CERTIFICATION CORNER
IT’S HOT, IT’S COLD,
THE LIGHTS WENT OUT,
OH MY!

PRESIDENT’S MESSAGE
AACE OFFERS ADDED VALUE

AACE INTERNATIONAL ELECTIONS
2015-2016 ELECTION RESULTS

BONUS CONTENT - TECHNICAL ARTICLE
PRICING AND PROVING DELAY CLAIMS
Are you a control freak?

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GOT A WICKED PROBLEM? FIRST, TELL ME HOW YOU MAKE TOAST

CLICK to watch Tom Wujec talk about “Got A Wicked Problem? First, Tell Me How You Make Toast” presented by TED.

Making toast doesn’t sound very complicated — until someone asks you to draw the process, step by step. Tom Wujec loves asking people and teams to draw how they make toast, because the process reveals unexpected truths about how we can solve our biggest, most complicated problems at work. Learn how to run this exercise yourself, and hear Wujec’s surprising insights from watching thousands of people draw toast.

Tom Wujec studies how we share and absorb information. He’s an innovative practitioner of business visualization — using design and technology to help groups solve problems and understand ideas. He is a Fellow at Autodesk.

Outside the Box will be a standing column designed to introduce new ideas and concepts from other resources and professions that may help stimulate a new way of thinking about total cost management. The views and opinions expressed are those of the authors and do not necessarily reflect the official policy or position of AACE International. We invite Source readers to send suggestions on other sources to editor@aacei.org.
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Young Professionals in Cost Engineering
Spotlight on Xiaohui Gu

AACE International COMP Program Members
Premium Partnership Program
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Next Month in the Cost Engineering Journal
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Relying solely upon a CPM schedule puts your project at risk. You need integrated cost management. PRISM G2 is the industry’s best integrated cost management software that simplifies projects controls by delivering dependable forecasts and accurate views of project performance so you can make informed decisions.

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In recent months I have had opportunities to meet with many of you, as members, sponsors, and supporters of the Association. From these meetings, one common experience kept being mentioned by our members, sponsors and supporters. That one thing in common is an ability to realize the added value AACE International brings to client enterprises, projects and products, and the communities that we touch, through our work and commitment to cost engineering.

I have been presenting a State of the Association at the AACE events I have attended. My presentation is often less formal than what is presented at our Annual Meeting. Often, these pre-Annual Meeting state of the association reports have developed into more of “an audience with” type of event that has included good question and answer (Q&A) sessions, an open exchange of ideas and representation of members’ regional views. Through this I have gained a greater appreciation of the diversity of industry, projects, and roles of members and reaffirmed my belief that the association provides members with the tools, techniques, and recognition to successfully operate in many environments, from rail and road infrastructure, to oil and gas, in all phases of project and product development.

The Association’s influence is reflected in an increased demand for setting international standards, and we now participate and collaborate in a number of pan-industry initiatives.

I have attended meetings of the Certification and Technical Associate Boards, and plan to attend the upcoming Education Board meeting. Our Associate Boards are the pillars of the association products and services. The Technical Board has completed a new version of the TCM Framework; The Certification Board is creating roadmaps to certification, and the Education Board has an update to the Skills and Knowledge of Cost Engineering in the works. The benefit of being a member continue to increase as evidenced by the above efforts of our volunteer associate boards. The volunteer efforts of these groups are truly appreciated. The Boards provided updates on the AACE operational plan and how the components of the plan are helping the Association realize the goals and objectives of our strategic plan.

Your Association is doing more to differentiate the value proposition of membership. We have consistently demonstrated via the annual salary survey that certified members’ salaries are higher than non-certified members. A recent CNN News survey had project control listed in the top 20 jobs for job satisfaction. We are currently analyzing the recent survey of membership to better understand your value drivers, with that data we will be better placed to measure and improve our performance.

As I complete writing this message, my thoughts are on the upcoming Board meeting, our Annual Meeting in Las Vegas, and my handing of the baton to President-Elect, Julie Owen. I just received an e-mail that election results are in and we will be sharing them with you by the time this message is released. I was impressed at the quality of the slate of candidates and thank the members for their participation; your votes count. The meeting in Vegas builds on the theme of, “We Do It Our Way”. The meeting will include a dedicated industry focus track on mining. This and other Annual Meeting promotions...
are now being made; we have the usual high number of quality technical presentations, education offerings, and social and network opportunities. I look forward to seeing you in Las Vegas.

Martin Darley CCP FRICS
President 2014-2015

If you would like to contact our current president with questions or comments about The President’s Message please address your e-mail to president@aacei.org. To engage in other discussions, check out AACE International’s Online Forums at www.aacei.org/forums.

Add-on Software for P6/EPPM

Introducing PROJECT WATCH™
The only software program that shows the P6 or EPPM System Administrator everything that is happening in real-time.
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2014 SALARY SURVEY RESULTS:
SALARIES INCREASE BY 6.9% AND AACE INTERNATIONAL MEMBERS EARN 13% MORE THAN NON-MEMBERS

The purpose of AACE’s salary and demographic survey is to enable project and cost professionals in different locations, industries, and work functions to compare their salaries, and to provide employers with information on prevailing wage rates among these professionals.

Information provided by more than 1,400 respondents, indicates that AACE International members self-reported a 13% advantage in income compared to their non-member counterparts. Globally, AACE International members reported normalized (by years of experience) salaries of $109,865 compared to non-members reporting $97,221. Members accounted for 65.1% of the responses with non-members making up the balance of 34.9%

The average yearly base salary for all project and cost management professionals globally employed full-time in 2014 was $105,363; a 6.9% overall increase since 2013. The average bonus in 2013 was $18,918. (In the United States and Canada alone, these figures were $120,438 (+6.2%) with a bonus of $20,982).

The majority of respondents indicated their job-function to be project control (24.5%) or cost estimating (21.8%). Other job-functions included: planning & scheduling (15.8%), project management (13.9%), cost engineering (12.9%), claims and dispute resolution (3.9%), decision & risk management (1.4%), and other (5.8%).

The majority of the respondents work in the construction industry (28.3%), oil/gas production (18.3%), or engineering (11.9%). 51.3% are located in the United States and 14.4% in Canada.

AACE members may download the complete 2014 survey as part of their membership benefits. Non-members may purchase the survey for $50. For more information, go to: www.aacei.org/resources/salary.

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Nominating Committee Chair John J. Ciccarelli, PE CCP PSP announced the results of balloting for the 2015-2016 AACE International Board of Directors, in balloting that ended on March 15.

**PRESIDENT-ELECT**

John C. Livengood, Esq., AIA, CCP CFCC PSP
A long-standing member of AACE, John previously served as Vice President Finance. He is a Managing Director with Navigant in their Global Construction Practice and splits his time between offices in Washington, DC, and San Francisco. He has nearly 40 years of experience in design, construction and international consulting.

**VP-ADMINISTRATION**

James E. Krebs, PE CCP FAACE
Jim has been an active member of AACE International since 1986. He is a recipient of the Charles V. Keane Distinguished Service Award and achieved the rank of Fellow in 2012. Jim served as the Director of Region 4 in 2008 and 2009. Jim is the Senior Vice President of Administrative Controls Management, Inc.

**VP-INTERNATIONAL REGIONS**

Philips Tharakan Mulackal, CCP CEP
Philips has been an AACE member since September 2005. He has been a Certified Cost Professional, (CCP) since June 2006. He served as Director Region – 7 from 2010 to 2012. He was recipient of the Outstanding Regional Director Award in 2011 and he received the TCM Excellence Award in 2010.

**DIRECTOR-REGION 3**

Bryon L. Willoughby, PE
Bryon has been a member of AACE since 2008. He has over 32 years of heavy civil and highway construction experience. He owns and operates a consulting firm.

**DIRECTOR-REGION 5**

Christopher Caddell
Chris is a Senior Vice President for Turner & Townsend. He received the Technical Excellence Award in 2012, and Outstanding Subcommittee Chair Award in both 2013 and 2014.

**DIRECTOR-REGION 6**

Colm Tully
Colm is a Certified Cost Professional (CCP) and a Planning and Scheduling Professional (PSP) with over 10 years of construction cost estimating and scheduling experience.

**DIRECTOR-REGION 8**

Jaimin Mehta, CCP PSP
Following his passion for building, Jaimin has spent most of his 17 years of experience working with ENR Top 20 National and Global General Contractors in Project Controls.

