2011 ANNUAL REPORT

DRIVING **PREDICTABLE** BUSINESS OUTCOMES IN A **DYNAMIC GLOBAL MARKET**

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The Construction Industry Institute, based at The University of Texas at Austin, is a consortium of more than 100 leading owner, engineering-contractor, and supplier organizations from both the public and private arenas. These organizations work together to enhance the business effectiveness and sustainability of the capital facility life cycle through CII research, educational initiatives, and industry alliances. A research organization creating a wealth of expert knowledge and practical information, CII provides vital leadership to the engineering and construction industry.

PURPOSE

The purpose of CII is to measurably improve the delivery of capital facilities.

VISION

CII is a leader in the construction industry, renowned for creating and implementing research-based knowledge that leads to measurable improvements in business effectiveness and sustainability in the delivery of capital facilities and increased business success for member organizations. Industry leaders are active in CII and their participation in CII leads to breakthroughs in the life cycle value of capital facilities.

MISSION

Through research-based, member-driven knowledge creation, dissemination and implementation, development of best practices and assessment of the impact of resulting improvements, CII creates global, competitive, and market advantages for its members. Through CII, member organizations and their employees cooperatively engage with academics in the creation of knowledge, including CII Best Practices. This collaborative effort adds value to member organizations and academia, and supports the professional development of employees, improving the entire industry. CII provides a forum for academics to discuss and investigate, in partnership with industry leaders, the most significant opportunities for industry improvement.

FOUR CORE KNOWLEDGE PROCESSES

Having begun in 1983 with 28 charter members who shared the CII vision, the institute is now recognized in the engineering and construction industry as the knowledge leader for project success. CII has four core knowledge processes: creation, dissemination, assessment, and management.

Knowledge Creation: CII research teams—groups that include academic investigators and employees of both owner and contractor organizations—generate best practices and breakthroughs for the construction industry. CII Benchmarking & Metrics processes create additional knowledge, producing ongoing applied research that establishes industry norms for construction performance.

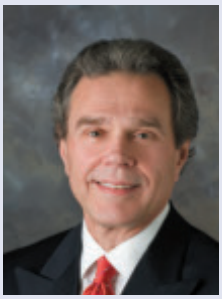
Knowledge Dissemination: Knowledge created by CII is disseminated to institute members and to other organizations and individuals in the engineering and construction industry. CII distributes this knowledge through research publications, implementation guides, educational materials, workshops, and conferences.

Knowledge Assessment: CII Benchmarking & Metrics collects, analyzes, and assesses the impact of CII knowledge as it is initially implemented and integrated into member organizations' work processes. Once proven through member benchmarking, this knowledge is incorporated into the capital project work processes of the industry at large.

Knowledge Management: Since 1983, CII has produced over 475 research documents and hundreds of other presentations and publications. Knowledge management adds value to CII by organizing and facilitating access to CII's extensive body of knowledge. By establishing communities of practice—virtual interest groups that share and develop knowledge—CII knowledge management provides another way to advance the institute's mission.

Through these knowledge processes, CII advances human knowledge and fulfills its mission of enhancing the business effectiveness, sustainability, and global competitiveness of CII members.

Remarks from the **Chairman**



SETTING THE STAGE FOR NEW OPPORTUNITIES

With this final chance to address you as chairman, I would like to emphasize some of the new directions we focused on in 2011, since I believe they will make a difference for the better at CII for years to come.

First and foremost, CII staff and leadership worked closely to maintain a culture of fiscal diligence, recognizing that we must be flexible, quick to respond to changes, and committed to balancing expenses and revenues. In the face of unpredictable economic challenges, CII maintained its efficiency and its accountability to cost at all levels of the organization. I am pleased to report that CII did very well in 2011, having expanded the membership by 14 percent. I am even happier to say that, because of the passion and commitment of the Membership Committee, our membership continues to grow. Because this growth provides the capital to expand research and implement our strategic focus for the future, a larger CII membership means so much more than simply a longer list of members. It means growth and improvement for the industry, and a more stable economy, at home and abroad.

It is imperative that CII remain relevant to its members and to the industry. As we look at the current list of CII members, we see that many are globally engaged. To stay relevant, we must support and leverage that wealth of global experience for the collective good of our core mission. While there was a time when we understandably wanted to insulate CII from the rest of the world, we now must support and learn from the CII members who actively pursue and manage global businesses. We are currently completing a revision of the CII Strategic Plan, with particular strategic focus on globalization. In support of this effort, we have supported the development of the first global CII-modeled initiative; we now expect to see it launched in Saudi Arabia in 2012.

Another part of our strategic focus on relevance is to expand our perspective by including members of more diverse market sectors within CII. In the past, some of these sectors have been under-represented, or even ignored. Throughout 2011, we planned a conscious effort to create a more diverse membership profile. This expansion into other industry sectors will allow us to learn the best practices used in other sectors. It will also help us engage representatives from these other sectors in the CII model, which will have a positive impact on our research and benchmarking and metrics data. Such an expansion of our membership will expand our knowledge base and benefit all sectors.

A powerful example of a prime market segment is health care—one of the fastest-growing industries in America. Two of our newest members, the Veterans Administration and Department of Defense, along with our longtime member, Kaiser Permanente, will become key drivers of a CII-led effort to create a benchmarking model for health capital projects. As the health care benchmarking database grows, the more it can be leveraged to engage this growing market sector. This initiative not only helps our health care members, but it helps diversify our research, attracts new members, and broadens the perspectives of other CII members.

Another objective this past year has been a renewed effort to stay relevant by improving collaboration with other industry-improvement organizations. Our alliances with Fiatech and CMAA are great examples of that renewed and expanded collaboration in action. We will not survive without seeking and taking advantage of opportunities to support our mission through active engagement with other like-minded groups. Because creating alliances and collaborating with others widens our perspective and leverages resources, it increases member value.

The last element of our push for renewed relevance is a heightened awareness that we are a member-driven organization. We need to continue to engage with and listen to the collective voice of our membership. We must understand what our members value most in their relationships with CII.

CII continues to offer its members a wealth of career development opportunities in the form of powerful and engaged committees, meaningful research teams, and diverse programs and that serve many elements of member organizations. CII's combination of researched knowledge and opportunities for professional growth forms a solid foundation upon which we can build and renew our own organizations. By engaging, implementing, measuring, and staying disciplined to meet the challenge of CII membership, we will drive predictable outcomes in our respective businesses. Driving predictable outcomes in a dynamic global market continues to be our biggest industry challenge and, yet, it is CII's greatest opportunity for achievement in the years ahead.

In closing, I would like to thank you all; it has been a wonderful experience to serve as your chairman this past year. CII is a remarkable collection of bright minds and energetic spirits—members who care deeply about the future of construction. I am proud and humbled to have had a chance to learn so much about who we are and to have had a hand in developing who we can become. Thank you!

Rick Haller

GAINING GROUND AND MOVING FORWARD

To start, I want to recognize the Herculean effort of the 2011 Membership Committee. 2010 ended with CII's membership below 100, but starting in January new members joined each and every month throughout 2011. By December, this committee's hard work had helped us reach a record 121 members. Like most parts of a corporate infrastructure, this group operates in the background and only draws attention when there is a problem. I want to extend a big thank you to CII's 2011 Membership Committee, and to its chairs, Scott Haven of SABIC and Bernie Fedak of Kvaerner North American Construction. This remarkable gain in membership energized the whole of CII in 2011.

CII's knowledge creation efforts had a strong showing in 2011. Five research projects reported out to the membership at the annual conference in Chicago in July: Construction Productivity Research Program (Phase III); Optimizing Jobsite Organization; Enhanced Work Packaging, Design through Workface Execution; Innovative Project Delivery Processes; and Reimbursable Contracts. We were able to launch one research team more than planned and, by the end of the year, CII had seven projects scheduled for presentation at the 2012 conference in Baltimore, and another seven in progress and scheduled to report out in Orlando in 2013. Because of the strength of CII's membership, eight—and possibly, nine—new research teams will be launched this spring.

The Breakthrough Strategy Committee (BTSC) also had a year of robust activity. As part of its charge to identify leading edge opportunities for step changes in capital project delivery performance, the committee produced four white papers, and initiated five new ones. The committee also sponsored an innovative technology corner at the annual conference, demonstrating to attendees how some of the newest technologies can be used for improved project performance. Among these breakthrough technologies were CAD for the iPad, holographic printing, and the quad-rotor helicopter.

In addition to our robust knowledge creation, our other core knowledge processes— knowledge dissemination, knowledge assessment, and knowledge management—all produced outstanding work in 2011. Among its other accomplishments, the Implementation Strategy Committee oversaw the revision of the *CII Guide to Best Practices* and sponsored new research on the vital role that support of the implementation champion plays in successful implementation. The Benchmarking & Metrics Committee launched its landmark Performance Assessment System, a resource with a first-of-its-kind online data mining engine. The Knowledge Management Committee introduced a new CII Best Practice, updated a best practice tool, and added two CII Communities of Practice to CII's virtual domain.

