The 21st Annual PACE Roundtable

Improving Efficiency through Innovation

Rendering of Penn State’s new Biobehavioral Health Building. Courtesy of Bohlin Cywinski Jackson

November 5-6, 2012

Department of Architectural Engineering

The Pennsylvania State University
Dear Friends of PACE,

In the discussion at this year’s Advisory Board meeting, the discussion moved from efficient use of technology to energy retrofit projects and how to improve integrative projects and the integrated classroom developments within the curriculum. The discussion was nicely summarized by Bob Grottenthaler with the comment, “We are all still working to improve efficiency.” The following comments quickly agreed with Bob’s observation. In this year’s Roundtable meeting, we will examine methods to keep moving forward while focusing on efficiency in new tools, processes, and industry drivers - how the industry is:

“Improving Efficiency through Innovation”

The PACE Roundtable has a mixed format that will include two break-out sessions in which critical industry issues will be discussed, a team collaboration exercise, and joint industry-student panel discussion.

Break-Out 1 & 2: Attendees will break into groups that examine specific topics in 1) sustainability and green building, 2) process innovation, and 3) technology applications.

Research Topics: Attendees will break into small groups with coupling industry members with a few students to allow the students to explore the ways they can capture one of the morning topics to research.

Panel discussion: Student Panel - Integrated Educational Experiences, moderated by Bob Holland

The main discussion topics, identified through The PACE Advisory Board, are:

<table>
<thead>
<tr>
<th>A. Supply Chain</th>
<th>B. Efficient Delivery of Services</th>
<th>C. Operations and Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session 1A:</strong> Integretating strategies and technologies</td>
<td><strong>Session 1B:</strong> Measuring Effective Collaboration</td>
<td><strong>Session 1C:</strong> Energy + BIM</td>
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<tr>
<td><strong>Session 2A:</strong> Modularization</td>
<td><strong>Session 2B:</strong> Efficient use of Integrated Design</td>
<td><strong>Session 2C:</strong> Model Handover</td>
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</tbody>
</table>

After the Roundtable, students will conduct research on the topics raised during the discussion and present their results at our PACE Research Seminar and Awards Banquet on April 15-16, 2013 at the Nittany Lion Inn. Please plan on attending this important event!

Sincerely,

Robert M. Leicht; Assistant Professor of Architectural Engineering
Director, the Partnership for Achieving Construction Excellence
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TUESDAY NOVEMBER 5TH - AGENDA

6:00 p.m.  **Roundtable Registration and Opening Reception**  
*Dean’s Hall 12*

7:00 p.m.  **Welcome Address and Banquet**  
*Dean’s Hall 12 – Professor Robert Leicht*
TUESDAY NOVEMBER 6TH—AGENDA

All events will be held in Deans Hall 2, unless otherwise specified.

7:30 a.m.  REGISTRATION AND CONTINENTAL BREAKFAST

8:30 a.m.  KICK-OFF

Professors Robert Leicht, David Riley, and John Messner  Update on PACE/AE

9:00 a.m.  PRESENTATION: INTEGRATED EDUCATIONAL EXPERIENCES

by Professor Bob Holland

9:15 a.m.  STUDENT PANEL DISCUSSION: INTEGRATED EDUCATIONAL EXPERIENCES

Moderated by Professor Robert Holland

10:30 a.m.  BREAK

10:45 a.m.  OVERVIEW OF SESSION I TOPICS

- MOVE TO BREAKOUT ROOMS

11:00 a.m.  BREAK-OUT SESSION I

1A. Supply Chain: Integrating Strategies and technologies

(Room 203)

1B. Delivery of Services: Efficient use of Integrated Design

(Room 204)

1C. O&M: Energy + BIM

(Room 205)
12:00 p.m.  
**LUNCH IN THE GARDENS**

1:00 pm  
**OVERVIEW OF SESSION II TOPICS**  
- **MOVE TO BREAKOUT ROOMS**

1:15 pm  
**BREAK-OUT SESSION II**

2A. Supply Chain: Modularization  
   (Room 203)

2B. Delivery of Services: Measuring Effective Collaboration (Room 204)

2C. O & M: Model Handover  
   (Room 205)

2:30 pm  
**AFTERNOON BREAK**

2:45 pm  
**FOCUS GROUP: STUDENT RESEARCH TOPICS**

3:30 pm  
**SUMMARY AND ADJOURN**
INDUSTRY SPONSORS

We would like to thank the following companies for sponsoring student attendance at this year’s PACE Roundtable:

Balfour Beatty Construction
Forrester Construction Company
Gilbane Building Company
James G. Davis Construction Corporation
McClure Company
Southland Industries
UPCOMING PACE EVENTS

Generations 10-20-30 Reunion

April 15, 2013

An annual event that provides an opportunity to meet with your fellow Penn State AE construction management alumni, the “PACE Generations 10-20-30 Reunion” highlights the classes of 1980, 1990 and 2000.

PACE Research Seminar

April 15-16, 2013

Held each spring, the research seminar combines presentations of research results and timely industry speakers for a diverse audience of building industry professionals.

PACE Advisory Board Meeting

June 7, 2013

Representatives from PACE Member companies meet to discuss key issues facing the building industry, and establish a research agenda for the next year.
PACE MEMBER BENEFITS

LEADER

An annual contribution to the PACE program of $20,000 or more.

Benefits: In addition to the benefits of a Partner, Leaders will be recognized as named sponsors of a distinctive student program in the construction management and/or AE curriculum.

PARTNER

An annual contribution to the PACE program of $10,000-$19,999.