**DIRECTOR-REGION 10**

Marcos Eduardo Ganut
With over 17 years experience in industrial assets consulting and audit of construction projects, Marcos is a mechanical engineer and has an MBA degree with an emphasis in project management/finance.
This article provides helpful hints to deal with potential environmental and technical issues while taking an AACE International (AACE) computer-based test (CBT).

Taking one of the AACE sponsored CBT exams can be stressful. Providing a comfortable and stable environment for our test takers is both AACE’s and our testing facility partner, Kryterion™ Global Testing Solution’s goal. All AACE certification test takers can expect a secure test environment and high test standards (see side bar for specifics) when taking an AACE CBT exam. However, some situations are outside the control of either AACE or Kryterion™. The test candidate also plays a part in minimizing the effects of these situations on their testing experience. By knowing about and being prepared for these situations should they present themselves during the CBT exam, test takers can reduce potential stress and facilitate a more favorable test experience.

Examples of unexpected events which may negatively affect your testing experience include: the testing facility being too hot or too cold, poor lighting, external noise close to the testing facility, print too small to read or even a fire drill. In addition, recognize that test equipment e.g., monitor, CPU, or software can hiccup and cause undue stress on a CBT test taker.

- General Suggestions
  - As with any test, be sure to get a good night’s rest.
  - Make sure you know where the test facility is and plan to arrive early – traffic and weather can impact your arrival at the test facility. Get there early and relax.
  - Ensure you understand the test process completely before you arrive at the test facility, www.aacei.org/cert/examDay.shtml

- Computer Keyboard Keystrokes are Limited and Internet Access is Disabled—Do NOT attempt to access the internet or use common keystrokes (e.g., CTRL+C, CTRL+V, CTRL+ALT+DEL, CTRL+X) as these features are disabled during testing for security reasons. These actions will automatically shut off the computer. If this happens, notify the test center proctor immediately.

- Climate Control—Heating and cooling of commercial buildings vary. You can minimize environmental discomforts by layering your clothes. That way you, the test taker, can adjust your clothing for optimal personal climate control during the test. If you still feel that the test center environment is too hot or cold, contact the test center proctor. Recognize that the proctor will need to consider the comfort of all test takers. They may or may not be able to accommodate your needs.

The following suggestions are offered to help a candidate understand, prepare for, and handle unexpected disruptions during a CBT exam.

Robin Watenpaugh, EVP
Certification Board Member

CERTIFICATION CORNER

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• **Noise**—Bring ear plugs to mitigate potential noises that cannot be controlled by the test facility. If the noise is excessive, notify the test center proctor immediately. They will take actions appropriate for the situation, but again they may not be able to control noise external to the test facility.

• **Test Equipment**—Report computer issues to the testing center proctor for attention and corrective measures. Examples of test equipment problems include: blurry screen resolution, difficult navigation due to a sticky mouse, sluggish response time, “freezing up” or performing erratically.

• **Power Outages**—If a power failure occurs while you are taking the exam, remain calm and do not leave the test facility. CBT test responses, including the memo, are saved periodically throughout the test. The test center proctor and technical staff can recreate your exam including the memo once power is restored. If it is mutually determined, between the test center proctor and the test taker, that there is insufficient time to complete the test before the test center closes, both the test center and the test taker are responsible to immediately document and communicate the disruption and reason for not finishing the test to AACE. It is always preferred that the test taker complete their test instead of attempting to reschedule which may or may not be approved and could cost the test taker to sit again.

AACE and Kryterion™ are both committed to ensuring a consistent, comfortable, and uninterrupted test experience. Some situations are out of the control of either AACE or Kryterion™. We will do everything reasonable to ensure a positive experience for our certification test takers. It is the test taker’s responsibility to proactively prepare themselves for unlikely events and precautions noted above.

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**COMPUTER BASED TESTING (CBT) DELIVERY AND TESTING STANDARDS**

The Certification Board of AACE International has partnered with Kryterion™ Global Testing Solutions as the provider of computer based testing (CBT) for all AACE certification examinations. With a worldwide network of testing centers, the Kryterion Testing Network (KTN) ensures each testing center conforms to strict standards to make certain all test takers have a consistent experience. Additionally, Kryterion Testing Network proctors are required to follow standard operating procedures and are certified to ensure the highest level of security and customer care.

1. **Secure Test Delivery**

   Webassessor™, in conjunction with the Kryterion Testing Network, provides an extremely secure testing environment:

   • The system requires User IDs, passwords, and test taker authorization codes, which are linked together ensuring that no individual can access any part of the testing infrastructure without authorization.
   • During the launch process, a secure connection is established between Kryterion servers and the PC at the testing center.
   • The browser is locked down to prevent the test taker from having access to other applications or browsers on the PC.

2. **Testing Standards**

   Kryterion testing centers must comply with testing standards such as:

   • Separation of test takers; two test takers taking the same test cannot confer.
   • The amount of space a test taker has to work in; adequate space for allowable test aids.
   • Minimum requirements for computer equipment and bandwidth to the internet.
   • Heating, lighting and noise level control.
   • Minimum number of Kryterion Certified Proctors (KCPs).
   • Continuous monitoring or video taping of test takers.
   • Reporting of any test taker problem or unauthorized behavior during test sessions.

To review AACE’s official Computer Based Testing (CBT) Disruption Policy, visit www.aacei.org/cert/disruption.shtml.
Recruiting qualified professionals has never been easier.

The AACE Career Center helps streamline your hiring process with unmatched exposure for job listing and, higher quality candidates. Because AACE members are among the most skilled and best trained total cost management professionals in the world, the AACE Career Center offers a highly targeted pool of exceptional talent, which is an asset to your business.

AACE Career Center offers:

- Quick and easy job posting
- Quality candidates
- Online reports provide you with job activity statistics
- Simple pricing options

About AACE International

Since 1956, AACE International has been the leading-edge professional society for project managers, schedulers, cost estimators, cost engineers, and project control specialists. AACE International is the authority for total cost management. Promoting the planning and management of projects, programs, and portfolios, AACE International is the largest organization serving the entire spectrum of project management professionals. AACE International is industry independent, and has members in over 80 countries.

*In order to qualify for this incentive, your company must advertise an employment position with AACE International’s Career Center for at least two months. Once you hire a person for that position, regardless of the source, AACE International will give you the option of either having that new person’s membership paid for the balance of the year or a $150 credit toward registering for an AACE International credential such as CCP, CEP, CFCC, EVP, or CCT.*
With commodities prices down, many senior mining companies are struggling with debt, mid-tiers are consolidating, and junior mining companies are going out of business. Most mining professionals would describe the current scenario as chaos, but as accredited cost estimators, we know that this also spells opportunity because we are in the business of planning. Now is the time to prepare for the upturn; to get the projects ready for the go alarm when the economic cycle corrects. Do the design work! Get the estimates ready! Place orders for long lead items and get the best project cost and schedule before everyone else does.

AACE International mining professionals have developed a series of panel discussions for the 2015 Annual Meeting to safely navigate through the current chaos and to help our members recognize the opportunities. We are proud to present a professional line-up of panel leaders with their chosen discussion topics. Here are five Mining Industry Track presentations scheduled for the June 28 to July 1 Annual Meeting at the MGM Grand in Las Vegas:

1. Quality/Accuracy of Study Estimates:

Facilitators will discuss order of magnitude, pre-feasibility and feasibility estimates as they relate to historical cost overruns on mining projects. Risk management and project cost uncertainties will be explored.

The Mining Track is led by John Gravel, director mining and metals for Turner & Townsend in Vancouver. Gravel has over 18 years of experience in mining, having worked the majority of his career for Rio Tinto, and now is consulting to senior, mid-tier, and junior mining clients. His experience is in procurement, project management, project controls, and cost management across many commodities and extraction methods. Gravel has completed assignments in remote parts of Canada, Chile, Peru, Argentina and Australia. He holds a business degree in finance from California State University, Long Beach, and a certificate of Operational Leadership Development from Duke University.

The panel discussion will be led by George Sturgis, vice president for project development at Hecla Mining Company. His experience spans 35 years of increasing responsibility in engineering, construction, construction management, and project management for mining projects in the U.S., Asia, Africa, and Europe. He is a project controls subject matter expert, including implementation of cost and schedule control systems. He pioneered the use of Monte Carlo simulation as a component of cost and schedule risk management planning, authored project management plans, prepared budgets, acquired technology resources, and directed field operations. He is a formally trained engineer with graduate studies in business administration, operations research, project management, and construction management.

