CCS' talented design students."



COLLEGE
for
Creative
STUDIES

As part of the PACE contribution, CCS received the Alias software—Maya Unlimited and AutoStudio—digital design software that will enhance CCS' art and design programs. The school also received 17 new Hewlett Packard workstations and a PACE Grant through the GM Foundation.

Speakers at the event included: Imre Molnar, Dean of the College, CCS; Ed Welburn, Vice President, Global Design, General Motors; Doug Walker, President, Alias; Daniel Wecker, Director Strategic Sales Program, Sun Microsystems; Ed Arlin, Executive Vice President, GM Global Account, UGS; Russell Krauss, Managing Director, GM Global

Develop Product, EDS; Greg Jensen, Associate Professor Mechanical Engineering, Brigham Young University; Richard Rogers, President, College for Creative Studies; and Robert Jablonski, 2005 Graduate CCS, Creative Designer at GM, former GM summer intern.



First PACE Institution in South Korea

October 12, 2005, Hongik University was formally announced as the first PACE Institution in South Korea and the second in Asia to participate in the program. It also has the distinction of being one of the very few PACE Institutions globally that was selected for its combination of creative design *and* engineering strengths.

The PACE contribution to Hongik included UGS NX, Teamcenter Engineering, E-Factory and Solid Edge software; Altair Hyperworks; LSTC's LS-DYNA; FLUENT software; MSC.Software's MSC.ADAMS and MSC.Nastran; Alias Maya, AutoStudio, Portfolio Wall and UG Direct Connect; new Hewlett Packard engineering workstations; and a Sun Microsystems server. Computer workstations from EDS and refurbished by Hewlett Packard were also contributed through PACE.

As part of its effort to promote the development of a design and engineering- linked curriculum and to foster automotive industry talent in Korea, GM Daewoo will set up a Product Lifecycle Management (PLM) education program at Hongik. PLM provides an organic connection between the development, production and aftersales service stages of a product. Students will be offered an opportunity for practical learning through joint programs with GM Daewoo and participation in PACE-related lectures.

"We are very proud to be opening the Hongik University PACE Center and are grateful for the \$30 million worth of hardware and software provided by GM and the 11 companies that make up PACE," said Seung-Eui Nam, President of Hongik University. "The donations will further enable us to train world-class talent with practical skills for Korean and global companies."



Speakers at this event included: Sung Kyoung Kim, Hongik University graduate; Seung-Eui Nam, President of Hongik University; Steve Clarke, Vice President, Engineering, GM Daewoo; Jai-Ik Kim, Account Operations Manager, EDS Korea; Yu Won-Sick, President, Sun Microsystems Korea; and Hyeong Woo Choi, Client Sales Manager, UGS.

Mexico Charms Attendees at 2005 PACE Annual Forum

In July, GM de Mexico (GMM) and the Mexican PACE Institutions (IPN, ITAM, ITESM-CEM, ITESM-Mty, ITESM-Toluca, & Universidad Iberoamerica) hosted the 2005 PACE Annual Forum in Toluca and Mexico City, Mexico. For the first time, this event was held outside of the U.S. Representatives from virtually all of the 41 PACE Institutions attended, with faculty and administrators traveling from Australia, Brazil, Canada, China, Germany, Mexico, South Korea, Sweden and the U.S. to discuss product life-cycle management issues and their relationship to creative design, product engineering and manufacturing curricula.

This 5-day Forum provided:

- Faculty presentations on PACE activities, research, and curriculum integration
- Training on critical PLM-related software: Alias, Altair Engineering, and MSC.Software products
- Networking with other PACE Institutions and company representatives
- Tours of Mexican PACE Institutions demonstrating their successes in digital product life-cycle management

Dave Stenson, Chief Engineer and PACE Champion for GMM, opened the ceremony, discussing the importance of PACE and PLM globally. Other industry presentations included:

The Future of Product Lifecycle Management by Ed Arlin, Executive Vice President, Global GM Account, UGS and Co-Chair, PACE Executive Sponsor Council.

NX3 – What's New? by John Baker, Product Evangelist, UGS

Panel Discussion: Collaboration & Visualization - Directions for Industry and Higher Education featuring the following panelists:

- Frank Barkman, Global Director for CAD, Visualization, and Collaboration GM
- Ed Arlin, Executive Vice President, Global GM Account, UGS
- Alan Rhodes, Senior Digital Design Manager, GM Design Center
- Esmerelda Caballero, EDS
- Jan Helge Bohn, Virginia Tech

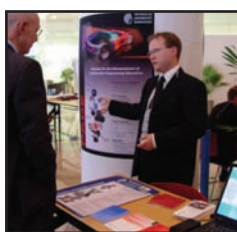
SAE Automotive CAD Certification—SAE Certified Automotive CAD Professional by Kevin Perry, SAE; Russ Boyd, UGS
Attendees toured GMM's Toluca Product Engineering Center coordinated by Miguel Rivero, Manager, Build and Test, GMM.

Carlos Gelista, Director of Government and Educational Relations at GMM coordinated a press conference where key PACE company executives discussed with specialized automotive media the importance of PACE, their contributions to the universities and industry, and related issues about the program and the partners involved.

Winners of outstanding papers:

- Greg Jensen and Courtney Berglund, Brigham Young University: Using Collaboration and PLM Tools to Link Remote Capstone Team Members
- Imre Molnar, College for Creative Studies: The Art in Car Design
- Deryl Snyder, Brigham Young University: Integrating CAx Tools Within Fundamental Mechanical Engineering Curricula
- Tom Mase, Michigan State University Golf Putter Project—Designing in the U.S. and Manufacturing in China

*A huge **THANK YOU** to everyone who assisted in making this event a success! Special thanks to Sun Microsystems, UGS and Altair Engineering for hosting conference meals; to UIA, ITESM-CEM and ITESM-Toluca for providing meeting spaces and lunches; and especially to GM de Mexico for their great effort in coordinating the many details to make it happen!*



Presentations from the Forum can be found on the PACE website: www.pacepartners.org under Events.