These accomplishments reflect our commitment to maintaining CII's relevance and quality, the two fundamentals of the CII purpose—to measurably improve the delivery of capital projects. The initial results of our 2011 member survey, tabulated in January 2012, indicate that our continuing efforts to increase CII's relevance and improve our quality were effective:

- Ninety-four percent of the member companies agree or strongly agree that CII research is relevant.
- Ninety-one percent of the member companies agree or strongly agree that CII research is of high quality.
- Ninety percent of member companies agree or strongly agree that CII research topics reflect challenging and high-potential issues of concern to the industry.

It is gratifying to see in the data that, through the leadership and guidance of the membership, we are staying true to our founding model. Our detailed analysis of this survey is just beginning and, once it is complete, we will communicate the results to the Board of Advisors.

Each year, the Strategic Planning Committee (SPC) reviews the CII Strategic Plan to determine whether CII is on the right road, given the industry environment. The impacts of a couple of mega-events in 2011—the earthquake and tsunami in Japan, and the uprisings in the Middle East—sharpened the sense that we must begin to think more globally in order to maintain the institute's long-term relevance. Additionally, the SPC's annual review suggested that CII could bring significant additional value to existing members if our membership demographics were more representative of all industry sectors.

Since we know that CII Best Practices and research findings definitively improve the safety, cost, schedule, quality, and predictability of our capital projects, it follows that CII can improve the industry significantly by disseminating research findings and best practices more broadly to leaders in other geographies and industry sectors. In turn, this wider embrace of other areas of the market will broaden and deepen CII's body of knowledge and increase the institute's value to the current membership. The leaders of the standing committees and CII staff have already met in 2012 and have begun to proactively address these SPC recommendations to globalize and diversify.

You will note that, throughout this report, SPC members have submitted compelling accounts of how their companies use CII Best Practices to make their projects predictable and profitable. Whether the projects they describe are in North America, Thailand, or China, these success stories reinforce the findings of our 2011 *Value of Best Practices* report: the proper implementation of CII Best Practices improves safety, cost, schedule, and quality.

2011 was a banner year for CII, and 2012 looks to be even better. It is your participation and guidance that has made CII an industry authority; it is your continued involvement that will allow it to endure as an industry leader. As you read the 2011 annual report, please take pride in **your** accomplishments. Thank you.

Wayne Crew

CII **Membership** List

OWNERS

Abbott
Air Products and Chemicals, Inc.
Ameren Corporation
American Transmission Company LLC
Anheuser-Busch InBev
Aramco Services Company
ArcelorMittal
Archer Daniels Midland Company
Architect of the Capitol
Barrick Gold Corporation
BP America, Inc.
Bristol-Myers Squibb Company
Cameco Corporation
Cargill, Inc.
Chevron
CITGO Petroleum Corporation
ConocoPhillips
The Dow Chemical Company
DTE Energy
DuPont
Eastman Chemical Company
Ecopetrol S.A.
Eli Lilly and Company
Eskom Holdings Limited
ExxonMobil Corporation
General Electric Company
General Motors Company
GlaxoSmithKline
Hovensa, LLC
International Paper
Irving Oil Limited
Kaiser Permanente
Kinross Gold Corporation
Koch Industries, Inc.
LyondellBasell
Marathon Oil Corporation
National Aeronautics & Space Administration
NOVA Chemicals Corporation
Occidental Petroleum Corporation
Ontario Power Generation
Petroleo Brasileiro S/A - Petrobras
Praxair, Inc.
The Procter & Gamble Company
SABIC - Saudi Basic Industries Corporation
Sasol Technology
Shell Global Solutions US Inc.
Smithsonian Institution
Southern Company
Statoil ASA
Teck Resources Limited
Tennessee Valley Authority
TransCanada Corporation
U.S. Army Corps of Engineers
U.S. Department of Commerce/NIST/EL
U.S. Department of Defense/ Tricare Management Activity
U.S. Department of Energy
U.S. Department of Health & Human Services
U.S. Department of State
U.S. Department of Veterans Affairs
U.S. General Services Administration

CONTRACTORS

Alstom Power Inc.
AMEC, Inc.
Aveng Group
AZCO INC.
Baker Concrete Construction Inc.
Bateman Engineering N.V.
Bechtel Group, Inc.
Bentley Systems Inc.
BIS Industrial Services Inc.
Black & Veatch
Burns & McDonnell
CB&I
CCC Group, Inc.
CDI Engineering Solutions
CH2M HILL
Coreworx Inc.
CSA Group
Day & Zimmermann
Dresser-Rand Company
Emerson Process Management
ENGlobal Corporation
eProject Management, LLC
Faithful+Gould
Flad & Associates
Flint Energy Services Ltd.
Fluor Corporation
Foster Wheeler USA Corporation
Gross Mechanical Contractors, Inc.
GS Engineering & Construction Corporation
Hargrove Engineers + Constructors
Hilti Corporation
Industrial Contractors, Inc.
Innovative Design Engineering Associates, Inc.
Jacobs
JMJ Associates LLP
JV Driver Projects Inc.
KBR
Kvaerner North American Construction, Inc.
Lauren Engineers & Constructors, Inc.
M. A. Mortenson Company
Matrix Service Company
McDermott International, Inc.
Midwest Steel, Inc.
Mustang
Parsons
Pathfinder LLC
Quality Execution, Inc.
S&B Engineers and Constructors, Ltd.
The Shaw Group Inc.
Siemens Energy, Inc.
SKEC USA, Inc.
SNC-Lavalin Inc.
SOG - Óleo e Gás S/A - SETAL
Technip
URS Corporation
Victaulic Company
Walbridge
Wanzek Construction, Inc.
WorleyParsons
Yates Construction
Zachry Holdings, Inc.
Zurich

RESEARCH COMMITTEE

CII research follows a process guided by the CII Research Committee, a group composed of sixteen senior industry representatives and three leading academic researchers. Operating on a yearly cycle, the committee has a minimum of four regularly scheduled meetings. At the first meeting, the committee implements its research topic generation process. In this meeting, committee members identify and develop key engineering and construction issues confronting the capital facilities delivery industry. Once the new topics have been developed, the committee solicits input from the CII Board of Advisors to help prioritize them. When the new topic slate has been generated, the committee then allocates CII resources to the universities chosen to perform the research.

To choose the appropriate universities, the committee requests that all interested academics submit their qualifications for conducting the research. Upon selection of the principal academic investigators, the committee sponsors a 15- to 20-member industry-led research team for each topic—staffed by CII member organization employees—to perform the research with the academics. The committee annually initiates approximately eight new research teams, typically from three categories of research: 1) best practice/core improvement; 2) current and emerging trends; and 3) strategic and future-oriented topics. These teams normally work for two years to complete the necessary research, prepare publications documenting their findings, and report out at CII's annual conference.

The following five research teams reported their findings at the 2011 CII Annual Conference:

1. Craft Productivity Research Program, Phase III (The University of Texas at Austin, University of Waterloo, and University of Kentucky)
2. Reimbursable Contracts (The University of Texas at Austin/ Illinois Institute of Technology and The Pennsylvania State University)
3. Enhanced Work Packaging: Design through Workface Execution (The University of Texas at Austin)
4. Optimizing Jobsite Organization (The University of Texas at Austin)
5. Innovative Project Delivery Processes—Is There a Better Way? (University of California at Berkeley and University of Washington).

After each conference, the Research Committee and the research staff engage with the teams that are midway through the expected two-year research duration. Research staff members schedule meetings with individual teams to follow up on any issues identified during the meeting. Since these teams are scheduled to present at the conference in the following year, these visits are important for helping them develop their publications and conference presentations. The teams that will be presenting at the 2012 CII Annual Conference are the following:

1. Construction Productivity Program—Phase IV (The University of Texas at Austin, University of Waterloo, and The University of Kentucky)
2. Modularization (The University of Texas at Austin)
3. Driving to Zero with Safety Leading Indicators (The University of Florida and the University of Colorado)
4. Managing Indirect Costs (Iowa State University and Michigan State University)
5. Methods for Dealing with Uncertainty—Applying Probabilistic Controls in Construction (University of Colorado)
6. Project Management Skills of the Future (Arizona State University)
7. Project Definition Rating Index (PDRI)–Summary of PDRI Research.

As these teams entered their second year of research in June of 2011, CII launched six new teams. The Research Committee and research staff held a virtual meeting with these teams after the 2011 conference. In 2011, as part of the Research Committee's improvements to the CII research process, all of the teams' academics and industry members were asked to jointly develop their respective research proposals, starting at their June kickoff meetings. Thus, the purpose of the virtual meeting in the early fall was to approve each team's proposal. These newer teams will present their findings at the 2013 CII Annual Conference. They are as follows:

1. Construction Productivity Program—Phase V (The University of Texas at Austin, University of Waterloo, and The University of Kentucky)
2. Knowledge Transfer from the Near-retirement Generation to the Next Generation (The University of Texas at Austin)
3. Workface Planning—From Design through Execution (continuation of the Enhanced Work Packaging study) (The University of Texas at Austin)
4. Quantifying the Impact of Change, from Project Authorization to Start-up (University of California at Berkeley and North Carolina State University)
5. Improving the Accuracy of Project Outcome Predictions (University of Alabama)
6. Strategies for HSE Hazard Recognition (University of Colorado and Virginia Tech)
7. Deploying Best Practices in Developing Countries (Virginia Tech).