“With commodities prices down, many senior mining companies are struggling with debt, mid-tiers are consolidating, and junior mining companies are going out of business. Most mining professionals would describe the current scenario as chaos, but as accredited cost estimators, we know that this also spells opportunity because we are in the business of planning. Now is the time to prepare for the upturn; to get the projects ready for the go alarm when the economic cycle corrects. Do the design work! Get the estimates ready! Place orders for long lead items and get the best project cost and schedule before everyone else does.

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“In the midst of chaos, there is also opportunity”
– Sun Tzu, The Art of War

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2. The Effectiveness of the Stage Gate Process:  

Most major mining firms use a stage-gated discipline for business case development, validation, project shaping, scope development, capital cost estimating, planning and risk assessment. Each step of the stage-gate process has a specific set of deliverables to be met in order to take a go or no-go decision and progress through the next gate to eventual project execution and delivery. This panel discussion will cover the key aspects of this process, lessons learned, as well as pros and cons of the stage-gate process.

The panel discussion will be led by Rene Mendoza, manager of project controls for Freeport-McMoRan Copper & Gold Inc. in Arizona. Mendoza has 25 years of experience in program and project management with extensive management managing project development throughout the project lifecycle. He has a proven track record of managing program level project controls while accurately forecasting progress, challenges and risk. He has extensive experience managing lump sum projects with multiple funding sources. He has demonstrated leadership in risk management, claims analysis, and negotiation on international projects with multinational contractors and vendors. Notably, he serves within BHP on independent peer reviews and execution phase reviews of major projects from selection through definition to execution. He holds a bachelor’s degree in civil engineering from the University of California at Berkeley.

3. The Owner’s Role and Organization for Mining Projects:  

Challenges in managing mining mega-projects: with mining companies operating internationally, what global systems and methods are being used to establish a consistent approach to project management and project controls. What portfolio reporting processes do mining firms have in place for projects using EPCM contractors and on self-managed projects? What type of organization and best practices do the owners have in place to provide oversight and management? What governance processes are in place? Mining company representatives will discuss available strategies.

The panel discussion will be led by Andrea Georgopoulos, manager of project controls for Freeport-McMoRan Copper & Gold Inc. in Arizona. She has over 25 years experience in program management, project planning, project control, and earned value management. She is a known leader in project controls and earned value management. She is currently transforming her firm’s capital project management processes away from operations based accounting to an EVMS approach, among with new corporate processes and procedures. She has a bachelor’s degree in business administration and a master’s in economics.

4. Lessons Learned From the Latest Mining Cycle:  

During the last mining cycle, projects often chased commodity prices, were accelerated and/or set aggressive commissioning date targets. Many projects had difficulties with this strategy. What lessons can be learned from this experience? What did we learn to improve project delivery? What were the challenges, opportunities, and successes?

The panel discussion will be led by Nelson Bonilla. He has more than 38 years of project/program controls experience on mining, petrochemical, power, mining, biotechnology and heavy civil projects in the U.S. and overseas, ranging from $200 million to over $8 billion dollars. His responsibilities have included direct involvement in estimating, scheduling and cost control, as well as managing teams of project controls professionals. Recent projects included the Barrick Gold Corp Lama Project, in Argentina, valued at $6 billion USD and the Minera Lumina Copper Chile S.A. (MLCC). Caserones project in Copiapor, Chile, valued at $2.9 billion USD. Bonilla has taught project controls and project management courses at Fluor, ICA Fluor, client offices and universities in California and Mexico. He is a past AACE International Association President and has both bachelor’s and master’s degrees in engineering from University of California Los Angeles.

5. Developing Standards for Mining:  

Mining projects differ greatly in relation to location, extraction method; commodities extracted, and scale. The mining industry has not settled on a common code of accounts and therefore cost comparisons, benchmarking and control are more difficult than in other industries. Several major mining companies have started working together to develop a common standard. Presenters will report on this activity, identify any opportunities in this approach, and discuss how the balance of the industry can adopt this standard.

The panel discussion will be led by Fred Biery, who manages the mining, minerals and metals area for Independent Project Analysis (IPA), the industry’s leading capital project benchmarking firm. Over the last 15 years, he has conducted hundreds of project reviews of mineral projects at IPA; which included conducting cost analyses, contingency evaluations and risk assessments. He has also been involved in a joint minerals industry study on developing a common code of accounts for the minerals sector to facilitate cost analysis, control and benchmarking. Biery has contributed papers on cost growth and cost benchmarking at prior AACE Annual Meetings, as well as published on cost and risk analysis topics in the Journal of Cost Analysis and elsewhere. Prior to joining IPA, Biery directed a cost and risk analysis group at a major systems engineering contractor. He holds a bachelor’s degree in economics and a master’s degree in finance. ◆
Sandra Mejia Villegas was born and raised in Medellin – the second-largest city in Colombia, located in the Aburrá Valley, a central region of the Andes Mountains in South America. She obtained her bachelor’s degree in Mechanical Engineering from Universidad Pontificia Bolivariana. Her parents always taught Sandra and her brother to have high ethical standards, as well as the importance of education and professional growth.

Sandra has been living in Canada since 2007. Her career started as a Mechanical Specialist in an Engineering House. In late 2010, Sandra’s husband, Mr. Omar Nava, a very successful engineer with vast experience in Project Controls and Project Management, advised her to explore career possibilities in project controls. She soon realized this field was her true passion.

Sandra’s first position in the project control field was as a Cost Control Specialist at Devon Canada. Some of the projects she was involved in included Sustainable Capital Projects in the Facilities Department. Sandra will always be grateful to Mr. Tim Gross, who was the project controls technical advisor at Devon, for his mentorship and confidence, which allowed her to learn and grow in the field. She is now working as Cost Analyst at a major Oil & Gas Operator, where she is part of Brownfield and Maintenance Capital Projects. In spring 2015, Sandra has also started her Masters of Science in Project Management at George Washington University in World Campus - Washington, DC.

AACE International offers numerous resources through online training, webinars, mentorship, technical articles in the journal, the section’s technical meetings, section’s fall workshops, networking opportunities, which are valuable to any professional in the field.

AACE International has great meaning for Sandra. Thanks to this organization she got her job at Devon Canada, as a result of becoming acquainted with Ms. Clara Teran, Director at Large at the Chinook–Calgary section of AACE Canada, to whom she is truly thankful. All the training, seminars and webinars that Sandra has taken have showed her the beauty of project controls field. AACE International offers numerous professional resources through recommended practices, online training, webinars, mentorship, technical articles in the magazine, local section’s meetings and workshops, as well as networking opportunities, which are valuable to any professional in the field. Sandra is currently enrolled in AACE Mentoring Program, and recently completed her first mentor/partner engagement with a well-known and highly rated project con-
Sandra’s motto is, “find your passion and make it your job; enjoy every day and grow.” She invites project controls professionals to join AACE International and to be part of any of the multiples opportunities that the association offers. She believes this will provide them the tools and direction required to become very successful in their jobs and achieve great professional development.

RECORD NUMBER OF FEMALE FIRST-YEAR STUDENTS JOIN CANADA’S TOP-RANKED ENGINEERING SCHOOL

The University of Toronto Faculty of Applied Science & Engineering recently celebrated another milestone in gender diversity among its students and faculty. Women now account for 30.6 percent of first-year students in U of T Engineering programs: a record for the faculty and a number that surpasses all other Ontario universities. It is the only engineering school in Ontario with female first-year enrolment of more than 30 percent. National figures are expected later this year from Engineers Canada.

“U of T Engineering is a rich environment for talented, bright women to become engineering leaders,” said Dean Cristina Amon. “Diverse perspectives are the foundation of our culture of excellence in research, education, service and innovation. This achievement is encouraging as we continue our proactive efforts to foster diversity within the faculty, among universities and across the engineering profession.”

Today, one quarter (25.8 percent) of U of T Engineering’s undergraduate population is female, compared to a province-wide average of 19.7 percent. Across Canada and the US last year, those averages were 18.9 percent and 19.9 percent respectively. The faculty’s targeted recruitment efforts have been successful, with female undergraduate enrolment up from 21.3 percent just six years ago, alongside rising entrance grade averages for first-year students that reached a record 92.4 percent this year.

“My experience at U of T Engineering has been even better than I expected,” said Molly Gorman, a first-year chemical engineering student who’s eyed U of T since before she started high school. “It’s incredible being a part of Canada’s best engineering school—and living in a city filled with so many opportunities!”