Benefits: In addition to the benefits of an Associate, Partners will be invited to participate in an annual Internship Workshop held for AE undergraduate students in conjunction with the PACE Roundtable meeting.

ASSOCIATE

An annual contribution to the PACE program of $5,000-$9,999.

Benefits: In addition to the benefits of a Donor, Associates will be offered first right of refusal for a premium booth location at the AE career fair and will receive an annual invitation to provide a guest presentation in an AE course.

DONOR

An annual contribution to the PACE program of $1,000-$4,999.

Benefits: Free advertising in the form of the company name and logo included on the Active PACE Member list on the PACE Web site and an invitation to PACE Advisory Board Meeting where companies gain the ability to influence the direction of AE student research.
2012-2013 PACE CONTRIBUTORS

Thank you for your support!

LEADERS
Balfour Beatty Construction
James G. Davis Construction
Penn State Office of Physical Plant
Southland Industries

PARTNERS
Barton Malow
Benchmark Construction Company
Clark Construction Group
Forrester Construction Company
Truland Systems Corporation

ASSOCIATES
DPR Construction, Inc.
Gilbane Building Company
The Haskell Company

DONORS
Foreman Program and Construction Managers
Langan Engineering & Environmental Services
McClure Company
Massaro Corporation
Reynolds Construction Management
Trammel Crow Company
Graduate Student Research Topics

**COMPUTER INTEGRATED CONSTRUCTION**

**Steven Ayer (PhD)** Utilization of augmented reality to improve engineering education

**Fadi Castronovo (PhD)** BIM strategies for the advancement of sustainability in integrative design

**Sreelatha Chunduri (PhD)** Information exchanges for lighting systems

**Mohsen Foroughi (PhD)** Role of Supply Chain in Sustainable Building

**Ruoyun (Tony) Gao (MS)** BIM in Healthcare Facility Management

**Colleen Kasprzak (MS)** BIM Planning for Retrofit Projects

**Ralph Kreider (PhD)** An ontology of the implementation strategies of building information modeling

**Sonali Kumar (PhD)** Experience-based design review of healthcare facilities using interactive virtual prototypes

**Fangxiao Liu (PhD)** Integration of Change and Knowledge Management Processes in Energy Efficient Retrofit Projects

**Yifan Liu (PhD):** Using Game Engine for Building Design and Construction Visualization

**Russ Manning (PhD)** Delivery methods for healthcare facilities

**Atefeh Mohammadpour (PhD)** Relationships between energy efficiency and patient health in healthcare facilities

**Miaomiao Niu (MS)** Information and Communication Technologies for Building Energy Audit

**Eric Nulton (MS)** Legal aspects of BIM implementation

**Ashwin Ramesh (MS)** Quality assurance and control planning for facility information handover

**Xiao Yuan (PhD):** Cyber-Physical Systems: Key features and applications

**Ying Zhang (MS)** Visualized trade space exploration for advanced energy retrofit building systems

**Lean and Green**

**Fatma Idil Akcetin (MS)** Impacts of green construction on safety performance

**Tabitha Sprau Coulter (PhD)** Energy audit process and decision support

**S. Safa Eslambolchi (PhD)** Owner Construction Safety Benchmarking

**Bryan Franz (PhD)** Evaluating the selection process of integrated project teams

**Pelin Gultekin (PhD)** Process Modeling and Decision Support System for Energy Efficient Retrofits

**Li Jiang (PhD)** Modeling for constructability

**Gretchen Macht (PhD)** Human metric based assignment of high-performance design teams

**Hector Velez (MS):** Impacts of Collaborative Team practices on project communication

**Jared Zoller (MS):** Costing Methodology for Energy Conservation Measures

**SUSTAINABLE ENERGY AND CONSTRUCTION**

**Indranil Roy: (MS)** Smart Grid Technology Roadmap

**Kelly Sprehn: (PhD):** The impact of cognitive style on the design of building energy audit reports

**Tolga Tutar: (MS)** Impact of Plug Loads on Commercial Office Building Energy Use

**Yishu Wang (MS):** Impact of large format PV modules on the installation costs of utility scale solar projects

**FuJu Wu (PhD):** Value stream mapping of the residential energy efficiency marketplace
# ROUNDTABLE EVALUATION FORM

*Please complete the following questionnaire in order to help us plan future PACE activities.*

<table>
<thead>
<tr>
<th>Circle appropriate response</th>
<th>Poor</th>
<th>Excellent</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seminar Content</strong></td>
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<tr>
<td>Overall quality of sessions</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Quality of discussion</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Relevance of subject matter</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>Seminar Format</strong></td>
<td></td>
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</tr>
<tr>
<td>Length of sessions</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Breakout sessions</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>Student / Industry interaction</td>
<td>1 2 3 4 5</td>
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<tr>
<td><strong>Organization</strong></td>
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<tr>
<td>General organization</td>
<td>1</td>
<td>2 3 4 5</td>
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<tr>
<td>Clarity of handout materials</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
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<tr>
<td>Food &amp; beverage service</td>
<td>1</td>
<td>2 3 4 5</td>
<td></td>
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List one topic for student research that is most critical to your business:

____________________________________________________________________________________
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Please give one suggestion to improve this roundtable:

____________________________________________________________________________________
____________________________________________________________________________________
____________________________________________________________________________________
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If you are interested in becoming more involved with the PACE organization, please leave a business card with the word PACE written on the back.

**PLEASE RETURN THIS FORM AT THE REGISTRATION TABLE**