The improvements to the research process that the Research Committee initiated in 2010 and successfully implemented in 2011 have streamlined the efforts of the committee and CII research staff. As discussed above, these included improvements to the topic approval and award schedules, to the selection of academics, and to the communication of CII research standards. Most importantly, the new requirement that principal investigators work with industry team members to formulate research proposals has increased the time available for research and improved team alignment. While CII stands confident in its unique approach to research and its ability to deliver valuable applied research findings to industry, the committee will continue its efforts to enhance member value and contribute to the advancement of the industry.

DRIVING PREDICTABILITY AT MUSTANG

CII BEST PRACTICE: IMPLEMENTATION OF CII RESEARCH

John Dalton,
Executive Vice President

At Mustang, we support industry use of CII Best Practices through our active involvement in CII research, committee work, and annual conference activities. We have incorporated many of the best practices into our Global Project Delivery Baseline, the set of processes Mustang follows to ensure the quality, consistency, and predictability of our projects around the world. Risk Management, Safety, Constructability, Alignment, PDRI, Benchmarking, and Lessons Learned are among the CI Best Practices that Mustang has incorporated into our baseline processes.

A number of these best practices are best applied to particular projects and circumstances, but we have come to the realization that the IPRA* tool and the PDRI** consistently improve our project performance by allowing us to properly assess and manage our efforts to have more predictable results. Additionally, Mustang's myLESSONS process captures and institutionalizes continuous improvement ideas and organizational learning. This proactive lessons learned program ensures that our project execution processes and procedures are continually refreshed to remain effective and value-adding. We have seen substantial benefit from the program's ability to identify issues before they become problems. Our best results have been in areas such as stakeholder alignment, scheduling, communications, cost performance, team cooperation, and procedural consistency.

Mustang employees study a 3D CAD drawing before a constructability review. Whether in the U.S., the Middle East, India, or Africa, constructability reviews are a part of the front end planning effort for all Mustang projects.

Our front end planning process incorporates the constructability process on all our projects. We tailor constructability to meet specific project needs, conducting multiple-day workshops with project teams and comprehensively using discipline-specific checklists. We have found that, because they enhance discussions about project approaches, tools such as workshops and checklists have improved our overall design effectiveness. Another facet of the constructability process is performing heavy lift studies. These studies evaluate and identify the safest and most cost effective means of placing large equipment in a facility. Additionally, many clients now request specific constructability process facilitators for their projects.

Implementing CII Safety Best Practices has led to improved and predictable safety performance on our projects. Our most recent efforts at implementing these best practices on some of our global projects have been remarkably effective. And the resulting culture change has improved our overall safety performance. I am proud to say that Mustang's TRIR has improved 45 percent over a two-year period.

These examples make clear why Mustang depends on the tools we have developed using CII resources; they are key to ensuring execution certainty and achieving predictable business outcomes.

* Implementation Resource 181-2, *International Project Risk Assessment*

** Implementation Resource 113-2, *Project Definition Rating Index – Industrial Projects*

Knowledge **Creation**

ACADEMIC COMMITTEE

As CII's primary forum for the academic community, the Academic Committee (AC) has a number of duties: designating subject matter experts to support the research process; identifying and grooming new academic researchers for success at CII; and helping ensure that CII research is competently done within the classic research framework. In 2011, the committee saw a change in its leadership, with Edd Gibson of Arizona State University stepping down as chair. Taking his place was Carl Haas of Waterloo University. Paul Goodrum of the University of Kentucky assumed the newly formed position of vice-chair. Jochen Teizer of the Georgia Institute of Technology also stepped in to fill the position of junior chair, formerly held by Carlos Caldas of The University of Texas at Austin.

In 2011, the committee once again sponsored the annual conference poster competition. This yearly contest benefits everyone involved: it gives graduate students working at schools that do not receive CII funding exposure to the CII research model, and it allows conference participants the chance to see valuable non-CII sponsored research. The 2011 competition drew more than 19 posters submissions, of which 10 were selected for conference presentation. The award for best poster went to Pingbo Tang of Western Michigan University. His poster was titled, *Formalization and Characterization of Workflows for Extracting Bridge Surveying Goals from Laser-scanned Data*. The AC also promoted awareness of CII-sponsored research in 2011 by organizing a specific CII research track at the Canadian Society of Civil Engineers 2011 Annual Conference and the Third International/Ninth Construction Specialty Conference, both in Ottawa, Ontario.

In support of CII's ongoing effort to reach out to the academic community, the committee conducted two webinars to educate researchers interested in CII: the first seminar was titled, *How to Participate in CII*; and the second was called, *The New CII RFQ & Proposal Process*. The subcommittee on promoting the academic use of CII products in the classroom held its organizational meeting in December of 2011. Another AC subcommittee, charged with overseeing the development of the AC web page on the CII website, worked throughout the year to enhance and expand the committee's communication with the academic community.

BREAKTHROUGH STRATEGY COMMITTEE

In 2011, the CII Breakthrough Strategy Committee (BTSC)—a group charged with keeping CII informed and up to date on innovations and advances in the industry—authored the following white papers:

- *Data Fusion*
- *Enhancing Project Team Building through Social Networking*
- *Assembly Drawings*
- *Automatic Safety Checking of Models and Schedules.*

The BTSC presented these white papers at the Fall 2011 CII Research Committee meeting for consideration for the 2012 CII research slate. Two of the white papers the BTSC presented to the Research Committee in 2010 provided the basis for the following 2011 research topics:

- Metrics for Assessing Emerging Information and Communications Technologies
- Construction Robotics – What is the Future?

In addition to currently developing four more white papers, the committee will start four more as the 2012 progresses.

To stimulate new ideas and connections, the BTSC continues to begin all of its meetings with innovation moments, and still schedules regular creativity visits/presentations for its members. In 2011, the committee made creativity visits to the following organizations:

- New Jersey Institute of Technology – Newark, N
  - Interdisciplinary Design Studio
  - Idea Factory
  - Economic Development Centers
- Accenture – Chicago, IL
  - Next Generation Infrastructure (including Cloud Computing)
  - Engineering, Project, and Data Management
- Honeywell ACS Labs – Minneapolis, MN
  - Situation Awareness
  - Abnormal Situation Management

In 2011, the committee continued its campaign to increase awareness of the BTSC to the CII membership. Throughout the year, the campaign, called BTSC 2.0, involved the following activities:

- Aivars Krumins presented an overview of the BTSC's activities at the Fall BOA Meeting.
- The committee demonstrated the latest applications of RFID, robotics, photogrammetry, 3D modeling, head-mounted computing, and laser scanning at the BTSC Technology Corner at the 2011 CII Annual Conference in Chicago. The display was later featured in a CII eNews article, and was cited in an online blog for 3D Systems
- John Fish made a presentation on the BTSC at the October FIATECH meeting.

Since 2010, the BTSC has added four new members and one graduate assistant:

- Tad Fry – Anheuser-Busch InBev
- Phillip Hamilton – Hargrove Engineers and Constructors
- David MacNeel – Baker Concrete
- Fran Rabuck – Bentley Systems
- Jeul Yung Kim – The University of Texas at Austin (GRA)

Michelle Kayon and Aivars Krumins will continue to serve as co-chairs for the BTSC in 2012.

IMPLEMENTATION STRATEGY COMMITTEE

To fulfill its mission of promoting the implementation of CII knowledge and work processes, the Implementation Strategy Committee (ISC) designs activities and hands-on educational opportunities for CII members.

Each year, the ISC conducts two Performance Improvement Workshops (PIWs)—one in the spring, and one in the fall—to enable members to hone their best practice implementation skills and to learn about new CII products. These workshops also provide networking opportunities for ongoing implementation support. In 2011, the spring PIW was held in Jersey City, New Jersey, and the fall workshop took place in Houston, Texas. Both were highly successful, with a combined attendance of 152 participants.

In addition to developing and conducting the PIWs, the ISC provides mentoring on request to participants in the CII Implementation Champions program. The committee also facilitates the CII Implementation website. The website details CII implementation planning, notifies members of upcoming ISC events, gives contact information for ISC support, and provides website links to products and conference presentations.

Committee members worked individually in 2011 to contribute three feature articles to the monthly CII *eNews*: one addressed CII research on craft productivity; another discussed quality management resources; and the last explored CII change management tools and practices. ISC members also continued to help validate emerging industry practices through the Program for Early Implementation.

Each year, the ISC chooses the recipients of the CII Outstanding Implementer Award. At the 2011 CII Annual Conference, CII presented this award to two deserving recipients: David Bullard of Ameren and William C. Beck of WorleyParsons. The award recognizes outstanding achievement in the implementation of CII practices by individuals in member organizations.

Bullard identifies ways to bring CII Best Practices and products into Ameren's capital delivery process, often piloting the practices and always seeking feedback for the best possible implementation. On his advice, Ameren has made the use of CII Front End Planning Best Practices a strategic objective in its five-year business plan for its power operations division. Using the Project Definition Rating Index, Ameren project teams are now better able to ask the stage-appropriate questions that simplify and expedite subsequent reviews.