As a leader in engineering education and research, U of T Engineering continues to attract world-class faculty. The complement of female faculty members has more than doubled in the past eight years, from 21 in 2006 to 44 in 2014. Seventeen percent of faculty members are women, which is three points higher than the Ontario average (14 percent) and four points higher than the Canadian average (13 percent).

These numbers are expected to grow in the years ahead, as early-career faculty members move up in the academic ranks. More than a quarter (27.8 percent) of U of T Engineering’s associate professors (early-career, tenure-stream faculty members) are now women, compared to an Ontario average of 15 percent and a national average of 15.7 percent.

In the 2014–15 academic year, women accounted for three of the four new faculty members hired at U of T Engineering. In addition, all three of the faculty’s 2014 Canada Research Chairs are women. “Engineering has changed significantly from when I began at U of T several decades ago,” said Professor Susan McCahan (MIE), U of T’s new vice-provost, innovations in undergraduate education, who was the University’s first female faculty member in mechanical engineering. “It is increasingly recognized as a vibrant and innovative profession: one that encourages broad perspectives and collaboration to drive positive changes that improve our world.”

As of 2013, women accounted for just 11.7 percent of all professional engineers in Canada. Growing numbers of female engineering students signal a promising future for gender balance in the profession. U of T Engineering offers many outreach programs that aim to inspire girls and young women.
Xiaohui Gu majored in civil engineering at Tongji University in Shanghai, China. Tongji University is an international, research-oriented university, with renowned strength in civil engineering and architecture.

The last semester before graduation, Xiaohui got an offer from the University of Sydney for their master’s degree program. He was working as an intern at Wanlong Construction Engineering Consulting Group Ltd., a construction cost consulting company. This was the first time he learned about final account and construction cost control. After two months practice, Xiaohui found that he was more interested in construction cost control than structure design and project management. In his view, it was great to help the client to control the construction cost. Then he decided to stay at Wanlong and gave up the opportunity to study in Australia.

For a few years Xiaohui participated in final account and construction cost control work on projects including the Administrative Center of China Telecom, the Royal Garden, and the Bao Shan Culture Center. He also worked as an assistant on-site quantity surveyor for the Guangdong Science Center, with total investment over RMB 1.9 billion, for a year. Xiaohui changed firms and joined WT Partnership (Shanghai), a quantity surveying company headquartered in Australia. Xiaohui got his master’s degree in Construction Project Management from the University of Hong Kong. While working with WT Partnership (Shanghai), Xiaohui learned the actual practice of cost management and problem solving for cost disputes.

Xiaohui returned to Wanlong as a general manager assistant after a long talk with Mr.

“Joining AACE helps me open my eyes and think about how to integrate the international recognized cost management practices into the local knowledge. Share your knowledge and you will be rewarded with other’s experience and advice and that AACE provides a great platform to improve your professional competence.”
Xiaohui first learned about AACE International as he became involved in the Chinese translation of the Skills & Knowledge of Cost Engineering 5th Edition. Through the translation process, Xiaohui learned there were many differences between China and the US related to cost controls and cost management. He learned that costs had a much closer relationship with the schedule in the US than in China. The concept of activity-based costing was also new to him. This knowledge led him to join AACE International.

Xiaohui became a Registered Cost Engineer through the Ministry of Construction of China, Registered Consulting Engineer through the National Development and Reform Commission of China and member of Royal Institute of Chartered Surveyors (RICS). He first learned about AACE International as he became involved in the Chinese translation of the Skills & Knowledge of Cost Engineering 5th Edition. He was recruited by Yeqiu Wu, the director of a joint learning center. Ms. Wu needed a team of local experts to translate the book. She recruited Xiaohui and he accepted the task to organize a team.

Through translation efforts, Xiaohui met Feng Shen, AACE China Task Force Co-chair. Through the translation process, Xiaohui learned there were many differences between China and the US related to cost controls and cost management. He learned that costs had a much closer relationship with the schedule in the US than in China. The concept of activity-based costing was also new to him. This knowledge led him to join AACE International.

Xiaohui is administrator of a cost consulting company and must think about trends in the industry and business development. He says, “With the world becoming more flat, communication of new concepts and technology is more convenient. Some technology applied in the US may be introduced to China. When asked about the value of AACE International; Xiaohui says, “Joining AACE helps me open my eyes and think about how to integrate the international recognized cost management practices into the local knowledge.” He encourages others to, “share your knowledge and you will be rewarded with other’s experience and advice and that AACE provides a great platform to improve your professional competence.”

4 WAYS TO IMPROVE COMMUNICATION AT WORK
Merilee Kern, KernCommunications.com

“It’s imperative for achievement-oriented professionals to communicate well in all aspects of their job,” notes Harvard Business School Executive Education department coach and facilitator, Vivian Ciampi. Mastering the following four tips can help:

• **Become the “Universal Translator”**—The most valued and successful person in any business is the one that can translate facts, figures, and concepts into actionable ideas that will not only make sense and resonate with their direct network, but also with any and all constituents.

• **Meet Before You Meet**—To avoid getting derailed in making a meeting presentation, determine who your key constituents are relative to your topic; set up one-on-one meetings with all of them a few days in advance of the big meeting; individually socialize the topic and make sure you understand their perspective and answer any questions or concerns that they have.

• **Stop, Ask and Listen!**—Today’s fast-paced workplace has most of us running at record speed, often in circles. We rush through conversations so we can cross it off our “to do list.” Stop and take a breath so you don’t rush into your agenda; ask open ended questions, such as “What’s going on in your department?” or “How has this system helped you?” Make 200 percent sure you are actively listening—not just hearing them—and that you give them ample time to convey their thoughts without interruption. People only have the capacity to absorb so much. You need to hone a discipline of talking less and listening more.

• **Converse With Clarity**—People today are inundated with data, work under tight timeframes, and talk in acronyms. Meeting attendees can feel intimidated, out of the loop and unable to effectively contribute. Ask clarifying questions. The basic who, what, where, when, why and how is a sensible approach. For example, “Why are we doing this?”; “How will that work?” or “Where will this help the organization?” are some examples. The win-win is that this fosters clear dialogue, makes people accountable to answer direct questions and often uncovers problems that need to be addressed but would have been overlooked had this approach not been used.
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*Previously known as the Certified Cost Consultant/Certified Cost Engineer
It is common for complex construction projects to experience delays at some point during the contract performance period. Their causes may vary, but for example, can range from differing site conditions, defective design, to actions or inactions of contractors or owners. While some contractors have become quite adept at quantifying and putting forth delay claims to owners, it often turns out that the delay claims do not comply with their contract with the owner. Unfortunately, for the contractors, this results in increased costs to prepare an amended claim and potentially negates their chances for recovery completely. It is crucial for contractors to start their delay claim development by reading their contract. While reading the contract seems like a logical first step in preparing a delay claim, in our experience, forgetting to do so is, in fact, the most common mistake made by contractors when preparing their claims.

The Contract
When reading the contract, one of the first things to determine is whether your contract is subject to a “no damages for delay” clause. There has been a marked increase in the inclusion of this clause in construction contracts by owners. The inclusion of this clause is often an attempt by the owner to preclude the contractor from recovering any monetary damages for delays experienced by the contractor. These clauses typically allow for non-compensable extensions of time only. If your contract includes a no damages for delay clause, the good news is that your delay claim may not be sunk. There are six widely recognized exceptions to the enforceability of a no damages for delay clause:

1. A delay not covered by the terms of the clause.
2. A type of delay not contemplated by the parties when entering into the agreement.
3. A delay of unreasonable duration.
4. A delay resulting from active interference or other wrongful conduct by the contractee.
5. Waiver of the clause by the actions of the parties.
6. Fundamental breach by the contractee justifying non-enforcement of the clause [1].

Further, some jurisdictions, including California, deem such clauses void and unenforceable in public (non-federal) contracts. If your contract

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**Abstract:** While many construction projects experience delays, properly pricing and proving the delays has become increasingly difficult as owners have learned to limit their exposure to delay claims. This article will provide a methodology to price and prove delay damages on any type of construction project. The article will identify common pitfalls and mistakes made when developing delay claims. It provides an overview and comparison of schedule delay analysis methodologies commonly employed by scheduling experts, providing both advantages and disadvantages of each method. It will explain how a contractor’s accounting system can be used to price and prove a delay claim. The article discusses contract clauses used by owners to limit delay damages and ways contractors can counter such contractual obligations. This article will leave the reader with an understanding of how certain scheduling and delay damage calculations, that are widely accepted in the construction industry, can be employed to help quantify the damages resulting from unforeseen time impacts and maximize the opportunity for recovery of damages resulting from such impacts.
requires an example of a typical contract
requests for a time extension. An
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associated with delays that are
the types of costs and damages
experienced on the project, as well as

arbitration or litigation.

dispute review board, mediation,
escalated from the change order level to
severity of the delay impacts they are
facing at a specific point in time; or 3)
they believe they can mitigate the delays
because they optimistically diminish the
severity of the delay impacts they are
facing. The dispute resolution process
will also detail how a claim can be
escalated from the change order level to
dispute review board, mediation,
arbitration or litigation.