ACTIVITY CORNER

2006 PACE ANNUAL FORUM JULY 24-29, 2006 Provo, Utah

What:

- Informational presentations, demonstrations, and cultural activities including presentations from faculty and students on their PACE activities and projects; tours of Brigham Young University (BYU) and their PACE-related labs; speakers from industry
- Optional software training for faculty, systems administrators, and student assistants
- Networking with industry and other PACE Institution faculty and students

When:

- July 17-21 – Special Pre-Forum Training: System Administration Training for Teamcenter Engineering
- July 24-25 – Training sessions for both engineers and industrial designers using PACE software tools
- July 26-29 – Conference session which will include paper sessions, poster sessions, and invited lecturers

Where:

Brigham Young University (BYU), is located in Provo, Utah (USA), a city of approximately 115,000 located at the western base of the Wasatch Range of the Rocky Mountains.

More information will be sent to PACE Program Integrators and also posted on the PACE website. For more information contact the PACE office at 586-947-2386 or Elaine Chapman-Moore (elaine.chapman-moore@gm.com).

PACE Courseware Repository Now Available on Website

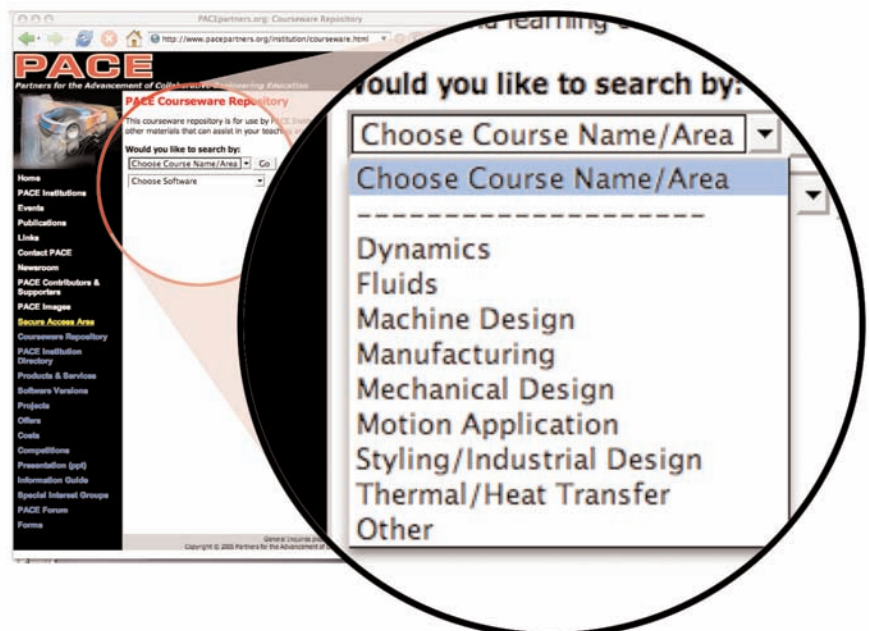
Faculty can now access the PACE Courseware Repository on the PACE website. This repository allows faculty to share tutorials and other teaching materials with one another, thus reducing the development time required to integrate digital application into the theory content of a respective course. With more than 60 tutorials and other materials in the repository, faculty can download this courseware and adjust it for integration into their curricula. Or they may actually require their students to use the tutorial “as is,” providing students a way to learn PACE-sponsored software at various levels of capability, without taking up critical classroom time.

The use of PACE tools and technologies provide an application of the critical theory of the subject, but faculty members face an overwhelming challenge of inserting application into an already full syllabus. Reworking syllabi to include application of theory becomes less time-consuming when faculty can borrow from one another. Also, as a result of PACE Grants, some faculty have been able to create courseware specifically geared to the integration of PACE software into the curriculum. Examples of courseware on the repository are:

- *NX for Engineering Design*
- *Bent rod dynamics application using MSC.ADAMS*
- *Motion Application for NX*

To access the repository, simply go to the PACE website: www.pacepartners.org. Click on the secure access area and log in (if you need log-in information, please contact the PACE office at 586-947-2386). Once you are logged in, you can click on the Courseware Repository link on that page. This brings you to the main page of the repository where you can search for materials by software or course name/area.

The PACE Office is seeking tutorials or any other form of PACE-related courseware from faculty for inclusion in the PACE Courseware Repository. Interested faculty should contact Elaine Chapman-Moore (elaine.chapman-moore@gm.com).



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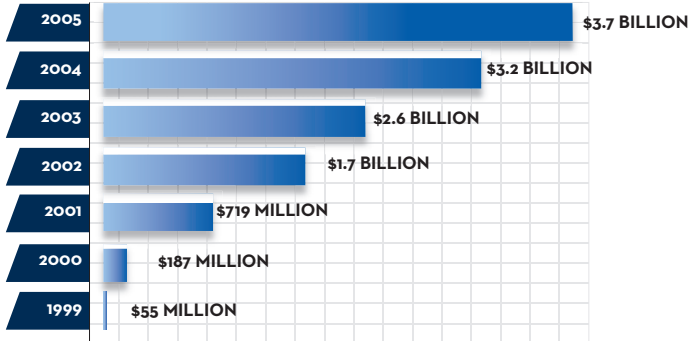
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PACE Cumulative Contributions to Date



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