On one complicated, critical-path outage project, Bullard piloted a formal CII-based constructability review that helped the team execute the work without major delays. As part of this effort, he developed an internal site for storing and tracking constructability efforts, results, and lessons learned. He also recommended that Ameren use Implementation Resource 250-3, *Sustainable Construction for Industrial Construction*, for its sustainability planning and maturity evaluation processes. His efforts have also prompted the project engineering group to increase its 2014 engineer participation goals from 25 percent to 90 percent.

Beck's familiarity with the CII Knowledge Structure and with CII products ensures that WorleyParsons is able to incorporate the most up-to-date CII processes and tools into its systems and work processes. As WorleyParsons has developed and continuously improved its core Enterprise Management System (EMS), he has utilized CII practices—either directly or as references—to prepare operating procedures and documents. This has resulted in the validation of existing procedures and, thus, made it unnecessary to prepare new procedures.

Beck has served as planner and moderator for several PIWs, always bringing immense value to the workshop audience. PIW attendees consistently rate his sessions as excellent, citing his insight and industry know-how. He also participated in the production of several ISC videos on implementing CII practices. These videos have been popular at PIWs and at annual conferences.

In 2011, the committee sponsored a revision of Implementation Resource 166-3, *CII Best Practices Guide: Improving Project Performance*. This publication is designed primarily to help CII Implementation Champions and others lead CII Best Practices implementation. It provides information to anyone interested in learning more about implementing CII Best Practices. It also is a resource for planning and evaluating the implementation of individual best practices.

The ISC delivered a popular presentation at the 2011 CII Annual Conference titled, "Reliable Business Outcomes Depend on Successful Best Practices Implementation." This presentation briefly revisited the ABC Company, the fictional company whose project execution has, for three years now, been hit-and-miss. The presenters discussed why ABC has experienced varying degrees of success in its deployment of the "CII Stuff" in the box. They looked at how members could make better use of the recently updated *CII Best Practices Guide*, and its recently improved professional development resources (e.g., online education). The implementation session drew a large audience. In the session, the panel used case histories of CII Front End Planning and Partnering Best Practices implementation to show how owners and contractors have used these practices to improve their construction safety, cost, and/or schedule results.

To further benefit implementers of CII practices, the committee also oversees the Implementation Assistant tool. This online tool allows users to create implementation plans based on the guidance of Implementation Resource 246-2, *The Implementation Planning Model: Steps to Success*. With the tool, implementers can initiate and track implementation plans, establish milestones, and use metrics for effective implementation. Also, managers of implementation initiatives using this tool can monitor the progress of their efforts.

The ISC completed draft-level work on a new investigation, *Support for the Implementation Champion*, addressing how familiarity with CII content and corporate geographic deployment both affect implementation success. Scheduled for publication in 2012, this research will provide customized guidance to diverse organizations. This publication will present the culmination of extensive dialogue with the membership at the Fall 2011 Board of Advisors meeting.

DRIVING PREDICTABILITY AT OPG

CII BEST PRACTICE: FRONT END PLANNING

Mark Arnone,
Vice President
Refurbishment Execution

CII Front End Planning research determined long ago that inadequate pre-project planning is one of the most common causes of capital project failure because it leads to incomplete scope definition during the early stages of project development. Because Ontario Power Generation (OPG) has been incorporating CII Front End Planning Best Practices into our business processes for over a decade now, we approached our 2011 refurbishment of our Darlington plant with a keen awareness of this pitfall.

First, we instituted a pre-project planning process to assess the feasibility and viability of the refurbishment. Once confident that it was indeed worthwhile, we drafted a project charter. Next we performed a high-level scope definition to guide the project team going forward, followed by the initiation of a long front end planning timeframe. This entire process has benefited OPG and the refurbishment program by helping us quickly establish alignment on objectives with new program staff and with people in other parts of the organization.

OPG also recently used CII research to implement a gating process for the development of several major projects, including the Darlington refurbishment. The refurbishment program also now uses a gated process to ensure that its subsidiary projects are adequately prepared before they proceed through the different project phases. By guaranteeing each project's systematic, step-wise progress, this process inspires the confidence necessary for maintaining our funding and helps us stay on schedule. OPG's refurbishment program also depends on CII's PDRI for infrastructure projects* to establish definition baselines for our subsidiary projects; and, as each project proceeds, we further use the index to track their readiness for execution.

Looking ahead, OPG is optimistic about meeting the challenges of energy production. As we move forward, we will continue to depend on the research-based guidance of CII Best Practices to help us deliver predictable results, even in face of expected market volatilities.

* Implementation Resource 268-2, *Project Definition Rating Index – Infrastructure Projects*

Recognizing that incomplete scope definition is a major cause of capital project failure, Ontario Power Generation (OPG) used CII's Project Definition Rating Index for infrastructure projects on its refurbishment of its Darlington nuclear power plant. OPG has been using this and other CII Front End Planning Best Practices for over a decade to ensure project success.

PROFESSIONAL DEVELOPMENT COMMITTEE

The mission of the Professional Development Committee (PDC) is to enable implementation of CII research, plan future educational opportunities for CII members, create outreach programs, evaluate trends in industry education, and develop new educational vehicles.

At the beginning of 2011, CII held its sixth offering of the highly rated CII Executive Leadership Program, jointly run by CII and the McCombs School of Business at The University of Texas at Austin. The program—a two-week, in-residence, educational experience—provides in-depth knowledge on a range of leadership skills necessary for the top capital facilities positions of the future. The program focuses on enhancing executive leadership capabilities and strategic business skills, benchmarking best practices, and building collaborative owner-contractor and peer-to-peer relationships across the industry.

The PDC's Registered Education Provider Program, now in its sixth year, provides CII members and the general public with a qualified corps of instructors, available to teach CII principles and methods at member organization facilities and other venues. In addition to its classroom-based programs, the committee oversees the CII online education program. Members and non-members alike can access the CII curriculum and benefit from fully interactive and professionally developed online courses. The current online curriculum covers partnering, development and alignment of project objectives, constructability, construction safety, planning for start-up, pre-project planning, and scope control and change management.

The PDC also facilitates an online resource plan—the CII Professional Development Continuum—to help organizations plan the career development of new project managers. The continuum illustrates how CII publications, education modules, online courses, web seminars, and instructor-led courses address competency areas across the project life cycle.

In 2011, the PDC recognized faculty and higher education programs with two awards. The CII Distinguished Professor Award recognizes full-time or adjunct faculty who incorporate published CII research findings into their courses. The 2011 awardees were Professors David E. Gunderson (Washington University), Fernanda L. Leite (The University of Texas at Austin), and Jochen Teizer (Georgia Institute of Technology). The second award, the CII Curriculum Partner Program Award, recognizes higher education programs that incorporate published CII research findings into their curricula. The 2011 recipient of this award is the College of Engineering and the College of Architecture at Georgia Institute of Technology.

At the 2011 CII Annual Conference, the PDC recognized Hargrove Engineers + Constructors, Inc. with an award for outstanding achievement in professional development. Hargrove implemented an innovative and effective professional development program based on CII research. In the program, employees could present or participate in weekly two-hour training webinars, developed and broadcast by Hargrove. Drawing on the management concepts and enabling technologies discussed in CII research on virtual teams, the company created a network of interconnected and integrated local offices.

Every week at Hargrove, project managers and function leaders took turns studying, developing materials, and presenting CII research. Each agenda had a safety topic, a CII resource presentation, and some form of written test—sometimes even a crossword puzzle. Test scores, attendance, and number of completed evaluations were the program's key performance indicators. Each session was evaluated on several dimensions: public speaking, presentation results, benefits, and application. Before the program was launched, presenters had already gained knowledge from their research team or benchmarking program participation. The opportunities for virtual team experience that the webinars have created have helped participants better meet the challenges of Hargrove's increasingly complex and distant projects.

The PDC's 2011 annual conference presentation was titled "Bridging NextGen Knowledge Transfer." This presentation recognized the differences in characteristics, attitudes, and values among the four generations that are now active in the workplace—specifically, the differences related to how members of each generation learn and communicate. It discussed the necessary skills for adapting to these differences or leveraging them for successful knowledge transfer—both across organizations globally and between generations—and for predictable business outcomes. It also brought awareness of practices and technologies in use for facilitating this knowledge transfer globally. In the well attended implementation session, PDC team members discussed the differences between the generations in terms of communication, engagement, motivation, and development. A panel of five CII Members from various organizations and generations shared, discussed, and debated the following topics: how companies are preparing their emerging leaders; what successful transfer of knowledge to the next generation looks like; and what type of technology is or will likely be used in training.

The PDC held its fifth offering of the CII Best Practices course during the 2011 fall semester. The course—offered to graduate students in civil engineering and construction management—was held at The University of Texas at Austin and broadcast to ten distance learning sites: Arizona State University, Colorado State University, Florida International University, Georgia Institute of Technology, Iowa State University, Oklahoma State University, Texas A&M, University of Houston, Vanderbilt University, and Virginia Tech. Each fall, executives from CII member organizations serve as course lecturers, offering students insights into the workings of the engineering and construction industry. Teaching the course gives the executive lecturers valuable contact with tomorrow's industry leaders.