The contract may also provide
requirements as to the way one can
quantify and classify the delays
experienced on the project, as well as
the types of costs and damages
associated with delays that are
recoverable. The following sections will
focus on the methodologies typically
used for quantifying days of delay and a
contractor’s damages for such delay
periods.

**Quantifying Days of Delay**

Construction contracts typically
specify the required methodology for
quantifying delay and submitting
requests for a time extension. An
example of a typical contract
requirement is:

“Submit a TIA with each
request for adjustment of Contract
time or whenever you or the
Engineer considers that an
authorized or anticipated change
may impact the critical path or work
progress.

The TIA must:

1. Illustrate the impacts of each
change or delay on the current
scheduled completion date or
internal milestone.
2. Use the accepted schedule that
has a data date closest to and
before the event. If the Engineer
determines that the accepted
schedule used does not
appropriately represent the
conditions before the event, the
accepted schedule must be
updated to the day before the
event being analyzed.
3. Include an impact schedule
developed from incorporating
the event into the accepted
schedule by adding or deleting
activities or by changing
durations or logic of existing
activities. If the impact schedule
shows that incorporating the

Although the language included
above is fairly typical, numerous
variations exist throughout federal,
state, and local public construction
contracts. It is therefore crucial that a
contractor understand the specific
contract requirements to ensure that a
time extension request will not be
rejected, based on the methodology
used.

If the contract does not specify a
methodology to quantify delay, the
contractor should determine the best
methodology to use. There have been
recent efforts conducted by industry
organizations to attempt to define a
structure and naming convention for the
numerous delay analysis techniques in
use by the industry. The following four
techniques are commonly used in the
US:

1. Windows or Time Impact Analysis
2. Collapsed As-Built
3. Impacted As-Planned
4. Total Delay

The selection of a technique is
important, and needs to consider what
data is available to perform the analysis.
The courts prefer analyses that are
based on what actually happened on a
project and that use as-built information
and project documentation in
conjunction with baseline schedules and
updates. For that reason, variations on a
Windows/TIA methodology are often
chosen. However, it may not always be a
choice for a contractor. If there is no
baseline schedule, such an analysis is
impossible, and the courts occasionally
have accepted the Collapsed As-Built
methodology, where an as-built
schedule is created from project
documents, and the schedule is
“collapsed” by removing owner delays to
show what might have occurred had the
delays not happened. The Impacted As-
Planned method, which applies delays to
the baseline schedule and typically does
not reflect the actual events of the
project, and the Total Delay method,
where the criticality and concurrency of
delays are ignored, have generally not
been accepted by the courts, but are
often used by contractors for negotiating
a change order for delay.

How does the contractor decide
which methodology to use? The answer
often depends on the available source
documents for the project. The
Windows/TIA methodologies require a
baseline schedule at a minimum, with
contemporaneous schedule updates
needed for some techniques. The
Collapsed As-Built, on the other hand,
relies upon the project daily records and
impact data and can be used without a
baseline schedule or schedule updates.
When the proper underlying project
information is available to perform a TIA
delay analysis, it is typically the
methodology used, provided the
contractor has adequate resources and
experience.

Given that the TIA delay analysis is a
preferred methodology and is probably
the best method for analyzing delay
during the project, this article will focus
on this methodology for preparing a
delay analysis. A Time Impact Analysis is
a time estimating procedure that uses the then-current CPM Schedule and “fragnets” to prospectively demonstrate or project the effect of changes and delays on a project’s completion. A fragnet is a sequence of new activities and/or activity revisions that are proposed to be added to the existing schedule. When properly implemented, this analysis ensures that the impacts depicted in the delay analysis did, in fact, extend the project duration. It also can identify concurrent delays if they exist.

A time impact analysis can be performed in ten steps:

1. Establish or identify an unimpacted update.
2. Gather the necessary supporting information, including the following:
   a. Documents that identify the scope of the change or nature of the delay.
   b. All of the relevant contract provisions described above.
   c. Other information from affected parties.
3. Prepare an accurate description of the changed condition or delay encountered.
4. Determine scheduled start and finish dates for all affected activities in the unimpacted update.
5. Check the unimpacted update for the following:
   a. Pending adjustments to contract completion date.
   b. Accuracy of reported activity status.
   c. Notice to proceed for any directed changes.
   d. Other alleged or actual delay occurrences.
6. Prepare a fragnet illustrating the sequence of the change or delay and define its relationship to the current unimpacted schedule.
7. Introduce the fragnet into the unimpacted update and recalculate the schedule with the change or delay. Analyze the results for accuracy.
8. Compare the unimpacted update with the impacted update to determine the delay to the project’s completion and if any alternatives for mitigating the impact of the change or delay exists.
9. If more than one change or delay occurs during the same period, determine and document on a chronological and cumulative basis the time impact caused by each change order or delay.
10. Prepare a written report of the overall schedule analysis and quantify the net time impact associated with each change or delay. Include the following:
   a. Any applicable clauses from the contract.
   b. Any facts supporting the contractor’s interpretations.
   c. All calculations of time extension(s) and additional compensation due.

Upon completion of the contractor’s time impact analysis, a few additional steps need to be followed to complete the analysis. The contractor must perform a responsibility analysis to determine the party responsible for the delays. The contractor must tie the responsible parties’ actions to the root cause analysis of the delay. If there are concurrent owner and contractor delays, compensability to the contractor for owner delays might be in question, and the analysis should address this issue. This analysis often requires an expert opinion and should be further supported by the relevant contract clauses.

Following the preceding steps will yield a defendable delay analysis that will calculate the days of delay, as well as determine compensability. The compensable days of delay can then be used to price the delay damages.

Quantifying Delay Damages

Similar to the process described above for quantifying the project’s days of compensable delay, quantifying delay damages starts with a review of the contract. The contractor must review the delay sections of the contract to determine if there is a specified method for calculating delay damages. Some contracts include a time related overhead (“TRO”) specification that sets forth the daily rate that must be used for quantifying delay damages. On a contract that includes a TRO specification, there will have been a TRO rate that was included by the contractor with its original bid or that was negotiated prior to executing the contract. If the contract did include a TRO rate, it is simply a matter of multiplying the TRO daily rate by the compensable days of delay determined in the time impact analysis explained above. If there is not a TRO rate in the contract, then daily rates will need to be calculated.

To calculate daily rates for delay damages, the contractor will need to rely on the company’s accounting records. In order to be in a position to rely on these records, the contractor should ensure that a proper accounting system is in place for the project. Ideally, the system would have been put in place prior to the contractor commencing work on the contract. The project accounting system should be based upon a project chart of accounts. The chart of accounts consists of a group of cost codes that covers all costs that the contractor will incur when performing the contract. It is beneficial for the contractor that the cost codes have a strong correlation with the bid estimate to allow for the monitoring of contract performance. The monitoring can be done throughout the project life by comparing the budget versus actual cost for each cost code. The system should be flexible enough to allow the contractor to add additional cost codes for change orders or impacts and inefficiencies experienced on the project. By correlating the project chart of accounts with the bid, the contractor will have a direct linkage between the project’s recorded costs and the contract terms and billing requirements, provided that the payment application also correlates to the bid.

When analyzing the project costs, it is important to refer back to the contract once again. Often times, the contract will define costs that are unallowable. The contract may also include Federal Acquisition Regulation (FAR) requirements when the project is at least partially funded with federal monies. If FAR requirements apply, it is important to remember the overriding cost principles of FAR when determining whether to include a cost in your delay claim. The overriding cost principles of FAR are as follows:

1. Is the cost allowable? There are certain types of costs that are
the project's fixed overhead costs expended during the period of delay. These costs include items such as supervisors' salaries and field office costs, such as the trailer, utilities, copy machine, etc. The project chart of accounts should include cost codes for these types of costs. There may be additional codes to include in the daily rate pool, so the contractor will need to review all of the indirect costs codes. The important distinction should be to include costs that are generally fixed in nature and directly proportional to the project duration. The idea is that if a contractor is put in a delay situation, there are certain types of costs that they will continue to incur, even though it is unable to perform any contract work for which it could receive revenue to cover these costs. The following steps detail the process for quantifying a field office overhead daily rate:

1. Generate an accounting report that details the transactions recorded to the field office overhead codes on the project.
2. Review the cost transactions within the field office overhead cost codes to determine if the costs incurred were fixed time-related costs, activity-related costs or one-time costs. Only the fixed time-related costs should be included in your field office overhead pool of costs.
3. Remove any cost transactions included in your pool that are unallowable under the contract and/or partially recovered by the change order markup provisions.
4. Sum the remaining field office overhead transactions in the pool and divide by the days of actual contract performance. The result of this calculation yields the field office overhead daily rate for your project.
5. Multiply this field office overhead daily rate by the compensable days of delay determined by your time impact analysis described above. The result of these calculations is the extended field office overhead delay damages suffered by the contractor.

Home Office Overhead Daily Rate Calculation

The next component to calculate for your delay claim is the home office overhead daily rate. Once again, the first step in preparing this claim component is to read the contract. Some contracts may identify home office overhead costs that are strictly unallowable. Even if the contract does not specify any home office overhead costs that are unallowable, the courts have typically referred to the unallowable costs listed in FAR part 31.2. Contracts may also stipulate how home office overhead costs should be priced for delays. If not stipulated by the contract, the most common methodology used in the industry is to use an Eichleay formula.

The Eichleay formula was first accepted by the courts in 1960. The calculation was submitted by the plaintiff Eichleay Corporation as a way to calculate the home office overhead costs incurred by Eichleay during a period of delay. The use of the Eichleay formula has been debated for more than 50 years, but it is now the generally preferred method for determining home office overhead delay damages.

Home office overhead costs are the costs recorded by a company to its general and administrative corporate cost codes. These costs typically include officer salaries, office or administrative salaries, rent and utilities, legal and accounting costs, entertainment costs, etc. Just as was done when calculating the field office overhead claim, you want to select costs that are generally fixed in nature. You then want to remove any costs that are considered unallowable under FAR part 31.2. These types of costs would include entertainment expenses, bad debt, etc. It is also important to ensure that the costs captured in the home office overhead cost pool are reasonable and allocable to the contract. The following steps detail the process for quantifying a home office overhead daily rate.

1. Generate an accounting report that details the transactions recorded to the home office general and administrative account codes during the project's period of contract performance.
2. Generate an accounting report that quantifies the total company billing during the project's contract performance period. Also generate a report that details the project's contract billings.
3. Review the cost transactions within the home office overhead cost codes to determine if the costs incurred were fixed time-related costs, activity related costs or one time costs. Only include the fixed time-related costs in your home office overhead pool of costs.
4. Remove any cost transactions included in your pool that are unallowable under the contract, or by FAR 31.2, or partially recovered by the change order markup
provisions, if included in the contract.
5. Divide the project’s contract billings by the total billings for the company during the contract period.
6. Multiply this number by the remaining pool of home office overhead costs for the project’s full contract performance period. This results in the total allowable overhead allocable to the project.
7. Divide the overhead allocable to the contract by the total number of days of contract performance on the project, including delay days. This results in the daily home office overhead rate for the project.
8. Multiply the daily home office overhead rate for the project by the number of days of compensable delay. The result of these calculations is the extended home office overhead delay damages suffered by the contractor.

It is important to note that to recover home office overhead damages calculated by the Eichleay method, some courts have required that the claimant must establish:

1. Government-caused delay and, therefore, compensable delay occurred;
2. The claimant remained on standby during the period of delay; and
3. The claimant could not have taken on other work or otherwise mitigate its damages resulting from the delay [4].

Unabsorbed or Idle Equipment Costs
Unabsorbed or idle equipment costs are a delay damage component that is often overlooked by contractors. These costs consist of the equipment rental or ownership costs that are incurred by a contractor during a period of suspension on the project. Rental equipment rates are typically determined by using the actual rental invoices to determine a daily rental rate for the equipment. It is important to note that once again, your quantification of unabsorbed or idle equipment costs needs to start by reviewing the contract. The contract may stipulate the rental rate guide that must be used to determine the idle equipment costs. Most owners require that any rental rates incurred by the contractor be less than or equal to the rates depicted in the contract specified guide. This means that you may need to reduce the actual rental invoice costs if the rates shown in the specified guide are less than actual rental costs. The opposite may also be true in that, if your actual rental rates are less than the rates listed in the specified guide, then you will need to price your equipment at the lower actual rental cost.

If the equipment is owned and there is not a contract specified rate guide, the process becomes more challenging. The contractor may specify a rental rate guide be used for owned equipment as described above. It is important to remember that if your contract includes a specified rate guide to use, you must ensure that you are applying the appropriate standby delay factor if one is listed. If the contract does not include a specified equipment rental rate guide, then you will need to calculate the time related costs attributable to the owned equipment. These costs generally include depreciation, freight costs, major repairs or overhauls, license fees and interest or cost of facility capital. These calculations are difficult and often require expert assistance and are beyond the scope of this article. When a rental rate guide is specified in the contract, you must review and understand the assumptions or factors included in the guide. Often, the guides will have different rates depending on the model year of the equipment and/or climate and regional adjustment calculations. A thorough review of the specified rental rate guide is imperative to ensure that your equipment calculations are accurate. The following steps detail the process for quantifying an unabsorbed or idle equipment daily rate for a project whose contract specifies the use of a rental rate guide.

1. Create a spreadsheet that lists all of the equipment used on the project.
2. Calculate the number of days each piece of equipment was on the project, including delay days.
3. Multiply the days the equipment was on the project by the daily rate determined using the contract-specified rental rate guide. Note that some contracts will require using monthly rates when equipment is rented long-term.
4. Multiply the total for each piece of equipment from step 3 by the delay factor specified in the rental rate guide.
5. Total this amount for all equipment on the project and divide by the number of days of contract performance. This results in an average daily stand-by equipment rate for the project.
6. Multiply the daily stand-by equipment rate for the project by the days of compensable delay. The result of these calculations is the unabsorbed or idle equipment damages suffered by the contractor.

The total delay damages for the project are then determined by adding up the values calculated in each of the three damage calculation sections above. It is important that the contractor document all aspects of their claim completely. The contractor should assume that its calculations will be audited by the owner. Having a completely documented claim makes the audit process easier on both the owner and the contractor. It is also a good idea to identify the overhead and equipment costs excluded in the calculations above. This helps with the owner’s audit and shows the level of effort and accuracy put forth by the contractor in developing their delay claim.

Conclusion
This article has laid out a process for quantifying and pricing delay claims that is widely accepted in the construction industry. It has identified many common mistakes made by contractors when attempting to calculate delay claims and emphasized ways to ensure avoiding these mistakes. The process depicted is by no means the only way in which a contractor can quantify and price a delay claim, but if the appropriate level of documentation exists, it is a method that has proven successful in the industry. The process depicted in this paper will allow the contractor to develop an effective delay claim that is properly documented and defendable for an owner.
REFERENCES

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To view additional resources on this subject, go to: www.aacei.org/resources/vl/
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THE AACE TECHNICAL BOARD RELEASES 2ND EDITION OF THE TOTAL COST MANAGEMENT FRAMEWORK
The second edition of the AACE International Total Cost Management Framework, An Integrated Approach to Portfolio, Program, and Project Management offers enhanced process maps through the use of color to emphasize the plan-do-check-act (PDCA) steps integral to TCM. The second edition incorporates minor edits to the process maps and associated narrative. The second edition was edited by H. Lance Stephenson, CCP FAACE.

The TCM Framework had its beginnings as an effort to develop a professional handbook to be called AACE International’s Total Cost Management Guide for the 21st Century. In 1995, the Guide project was re-scoped as the Framework project. In 1996, the high level TCM process was published in an article in Cost Engineering journal entitled, “A New Look at Total Cost Management”, authored by John Hollmann. At this time John became the lead author and editor for the Framework working in association with the Technical Board. The Technical Board solicited member comment via a special survey and we drafted the introductory chapters (now Part I). These chapters were subjected to considerable review and consensus until 2002, when they chapters were formally published.