The PDC held its second offering of two four-hour instructor-led courses in conjunction with the 2011 CII Annual Conference in Chicago, Illinois. Dr. G. Edward Gibson from Arizona State University taught his *Front End Planning for Renovation and Revamp Work* course in advance of the conference and Dr. Jimmie Hinze from the University of Florida taught the *Making*

DRIVING PREDICTABILITY AT DOW CHEMICAL

CII BEST PRACTICE: ZERO ACCIDENTS TECHNIQUES

Jeff Patterson, Global Construction Director

We at Dow Chemical have always taken pride in our dedication to our core values, one of the most important of which is protection of the environment and of the people who work in our plants. Back in 1995, Dow Chemical set a corporate goal to lower the total recordable injury rate across the company by 90 percent by 2005. This target was, by any measure, a huge stretch goal. For Construction, it meant reducing the injury rate from 3+ to 0.3 in ten years—a reduction that, in fact, was achieved. A key driver of this success was our ability to establish a culture focused on the "Left Side of Zero." This approach incorporated CII's Zero Accidents Techniques and embraced the belief that zero was possible. In 2006, the company raised the bar even higher with the introduction of a more ambitious, next-generation set of corporate goals. These goals were 1) to strengthen relationships within the communities in which we operate, 2) to continue to improve our product stewardship, 3) increase innovation, and 4) reduce our Environment, Health, and Safety (HSE) impact. The HSE target was to reduce our recordable injury rate by another 75 percent from the benchmark we set in 2005.

The fact that our projects have been getting more global since 1995 has only made this safety goal more challenging; beyond our already significant investments in North America and Europe, we are now actively engaged in projects in multiple locations in Latin America, the Middle East, and across the Asia Pacific region. A number of these plants are being built in places in which we have either never before constructed a facility or in which we have not had significant construction activity for many years. Many of these regions have safety performance records and cultures that are not yet at the level of our historical norms, much less at the level of the aggressive targets we have set for current and future projects. One key learning for us has been that, to achieve these levels of safety performance, the owner leadership role at the project site is absolutely critical to establishing the proper safety culture and to getting workers to internalize the vision of zero; as CII's recent study on the role of project site leadership* concluded, leaders must actively lead the safety culture, and must consistently reinforce it with their decisions and behaviors. The Drive to Zero is not a spectator sport.

A recent example of Dow Chemical's commitment to safety leadership was on the multi-billion dollar complex that we and our JV Partner, Siam Cement Group, recently completed in Mat Ta Phut, in Rayong Province, Thailand. This world-scale facility—built mostly in the Asia Industrial Estates (AIE) near an existing Dow site—had a peak workforce of nearly 10,000 workers. Strong engagement by the leaders at the project, site, and business levels was a key to establishing the right expectations and culture with the contractors; and the proactive leadership by the project and construction team throughout the front end planning, detailed engineering, and construction phases was a strong contributor to the project's < 0.10 recordable injury rate. This level of performance is better than the goal of 0.12 we have set for ourselves for 2015. Our practice of setting ever more challenging goals for ourselves is fundamental to the Dow business philosophy. CII Best Practices fit perfectly into this approach, since they are easy to customize to our business needs and processes. Because our safety performance has been so strong over the last decade and we plan to make it even stronger, CII's safety principles and practices will continue to be integral to our Drive to Zero safety journey.

*Research Summary 256-1, *Project Site Leadership Role in Improving Construction Safety*

At Dow's multi-billion dollar complex in Rayong Province, Thailand, workers gather for a daily safety briefing, a component of Dow's Drive to Zero campaign. Using CII Safety Best Practices, Dow is making breakthroughs in safety, with its focus on the safety behaviors of its project leaders.

Zero Accidents a Reality course at its conclusion. Over 36 organizations participated in these offerings.

During 2011, the PDC developed and successfully presented two web seminar series: a two-part series titled *Capital Project Value Propositions*, and a four-part series called *Concepts for Incentivizing Contractor Performance*. Each one-hour seminar included a live question-and-answer session. Over 68 organizations participated in these events. More web seminars are planned for 2012.

The PDC continues to sponsor the Best Practices–Best Practitioners Alliance, a collaboration of the Construction Management Association of America (CMAA) and the Construction Industry Institute (CII). Now in its second year, this alliance is dedicated to improving construction performance and outcomes. Its mission is to improve capital facility delivery in all settings by promoting the professional practice of Construction and Program Management in conjunction with the broadest possible application of recognized industry best practices. In 2011, CII staff attended the CMAA Owners' Forum and presented at the CMAA National Conference & Tradeshow. CMAA representatives attended and presented at both 2011 CII Performance Improvement Workshops and the CII Annual Conference.

In 2011, the PDC formed a certification focus group to develop a strategic direction on certification and to provide guidance to member organizations. It kicked off this effort by engaging the Board of Advisors at its fall meeting.

BENCHMARKING & METRICS COMMITTEE

The CII Benchmarking & Metrics (BM&M) Committee and the BM&M staff regularly obtain, analyze, and disseminate quantitative information on member project performance. In 2011, the CII Benchmarking Program provided project performance information to eight active CII research teams. Increasingly, the benchmarking program is a key resource for CII research teams. However, the biggest news in 2011 was the launch of the CII Performance Assessment System (PAS) in March and July. PAS represents a step change in project performance assessment, since it possesses the world's first online data mining engine for benchmarking. The power of PAS data mining was demonstrated at CII's Annual Conference in Chicago to much acclaim. Since then, CII BM&M staff has observed an increase in benchmarking activity among member companies. PAS also enables the continued formation of Performance Assessment Laboratories (PALs) at various universities around the globe. In 2011, CII established a PAL at the University of Calgary in conjunction with the Construction Owners Association of Alberta (COAA) for the benchmarking of heavy industrial projects in the province (e.g., oil sands projects). CII expects this PAL, along with others in Brazil and around the world, to enhance the project benchmarking efforts of CII member organizations.

The BM&M Program added 51 new projects to the CII benchmarking database in 2011, bringing the total number of projects tracked to 2,039. These new additions were submitted by 20 companies. A primary goal for the CII BM&M Committee in 2012 is to greatly improve participation rates in the benchmarking program. One way this may be achieved is to utilize the database as a foundation for ongoing CII research efforts, in conjunction with other data collection efforts.

BENCHMARKING ASSOCIATES TRAINING

Three training sessions for CII Benchmarking Associates were held during 2011 for the member employees responsible for entering project data into the CII Benchmarking and Metrics System. Host cities for the training included Austin, Texas (CII Benchmarking Workshop), Birmingham, Alabama (Southern Company), and Houston, Texas (Jacobs Engineering).

BENCHMARKING AWARDS

At the CII Annual Conference in July, the 2011 CII Benchmarking User Awards were presented to Eli Lilly and Company in the owner category and Alstom Power in the contractor category. Both companies have impressive, sustained benchmarking programs.

Other CII Benchmarking Program achievements in 2011 included the following:

- award of $620,000 in external research grants for benchmarking programs
- completion of the seventh round of annual data collection for the Pharmaceutical and Biotechnology Benchmarking Program, bringing the complete pharma database to 234 projects
- kickoff of the National Healthcare Facilities Benchmarking Program, which serves all U.S. healthcare organizations funded by the U.S. Department of Defense (Tricare Management Activity) and the U.S. Department of Veterans Affairs
- presentation of the three-day 2011 CII Benchmarking Workshop, held in Austin, Texas, in March, with 90 attendees
- publication of CII's annual safety report, two summary reports (Value of Best Practices and Productivity), five refereed journal articles, and three conference proceedings
- supervision of four Ph.D. candidates and one M.S. student.
- production of 32 data requests for CII member organizations and research teams.

It is clear that a strong benchmarking program is important to CII's continued success at improving project outcomes. Going forward, renewed member participation in the CII Benchmarking Program is a key objective for CII.

KNOWLEDGE MANAGEMENT COMMITTEE

The purpose of the Knowledge Management Committee (KMC) is to maintain and add value to CII's body of knowledge, and to establish and support the CII Communities of Practice.

CII members leverage collective industry wisdom through the CII Knowledge Structure—CII's systematic online categorization of its research products. The committee manages and maintains the structure and is responsible for approving all changes to it, including the placement of new products and the archiving of outdated ones. The knowledge structure categorizes research publications into 14 knowledge areas, and further subdivides them into "best practices," "other practices," and "information" topics. Within each knowledge area, publications are listed by product type, i.e., as implementation resources, research summaries, educational materials, or research reports.

In an effort to maintain and add value to CII's body of knowledge, the KMC recommends research topics to Research Committee, refreshes best practices that require updating, and identifies and validates emerging best practices. In 2011, the KMC updated the COMPASS tool (a CII Best Practice used to improve project team communications) and promoted Project Risk Assessment to best practice status. Also, in advance of its revision of the CII Best Practice designation guideline, the committee met with the Benchmarking and Metrics Committee to discuss improved validation methods. The revised guideline will help the KMC evaluate current practices for promotion to best practice status. A key accomplishment in 2011 was the utilization of the Knowledge Management System (KMS)—an online tool recently developed by the committee to help its members more efficiently and effectively conduct product reviews. Because reviews are now conducted online by product family, the committee's productivity has been greatly enhanced. In 2011, the committee developed a KMS User Guide and performed over 50 reviews—significantly more than in prior years.

The KMC also expanded the CII Communities of Practice (COPs)—groups whose members share a passion for a topic or practice area. The COPs provide a virtual environment in which members can deepen their knowledge and understanding of a topic through ongoing collaboration and knowledge sharing. At the beginning of 2011, the already established COPs addressed safety, sustainability, globalization, information management, front end planning, next-generation leaders, risk management, and new membership on the CII Board of Advisors. By the end of the year, the KMC had launched two new communities: the Quality Management COP and the Federal Facilities Delivery COP. This addition brought the total to 10, with over 200 CII member participants.

The KMC also sponsored the first-ever COP Leadership Forum, held in conjunction with the 2011 CII Annual Conference in Chicago. COP leaders provided insight into their progress, deliverables, and lessons learned, and participated in a workshop for continuous improvement. This successful knowledge sharing event will be repeated at the 2012 annual conference.

DRIVING PREDICTABILITY AT BIS INDUSTRIAL SERVICES

CII BEST PRACTICE: CONSTRUCTABILITY

Dave Hile,
President and CEO

As a provider of construction services to several industries, BIS Industrial Services has utilized several CII Best Practices for many years. We have found that successfully implementing constructability practices provides for many positive project outcomes, including safety, quality, productivity, cost, and start-up, among others. On a recent project, the primary scope was to install a new economizer in an existing chemical recovery boiler. Also included in the project were fifteen soot blowers, four new platforms to access the soot blowers, a new outlet duct, and a salt cake conveyor collection system. In conjunction with the economizer, we needed to replace the internals in the steam drum and install a new super heater section. Each of the four areas was unique, each with different issues. However, the installation of the economizer was the most critical aspect of the schedule, and proved to be the most challenging.

The preliminary outage conversion schedule indicated that a 28-30 day outage would be needed. During this time an extremely large number of craft people would be required to perform work in a small area. The staffing required to accomplish this work was cause for safety concerns, and the mill was not able to meet production needs during an outage of such a long duration. Faced with these challenges, we used our constructability process to look for areas of improvement.

The new economizer was designed with six banks of modules, with each bank having three modules, and each module weighing 25,000 pounds—all with an estimated total weight of 450,000 pounds. All economizers are designed to be supported from the top, and are installed by attaching the top bank of modules to the structural support steel with rods. Once the top bank is attached, each remaining bank of modules must be hung off of the bank above it, until all six banks are installed. When an economizer is hung with rods, it can swing freely as it heats and cools. After considerable study, we finally settled on a "bottom-up" approach. The plan was that, prior to the outage, we would construct a monorail system, erect a lower support structure, and then install the lower three banks, each at the correct elevation. During the outage, we would remove the existing duct, install the main support steel on correct elevation, install the top three module banks, and then transfer the lower banks to hang.

The first stage of this lift plan worked well, and the lower modules were installed according to our original plan. Once the lower modules were in place, they restricted headroom to the point that the monorail could no longer be used. To allow for the setting of the upper three banks of modules, the monorail was shortened to a point just short of the economizer box.

The second phase of the installation, which consisted of the top three banks of modules, was completed during the planned boiler outage. The economizer was clearly in the critical path, but was only part of the total project. At the same time that the economizer installation was underway, installation of the soot blowers, the new platforms to access the soot blowers, the new outlet duct, and the salt cake conveyor collection system was completed. In conjunction with the economizer, we were able to replace the internals in the steam drum and install the new super heater section.

Faced with a schedule estimate of 30 days, we felt confident that, by using CII Constructability Best Practices*, we could develop a unique solution to our schedule problem. In the end, we were able to turn over a successful upgrade in approximately 20 days. In addition to a schedule that met the needs of the customer, the project was completed safely and on budget.

* Special Publication 34-1, *Constructability Implementation Guide, Second Edition*

On a recent project, BIS Industrial Services implemented CII Constructability practices to install a new economizer for the plant's chemical recovery boiler. Among the CII Best Practices the company uses, constructability is one that gives the company remarkably consistent positive outcomes.

MEMBERSHIP

The Membership Committee (MC) is responsible for executing the membership process, including recruitment of new members and member retention. The committee also assesses member participation and works to maintain a balance of owner and contractors members. Recruiting was a priority in 2011 and, by the end of the year, the result was a 14 percent increase to a total of 121 members.

The committee also made progress on the rollout of the *myCII* feature on the CII website. This password-protected online tool provides information on participation records, download history, and other information, based on an individual's CII affiliation. In 2012, new features and enhancements will be added to provide access to information previously only available through contact with CII staff.

BRANDING IMPLEMENTATION BECOMES STRATEGIC COMMUNICATIONS

In the first half of 2011, the Branding Implementation Committee (BIC) continued to guide the consistent incorporation of CII's brand identity into all CII communications and publications. It also worked to keep improving the message, look, and feel of the CII website.

In mid-2011, the Branding Implementation Committee was re-chartered as the Strategic Communications Committee (SCC) by the Executive Committee. This was done not only in recognition of the BIC's previous work to establish the CII brand, but to place more focus on communications that would promote the CII value proposition to members and to the industry. As part of this change, the SCC developed a new charter, the centerpiece of which is a plan to more consistently and effectively promote and improve awareness of the value of CII to our members and the industry. A particular focus of this campaign is to improve the internal quality and consistency of messaging across all core process areas. Communications guidelines and strategies are being developed, along with key messages that, starting in 2012, will improve CII's global reach and name recognition.

In 2011, the SCC implemented its communications plan and resurrected the CII *eNews*, publishing quarterly issues focused on delivering useful information about CII to members. Media relations improved in 2011, with committee visits to four key publishers who have since increased their coverage of CII research and events. The committee also expanded its membership and created liaison roles to all four CII core process areas.

The 2011 communications plan calls for a 2012 focus on 1) supporting the purpose, vision, and mission of CII through communications, 2) improving the quality, consistency, and alignment of core process and standing committee communications to better deliver CII's value proposition, 3) maintaining and promoting CII's brand and reputation for industry leadership, and 4) maximizing communication channels to expand the CII audience and membership.

ANNUAL CONFERENCE

The theme of the 2011 CII Annual Conference—*Driving Predictable Business Outcomes in a Dynamic Global Market*—focused on CII's continuing commitment to improving the delivery of capital facilities. CII speakers showcased new research, many with ready-to-use tools. **Melissa Herkt**, President and COO of Emerson Process Management's PlantWeb Solutions Group, served as conference chair. Conference keynote speakers were **Penny Manuel**, Executive Vice President of Engineering and Construction Services at Southern Company, **Ed Monser**, President and COO of Emerson Electric Company, and **Clarence Ray**, CEO of Shaw Power Group. The following featured speakers rounded out the conference presentations: **Bruce D'Agostino**, President and CEO of Construction Management Association of America (CMAA); **Bob Prieto**, Senior Vice President of Fluor Corporation; **Jimmy Slaughter**, President of S&B Engineers and Constructors, Ltd.; and **Mark Vitner**, Managing Director and Senior Economist of Wells Fargo Securities, LLC. Students from the Chicago-based Architectural, Construction, and Engineering (ACE) Mentor Program discussed their future professional plans. Also presenting were students from SkillsUSA and the National Center for Construction Education and Research (NCCER), two trades-oriented mentoring programs. These young people came from around the country to talk about their local programs and to provide hands-on demonstrations of training equipment. In addition, graduate students from engineering programs at universities across North America presented posters of their non-CII-funded research.

Process **Industry** Practices

Process Industry Practices (PIP) is about to complete its nineteenth year as an industry consortium, with continued growth and promise for the future. Over the past two years, we have added a net of nine new PIP Members, plus 12 new PIP Subscribers. This makes for a total of 103 owner/operator and contractor companies now regularly utilizing our harmonized PIP Practices. With an additional 19 PIP Licensees, we have clearly become a well recognized industry consortium. As the global reach of our Members, Subscribers, and Licensees has grown, we have also begun to see the use of our practices extending beyond the process industry.

PIP is an independently funded organization operating under the umbrella of CII. Our member companies continue to apply key resources in support of nearly 500 PIP Practices in eight engineering disciplines. Member support is also crucial to the five strategies we are pursuing to enhance our future success, as articulated in the most recent PIP Strategic Plan: 1) pursue related/adjacent industries for membership; 2) increase cooperative involvement with suppliers, vendors, manufacturers, and licensees; 3) increase participation on committees and teams; 4) increase implementation of practices; and 5) drive executive support of PIP. Because developing PIP Practices involves harmonizing member companies' internal standards, these practices are applicable to the needs of numerous process industry non-members and to those in related industries around the world. Thanks to the enthusiastic participation and support of member company volunteers and management in 2011, we were able to regularly update and revise our practices, as well as increase industry awareness, acceptance, and use of them.