Completing the remaining 30 sections was not so much a traditional writing process as a process reengineering project for the editor and contributors. The effort consisted of taking common practice knowledge about cost engineering and allied fields, breaking it down into steps, connecting the steps based on a time honored management process model, and finishing it with consistent narrative using a single voice. Once again, the support of leading professionals was sought to assist in the development. The value of the resulting product is in integration and structure, not new practices, how-tos, or narrative.

The product was then reviewed by AACE’s Technical Committees, the main and associate AACE Boards, and other subject matter experts. Comment was sought from related associations as well. The review and approval process used was the same stringent approach that AACE uses for its Recommended Practices. This multi-stage process requires formal requests for comment, documented comment disposition, and Technical Board approval to ensure that general consensus is achieved.

Individuals interested in purchasing a copy of the AACE International Total Cost Management Framework, An Integrated Approach to Portfolio, Program, and Project Management can visit the AACE online store. The second edition is available as an electronic download or as a print version book.◆
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For more information on a Premium Partnership Program and how it will benefit your organization please contact AACE International Headquarters at 304.296.8444 or www.aacei.org.
**Atlanta Area Section**

The guest speaker for the February 17 membership meeting was Jeffery Mutchler. Jeff is an industrial hygiene manager for Terracon’s Atlanta office. He holds a BS from the University of Georgia and an MS from Emory University. He also holds EPA-AHERA certification and a 40-hour HAZWOPER certificate. The topic of the evening was, “*Estimating Asbestos Abatement Costs – It’s Not Just ‘By the Numbers’ Exercise*”.

What you missed if you were not at the February meeting are the many factors that enter into generating accurate asbestos abatement costs, and it is rarely as easy as applying a cost per square foot value of a given asbestos-containing material. Most asbestos abatement projects are not like the one before, even if they consist of the same type and quantity-quality/accuracy of the asbestos inspection report, reason for the abatement (renovation vs. demolition), location, type of owner, and level of third party involvement all play a factor. The presentation covered some of the factors that can complicate accurate abatement estimating and how to mitigate some of these factors.

The Atlanta Area Section was treated at its January meeting to a presentation by Arol Wolford, CEO of VIMTREK, and original founder of CMD Group. We were pleased to welcome a long-missed member from the past (who claims he’s now studying for the PSP) and another member previously with the East Tennessee Section (who says she intends become certified).

Arol presented VIMTREK’s mission to improve Building Information Modeling (BIM) with a 3-D visualization and collaboration tool (VIM–Visual Information Modeling) to reduce construction costs, energy operations and carbon footprints by a minimum of 25 percent.

Mr. Wolford, a founding member of Revit, discussed the development of Revit and his interest in taking BIM to the next level. Using the Boeing 777 as an example of a computer-generated project, from design through all steps of construction and then simulated flight, he asked, “why not do that to building construction?”

**Arizona Section**

The AACE International Arizona Section’s January 2015 Section Meeting was on Thursday January 15, at the Scottsdale Bible Church construction project, where Kitchell Project Superintendent Andy Platt gave a tour of the Shea Campus. Meeting attendees included Marina Sominsky, PSP; and Matt Chappell, CEP.

Andy’s tour and presentation included insights, anecdotes, and interesting construction insights on the project. Attendees were able to meet campus staff and learn about the project through

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*At the January Arizona Section meeting, Kitchell Project Superintendent Andy Platt gave a tour of the Shea Campus of the Scottsdale Bible Church phase two construction project including a new children’s building and bookstore/café.*
On December 13, 2014, the Arizona Section participated in the 31st Annual CPLC Para Los Ninos Holiday Party at Kino Sports Complex in Tucson, AZ. Volunteers from corporate and business sponsors, as well as other groups, handed out free toys, treat-filled stocking, and a variety of other treats to local children. Activities included jumping castles, music, free hot dogs and soft drinks, and pictures with Santa and his elves. On-site check-ups and community service information was also provided. Despite rain, it is estimated over 1,000 children and adults attended the event. Thank you to our volunteers!

Section members also volunteered once again for the Phoenix CPLC Angeles del Barrio event in December. Thank you to those who participated in the event, for donating your time and support. This year’s attendance was excellent. 7,500 children and families attended the CPLC Holiday Angeles del Barrio Annual event in Phoenix. Santa rode in on his fire truck, the Arizona Cardinals franchise brought an inflatable bouncer for the kids, and the mascot was on hand to entertain and take pictures with the fans.

The Arizona Section’s December 2014 board meeting was on Wednesday, Dec. 17, 2014, via teleconference. Arizona Section officers in attendance were: President Chris Hudson, CCP CEP; Treasurer Marv Carson, Secretary Matt Chapell, CEP; and Director-at-Large Marina Sominsky, PSP. The main topics of discussion included the January 15 tour of the Scottsdale Bible Church project, the next board meeting scheduled for May, and the board member reports on their action items.

**Aurora Edmonton Section**

The Aurora Edmonton Section met Jan. 21 for a dinner meeting. Two presentations were made, the first being, “The Habitat Program locally and globally”, presented by Alfred Arthur Nikolai. Alfred is the President and CEO of Humanity affiliate in Edmonton, the largest affiliate in Canada. Under Alfred’s leadership, Habitat Edmonton realized many significant accomplishments in 2013, including: 81 Habitat families served in one year, the most in Canadian history; the largest rural Canadian build at Edson; construction of the first ever NetZero energy precast concrete home in partnership with Lafarge and Stantec; a first time...
Mohamed Abdelgawad of the Aurora Edmonton Section is shown above at the podium at the Section’s February meeting while attendees are seated for the section’s dinner meeting.

for home ownership on a Metis Settlement in Canada; and the largest Habitat build (64 units) in Canadian history.

Alfred’s leadership and collaboration skills have resulted in partnerships with many corporations, municipalities and organizations to increase access to affordable housing. Alfred currently serves on Alberta’s Interdepartmental Commission on Homelessness. Alfred has garnered many awards and some of the more notable include: receiving the Dr. E. Bako Award for outstanding contribution to the Alberta Fitness Appraisal and Certification Program – 1993; receiving the National Go-for-Green award in recognition of outstanding contribution to Active Living and the Environment in Canada – 1993; and the Larry Shaben award for Outstanding Leadership in the Housing Sector – 2012.

The second presentation was by Ron Knol, Donor Relations Coordinator for Hope Mission, on the activities being taken up by Hope Mission in the Edmonton and surrounding areas. Ron Knol has worked several years as a lawyer, a business manager and a director on the boards of several charities. Born and raised in Edmonton, Ron has gained an appreciation of the generosity of the Greater Edmonton community as it meets the needs of those who daily face the challenges of poverty and misfortune.

- **Brazil Section**

John Hollmann, PE CCP CEP DRMP, is shown above giving the keynote address at the Second Brazil Cost Management Symposium in Sao Paulo, Brazil December 5-6, 2014.

- **Central Texas Section**

The Region 5 Central Texas Section had its first section meeting for 2015 on Jan 15. The technical presentation was presented by George McLaughin from McLaughin and McLaughin on, ‘Project Management Using Standard Project Control Tools’.

- **Hawaii Section**

Preparation classes for the AACE Planning and Scheduling Professional (PSP) and Certified Cost Professional (CCP) certification exams were conducted February 5-7 for the Hawaii Section. Shown above from left are: Richard Koong, Gregory Treese, Joeseph Uno, David Ladines, Brett Katayama, Michael Bensussen, Thomas Uno, Sean Regan CCP CEP, Kristy Kastner PSP, Jeanette Roberts. Note that Kristy Kastner and Greg Treese are from HART, Jeanette Roberts is with HECO and Mike Bensussen is from the University of Washington. They attended the PSP course on the 5th. These same students were joined by Richard Koong, Tommy Uno, David Ladines, Brett Katayama and Joe Uno, all from J. Uno & Associates, Inc. for the CCP course on the 6th and 7th. The sessions were taught by Sean Regan.
The Region 5 Central Texas Section had its first section meeting for 2015 on Jan. 15. The technical presentation was presented by George McLaughlin from McLaughlin and McLaughlin on, ‘Project Management Using Standard Project Control Tools’.

The presentation addressed project management of various types of projects through implementation of standard project control tools and techniques. Tools included CPM schedules, EVM techniques, productivity measures and scope of work management. The notion is to go beyond simply producing project control deliverables to crafting and analyzing these deliverables.

At the end of the presentation, there was discussion on situations or real scenarios that typically occur during the planning and execution of real projects to get the members perspective on the outputs of the project control tools that are evaluated. The presentation was attended by 11 participants including two via virtual medium. The Central Texas Section provides AACE members not enrolled with the section the opportunity to participate virtually.