Our 2011 focus on increased globalization led us to expand our Electrical Function Team effort. This signals the development of electrical practices that will meet IEC requirements. Also, all of our function teams are now routinely considering the changes that can be made to PIP Practices in their respective disciplines. These changes will make them even more usable globally than they are now. The initiative to deliver our piping material and valve specifications to clients electronically was accelerated in 2011. There are now over 40 piping material specifications from PIP available in commercial 3D CAD modeling products. Also during 2011, many of PIP's teams and committees began using their new individual SharePoint sites to enhance their effectiveness through improved communications and availability of key documents.

Quarterly discipline-specific implementation workshops continued during 2011. The Electrical, P&ID, and Machinery Function Teams were featured, and these workshops continue to provide excellent forums for sharing implementation success stories. PIP Members continue to report that they achieve considerable savings by implementing PIP Practices, rather than developing and maintaining their own internal standards. The application of new initiatives related to PIP Practice use is increasing, resulting in less redesign and rework, and more efficient interfacing between industry participants.

Near the end of 2011, PIP Members agreed to provide resources to begin a new function team to develop practices related to gas/liquid transmission and distribution piping systems. This team held its first meeting in January 2012. The prospects for the new year, PIP's twentieth, are very exciting.

MEMBERS - OWNERS

3M Company
Aramco Services
Archer Daniels Midland
Arkema
Ascend Performance Materials
BP
Celanese
Chevron
CITGO
ConocoPhillips
DuPont
Eastman Chemical
Evonik Degussa
Flint Hills Resources
FMC
Hess
HollyFrontier
Honeywell
Huntsman
Kemira
Momentive Specialty Chemicals
Monsanto
Mosaic Fertilizer
Occidental Oil & Gas
Pasadena Refining
PPG
REC Silicon
Rentech Inc.
SABIC
Sekisui Specialty Chemicals
Solutia
Sunoco
Tesoro
UOP LLC
Western Refining

MEMBERS - CONTRACTORS

Ambitech Engineering Corp.
BE&K (a KBR Company)
Bechtel
Braskem America Inc.
Brinderson
Burns & McDonnell
CB&I
CDI Engineering
CH2M HILL
Chemtex International
ENGlobal
Fluor
GE Energy
Jacobs
KBR
Kvaerner
Merrick and Company
Middough
S&B E&C
SAIC Energy, Environment, and Infrastructure LLC (SEE&I)
Samsung Engineering America
Shaw E&C Group
SK Engineering & Construction
SNC-Lavalin
Technip
URS Corporation
WorleyParsons

SUBSCRIBERS

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Agrium
Anderson Development
Bahrain Petroleum Co. (BAPCO)
BHPBilliton Nickel West
Cenovus Energy Inc.
Chemetall Foote Corp.
ChevronPhillips Chemical
Coffeyville Resource Refining and Marketing LLC
Covidien
Emerson Process Control
ENPPI-USA
Harvest Operations Corp.
HOVENSA
INVISTA S.à r.l.
KPS Technology & Engineering LLC
Kraton Polymers
L-Con Engineers & Constructors
Lloyd Engineering
Lyondell Chemical
Marafiq
Northwest Upgrading Inc.
NuStar Logistics, LP
ONEOK
Petroleum Company of Trinidad & Tobago
Plasco Energy
PlusPetrol SA
Praxair
Sasol
Saudi International Petrochemicals Co. (SIPCHEM)
Seadrift Coke
Sherwin Williams
Silver Eagle Refining
Sinclair Oil Corp.
Stepan Company
Sumitomo Chemical Company Ltd.
The Williams Companies
University of Texas at Austin
Valero
Wink Engineering
Wynnewood Refining

LICENSEES

ASME
Autodesk
Bentley Systems
Codeware
ConcepSys Solutions
IEEE
IHS
Intergraph
ISA
Lee College
National Institute of Building Sciences
National Insulation Association
Palomar College
Pi/FlexPlant
St. Paul Technical College
Texas A&M-Corpus Christi
Thomson Reuters/Techstreet
University of North Dakota

FIATECH

2011 was a year of outstanding achievement, performance, and growth for Fiatech: our members raised our industry profile by energetically promoting our value proposition to their business partners and peers; several industry publications recognized our contributions; we increased our website and social media activities; and we participated in more industry events than ever. This invigorated industry presence was a leading factor in our high rate of membership growth in 2011—at last count, at over 20 percent.

We remained focused on our core mission of advancing the implementation of technology and innovative practices to deliver the highest business value to capital projects. United by one goal, Fiatech's members led the way in making step-change improvements in the design, procurement, engineering, construction, and maintenance of large capital assets. Our mission is implemented through the Fiatech Capital Projects Technology Roadmap, the strategic guide we use to execute projects that develop, demonstrate, and deploy emerging technologies and innovative practices.

Today, the dynamic synergy created by Fiatech and its member organizations is manifested in a variety of ways. The annual Fiatech Technology Conference and Showcase has always been key to our efforts to demonstrate to the industry what is being done to improve large capital assets. The 2011 conference in Chandler, Arizona, was no exception. The extraordinary mix of attendees—builders of refineries, power plants, health care facilities, buildings, infrastructure, and manufacturing facilities, along with providers of EPC and AEC services, and top research organizations and technology providers—generated robust dialogue and creative thinking on how to advance innovative processes and technology deployment to improve the capital projects industry. Conference attendance was higher than in 2010, with 31 solution providers demonstrating their emerging tools. Additionally, we hosted our Technology Tuesdays in 2011, a series of over 25 webinars with over 1,000 participants.

Our focus at Fiatech is on delivering projects that advance our mission. Whether Fiatech members are streamlining building regulatory processes, using materials management to improve traceability and visibility throughout the supply chain, or employing mobile devices in the field to provide real-time, accurate reporting, they are leading the industry through the effective use of technology. Many of these cutting-edge member projects are currently using the ISO 15926 standard to advance interoperable solutions. These projects integrate BIM tools, deploy automation advances in procurement and construction, identify data requirements and process flows, and streamline the building regulatory and permitting process.

PROJECT DELIVERABLES

In 2011, we designed and began work on the exceptionally strong set of deliverables we will present at our 2012 conference. These products will address a wide range of challenges across the project life cycle, and will include the following:

- An Introduction to ISO 15926
- Industry Interoperability Vision Paper
- Collaborating with a Neutral 3D Model
- Managing Material Libraries & Catalogs
- Specification Automation
- Leveraging Passive RFID
- RFID Access Control Systems
- 3D Planning Tool to Gauge Nuclear Radiation Exposure
- Automated Code Plan Checking Tool. Proof of Concept
- Digital Seals and Signatures
- Guidelines for Replicable Buildings
- Advancing Asset Knowledge through Use of Augmented Reality Technologies
- User Acceptance of Mobile IT
- ISO 15926 Project Information Flow
- iRingTools Interfacing Project
- Harmonization of Pump Schemas with the ISO 15926 Reference Data Library
- Joint Operational Reference Data (JORD) Deliverables: An ISO 15926 Enhancement Project

CELEBRATING INDUSTRY ACHIEVEMENTS

Fiatech honored twelve outstanding organizations and individuals with a Celebrating Engineering & Technology Innovation (CETI) Award during the CETI Gala at our 2011 annual conference. We also recognized ten individual members and one corporate member as all-star volunteers with Superior Technical Achievement Recognition (STAR) Awards.

INDUSTRY IMPACT & GLOBAL LEADERSHIP

Fiatech participated in over 35 international events in 2011, including the launch of an annual European gathering of members and prospective members that was co-located with SPAR in The Hague. This event was sponsored by Fiatech's newly created European Advisory Council, which serves Fiatech members in Europe and the Middle East. At the end of 2011, Fiatech had over 35 percent of members and partners who are headquartered outside the U.S., in countries as diverse as Australia, Brazil, Canada, Finland, France, Greece, Israel, Malaysia, Norway, Russia, South Korea, Sweden, Turkey, and the United Kingdom.

FIATECH 2011 MEMBERS & PARTNERS

AIA Building Connections
ALCIM
ARC Advisory Group
Areva
Arizona State University
ARX
Aspen Technology
Atlas RFID
Auburn University
Autodesk
AVEVA
Avolve Software
Bechtel
Bentley Systems
Black & Veatch
BuildingSmart Alliance
Burnham Nationwide
Burns & Roe
Carnegie Mellon University
City of Salem, Oregon
CH2MHILL
Chevron
CIB
Clark County, Nevada
Consolidated Contractors Company
Construction Industry Institute
Construction Opportunities in Mobile IT
Construction Sciences Research Foundation
Continental Automated Buildings Association
Coreworx
CrossInnovation
Dassault Systemes
The Dow Chemical Company
Drexel University
DuPont
Emerson
Electric Power Research Institute
ExxonMobil
Fluor
Georgia Tech
GlencoIS
HAL
Hatch
Honeywell
Hydraulic Institute
IBS
IFS
Intergraph
iRING
Istanbul Technical University
Jacobs
Kaiser Permanente
Korea Advanced Institute of Standards and Technology
Korea Institute of Construction & Transportation Technology Evaluation and Planning
Latista
LIDAR News
Loughborough University
Meridian Systems
MIMOSA
Myongji University
National Academy of Construction
National Center for Manufacturing Sciences
National Institute of Science & Technology
Noumenon
Omni-ID
OnTrack Engineering
Oracle
Panprojects
Peter Kiewit Institute
Petronas
POSC Caesar Association
Process Industry Practices
Queensland Energy Resources
S&B Engineers & Constructors
Salt Lake City, Utah
Siemens
The Shaw Group
Solibri
Systemation Solutions
Target
Tecgraf
TEEC Software Solutions
Texas A&M University
ThomasNet
Trimble
Tennessee Valley Authority
University of Alabama
University of Alberta
University of Calgary
University of Houston
University of Michigan
University of Queensland
University of Salford
University of Southern California
The University of Texas
University of Washington
University of Waterloo
VNIIAES
VTT
WorleyParsons
Zachry

CII **Awards**

CARROLL H. DUNN AWARD OF EXCELLENCE

The Carroll H. Dunn Award of Excellence is the highest recognition bestowed by the Construction Industry Institute. The award, established in 1985, bears the name of the original recipient, the late Lt. Gen. Carroll H. Dunn, U.S. Army. The purpose of the award is to recognize an individual who has had singular and notable responsibility for significant advancements in improving the construction industry.

Stephen T. Ayers

CII's highest honor, the Carroll H. Dunn Award of Excellence, was presented to Stephen T. Ayers, Architect of the Capitol for the U.S. Architect of the Capitol (AOC). Stephen is the twenty-fifth recipient of the Dunn Award, joining a distinguished line of unique individuals who have shown the highest degree of personal dedication to improving the cost, schedule, and safety of capital projects.

His vision for the industry involves a recommitment to the fundamentals—particularly, the maintenance and renewal of our infrastructure—and to increased collaboration between owners and contractors to reduce change orders. Stephen has dedicated his life to serving the country and, as Architect of the Capitol, has focused on efficiently and sustainably preserving our nation's facilities.

TUCKER LEADERSHIP AND OTHER CII AWARDS

In addition to the Carroll H. Dunn award, The Construction Industry Institute recognized excellence among its members and academics by presenting the following awards in 2009:

Richard L. Tucker Leadership & Service Award

This award recognizes an individual who has contributed significantly to the advancement of the CII mission and to the success of CII as an organization.

John Dalton, Executive Vice President of Mustang was recognized at the conference as the eighth recipient of the Richard L. Tucker Leadership and Service Award. John has been a model of outstanding service to CII, having been involved with CII for over 20 years. John served as chair of the CII Executive Committee in 2009, playing an instrumental role in the development of CII's strategic plan. He has also served on the Membership Committee, Strategic Planning Committee, and Annual Conference Committee. John's leadership and varied contributions have made him a role model for other CII members.

Distinguished Service Award

This award recognizes individuals who have generously contributed their time and talents to the advancement of the CII mission.

Distinguished Service Awards were presented to the following CII leaders at the Spring 2011 CII Board of Advisors meeting:

- Wayne Burchette
- Steve Carter
- Kirk Morrow

Distinguished Service Awards were presented to the following CII leaders at the Fall 2011 CII Board of Advisors meeting:

- Barry Christen
- Charles Green
- John Lambert

Outstanding CII Implementer Award

This award recognizes a significant contribution to enhancing the implementation of CII Best Practices and research findings.

The Construction Industry Institute selected **Dave Bullard** of Ameren Project Controls and **William Beck** of WorleyParsons as co-recipients of the 2011 Outstanding CII Researcher of the Year Award. They were recognized for this honor at the CII Annual Conference in Chicago, Illinois.

CII Benchmarking User Award

This award recognizes an owner member organization and a contractor/supplier member organization that have made exceptional use of and contributions to benchmarking.

Eli Lilly and Company was named the winner of the 2011 CII Benchmarking User Award for owners. **Alstom Power** won the award in the contractor category.

DRIVING PREDICTABILITY AT SHAW POWER GROUP

CII BEST PRACTICE: LESSONS LEARNED

Virgil Barton, Vice President, Quality, ES&H, Regulatory Compliance, Process Improvement

CII Best Practices are particularly important to the Shaw Power Group because they are so adaptable to what we call "the Shaw way." And lessons learned and constructability have been fundamental to the Shaw way. Indeed, Shaw uses a robust electronic lessons learned resource, the Operating Experience/ Lessons Learned (OE/LL) database, to gather experience from our China projects and other industry operating sites. We designed the OE/LL software with two key goals. First, data entry has to be very easy; a record with attachments can be generated in minutes. Second, and most importantly, it must permit retrieval and analysis of processes and common causes.

For example, data from the China Nuclear Construction Project are collected from the Haiyang and Sanmen projects where Shaw has staffed personnel in nearly all of the key construction management positions. The OE/LL manager makes bi-monthly field trips to these projects to ensure OE/LL data flow and the identification and documentation of important issues or events.

We have incorporated this information into our process requirements for our Constructability, Readiness Review processes and our Project Execution processes, all of which require review of the OE/LL data. Currently, we are putting a major emphasis on the Readiness Review processes at our domestic sites—our V.C. Summer and Plant Vogtle nuclear construction projects—as project milestones are approached. These processes enhance the certainty of results and deliver predictability on these U.S. projects, as well as on the China project. Because lessons learned and constructability mean so much to so many stakeholders, we will continue to rely in CII Best Practices* to improve and preserve the Shaw way.

Shaw deploys its Operating Experience/Lessons Learned database at the Sanmen Unit 1 Plant in Sanmen, China to ensure that employees have easy access to information and can quickly analyze processes and obstacles.

* Implementation Resource 230-2, *Implementation of Lessons Learned Programs*

Research Summary 230-1, *Effective Management Practices and Technologies for Lessons Learned Programs*

CII Professional Development Award

This award recognizes exceptional commitment to the development of construction industry professionals by an owner member organization and a contractor/supplier member organization.

Hargrove Engineers + Constructors won this award in 2011 for its implementation of an innovative and effective professional development program based on CII's 15 Best Practices.

CII Distinguished Professor Award

The Distinguished Professor Award recognizes full-time or adjunct faculty who incorporate published CII research findings in the courses they teach.

Dr. David Gunderson teaches in the Construction Management Program at Washington State University. Using CII publications, he teaches students about productivity at both the macro- and micro-levels, asking them to apply the information to real-world problems.

Dr. Fernanda Leite is an assistant professor in construction engineering and project management in the Department of Civil, Architectural, and Environmental Engineering at The University of Texas at Austin. She teaches courses on project management and economics, and on building information modeling for capital projects.

Dr. Jochen Teizer teaches at the Georgia Institute of Technology, where he incorporates CII research findings and live technology demonstrations into his courses. He shows students how to use CII materials in his classes on construction engineering and project management, and in his project planning and monitoring classes.

CII Curriculum Partner Program Award

The Curriculum Partner Program Award recognizes higher education programs that incorporate published CII research findings in their curriculum.

The Georgia Institute of Technology (Georgia Tech) has a long tradition of civil and building construction research and education. Construction engineering and management education is split into two programs at Georgia Tech: the College of Engineering and the College of Architecture. The engineering program incorporates CII research findings into several undergraduate and graduate classes. The program's construction safety class uses CII safety research to complement existing educational material on safety. Modules on front end planning and the Project Definition Rating Index help students build effective project teams, and they provide useful metrics. The CII Best Practices course—a distance learning class headquartered at The University of Texas at Austin—brings the two Georgia Tech programs closer, providing opportunities for cross-disciplinary exchange. The Georgia Tech program prepares students for industry employment through its curriculum and classroom activities, particularly the Construction Industry Seminar it offers each year.

Sources and Uses of CII Resources in ($000)

		Net
BEGINNING BALANCE		
Carried Forward from 2010	1,097	
Reserve	750	**1,847**
SOURCES		
Membership Dues		4,176
Product Sales:		
Revenue	145	
Production & Sales Expense	(198)	(53)
Other Sources		45
TOTAL SOURCES		**4,168**
USES		
Programs:		
Research	1,532	
Implementation	213	
Professional Development	182	
Best Practices Program	51	
Knowledge Management	69	
Benchmarking & Metrics	735	
Executive Leadership Program	289	
Breakthrough	24	
Benchmarking & Metrics Revenue	(432)	
Other Program Revenue	(615)	2,049
Conferences:		
Annual Conference	916	
Attendance Fees	(768)	148
Supporting Activities:		
Support of Members & Director's Groups	705	
Academic Committee	18	
Other Activities	58	
Supporting Activity Revenue	(227)	554
Information Systems		158
General Expense:		
Administration	319	
Other Activities	203	522
TOTAL USES		**3,431**
NET		**737**
ENDING BALANCE		**2,584**

CII Staff

Director

Wayne Crew

Executive Staff

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Manuel Garcia, *Associate Director of Knowledge Dissemination*
Dr. Stephen Mulva, *Associate Director of Knowledge Assessment*
Dr. Stephen Thomas, *Associate Director of Knowledge Creation*
Jewell Walters, *Program Manager, Member Support*

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