**Montreal Section**

On Dec. 2, 2014, the Montreal Section enjoyed an engaging presentation entitled, Strategic Procurement: Forging Win-Win Long Term Relationship With Suppliers, by Martin Perrier, Director of Procurement Hydro-Quebec Equipment, and Chantale Germain, Manager of Scheduling and Estimating Hydro-Quebec Equipment. This meeting, at Hydro-Quebec’s presentation facility in Montreal, was attended by over 57 members and guests.

The presentation noted the importance of timely and efficient supply of equipment, materials and services for successful project delivery in a dynamic project environment. While a major focus remains on the delivery of projects on budget and schedule, principles of ethics, equity and performance must also be followed and rigorously respected.

Strategic procurement was described as founded on informed and sound business decisions through the entire project
lifecycle. Scheduling and estimating knowledge contributes to this process. The presenters demonstrated synergies that can be formed between estimating and procurement disciplines, based on common interests and using the know-how that exists within each discipline, leading to tangible benefits in an increasingly competitive environment and evolving market.

To achieve effective results and improved supplier relationships, the Hydro-Québec Equipment group also implemented several innovations in 2014. Some examples of integration were shared along with the benefits of successful collaboration.

Key topics included current market conditions and historical indicators; making sense of internal and external information for enhanced forecasts; choosing the right tools based on the context and how to improve the decision-making process.

In November 2014, the Montreal Section enjoyed a presentation entitled, *Risk Assessment and Mitigation in Transportation Projects*, by visiting speaker, Professor Ali Touran, Ph.D., P.E. from Northeastern University in Boston. Dr. Touran is a Fellow of ASCE, President of the Boston Society of Civil Engineers (BSCES), and a member of the Board of Construction Management Association of America (CMAA).

The presentation emphasized the importance of identifying risk factors early on and described how public transportation agencies have started using formal probabilistic risk assessment for their capital projects and adopted a systematic methodology to identify, quantify, and mitigate risks that can threaten project budget and schedule.
The main steps of the process, as implemented by Dr. Touran in various risk assessments for industry, includes the following: Validation of the base conditions, identification and quantification of risks; establishment of budget contingency; development of a risk mitigation plan and the implementation and monitoring of the risk program. Modeling the cost uncertainty, development of risk register, and the Monte Carlo simulation approach were all described and the benefits and pitfalls of risk assessment programs highlighted.

The methodology used by an agency using a top-down approach was also compared with the traditional approach in risk modeling. Thanks to Alex Ocheoha, President of the student section at Concordia University for proposing and coordinating this special visit to Montreal and to Rio Tinto for providing the meeting facilities at their Montreal office.

Another high point of this meeting was the award of 2014 scholarships to deserving recipients Laya Parvizsedghy and Zorana Popic from Concordia University. Both were in attendance at the meeting to receive their awards and address the Montreal Section.

The Montreal Section got the new season off to a jump start in September 2014 with an evening that has become an annual tradition for the local members that we call, “Highlights of the Annual Meeting”. For those who cannot attend the Annual Meeting, we bring back the flavor to Montreal with some highlights. This year, the 58th AACE Annual Meeting was in the “Big Easy”, New Orleans, with a theme of Total Cost Management—A Platform for Success. Chantale Germain of Hydro-Quebec and Les McMullan of Rio Tinto attended the Annual Meeting and shared highlights from a few presentations. There were so many interesting topics to choose from.

The meeting presentation facilities were provided courtesy of Deloitte in downtown Montreal and hosted by past Montreal Section board director Maged Abdelsayed and current Director Celina Ma from Deloitte.

The topic discussed by Chantale was that by long-time friend of the Montreal Section, John Hollmann, PE CCP CEP DRMP, entitled, Risk Analysis at the Edge of Chaos (Risk-1584). This paper reviewed chaos and complex systems theory and a method to bring the understanding of these topics into a practical risk quantification toolset.

Les highlighted points from two topics that he had enjoyed including Games Contractors Play by Joe Lukas, PE CCP (OWN-1695) with a top ten list of popular techniques some contractors use and Implementation of an Effective CM Shadow Schedule (PS-1720) by Hector Arias and Alberto Martinez. The latter described this best practice scheduling technique as applied on projects and the benefits to the owner and contractors.

Over 60 attendees present certainly enjoyed the presentations and left proudly sporting mardi gras beads from New Orleans as a souvenir. Those in attendance were reminded to plan ahead for the 2015 Annual Meeting in Las Vegas.

**South Central California Section**

The South Central California Section proudly celebrated its ten year anniversary with a dinner meeting at Boccaccios restaurant in Westlake Village California on Jan. 22. The Section was honored to have as guest speaker, Julie Owen, CCP PSP, AACE International President Elect. Julie gave a brief overview of AACE’s activities and initiatives, an account of her travel experiences for AACE, including her travel to South America and the International Total Cost Management Conference in...
Bangkok. Julie also shared some of the preliminary plans for her presidential term which officially starts at the Annual Meeting in Las Vegas. Julie was generous enough to also give a technical presentation on Los Angeles Metro’s Measure ‘R’ a sales tax ordinance approved by the voters of Los Angeles County that commits $36 billion over 30 years for transportation initiatives to combat regional traffic congestion. The presentation provided a technical focus on the benefits and value proposition of program management on a multi-billion dollar transportation program, including: challenges, best practices, and program management return on investment. A very full and enjoyable evening ended with Julie awarding a certificate recognizing Walter Jazwa. Walter was one of the Section co-founders and had the initial idea of starting the South Central California Section to serve members between the main metropolitan areas of Los Angeles and San Francisco. The Section, although small, has consistently held technical dinner meetings in the Thousand Oaks and San Fernando Valley area of California. The Section also has a long standing relationship with California State University Northridge Construction Management Program, and more recently with the Construction Management program at the College of the Canyons, Santa Clarita.

**Southern California Section**

Charity Golden, MBA CIA, Executive Director AACE, International, spoke at the February 10 Southern California Section dinner meeting. Golden spoke on communication skills. Based on her years of experience working with associations and as an organizational trainer charity discussed how effective communication can increase your corporate value and well as personal stature. We had 14 who attended the dinner event including a first time guest plus 2 additional members who listened in via Webex, a new program being tested to reach out to more of our members. ◆

Julie Owen, CCP PSP, presents a certificate of appreciation to Julie Owen, CCP PSP, for presenting the program at the section’s 10th anniversary in January.

Charity Golden, MBA CIA, AACE Executive Director, is shown speaking on communication to members of the Southern California Section in February.

Southern California Section President Melvin Earley, CCP, presents a certificate of appreciation to Julie Owen, CCP PSP for presenting the program at the section’s 10th anniversary in January.

South Central California Section President Mark Von Leffern, EVP PSP, is shown presenting a speaker’s gift to AACE Executive Director Charity Golden, MBA CIA, following her talk to the section in February.
When Will Your Section News Submission Be Published?

The digital Source magazine includes all “Section News” submissions. Source has a submission deadline of two months in advance of the issue date. Please review the following production schedule. It lists the submission periods for the six bi-monthly issues of Source magazine in 2014.

2015 Source Section News Submission Schedule

February
• Items submitted from Oct. 16 - Dec. 15, 2014

April
• Items submitted from Dec. 16 - Feb. 15, 2015

June
• Items submitted from Feb. 16 - April 15, 2015

August
• Items submitted April 16 - June 15, 2015

October
• Items submitted June 16 - Aug. 15, 2015

December
• Items submitted Aug. 16 - Oct. 15, 2015

This production schedule is based upon production schedules at AACE headquarters, as well as our printer having two to three weeks production time to take our in-house files and convert them to the Nxtbook software for posting. Enhanced features like audio, video, website links, and more will be a part of each issue of the Source. Some technology features will require additional production time and earlier deadlines. The magazine is to be ready for posting by the first of the month.

Within 2 to 3 business days of submitting a “Section News” items, you should receive a return confirmation e-mail that your submission was received at AACE headquarters.

How to Submit Text and Photos

Please submit any and all text as a part of the e-mail or as a Microsoft Word file attachment. Please submit any photo or photos as individual attachments in tiff or jpg formats. Do not embed photos in Microsoft Word files.

For photos to be used, we require either large original files or print size photos at 300 dpi (dots per inch). We can convert large 72 dpi submissions into the required 300 dpi. This process shrinks the size of the original submission. We cannot use photos taken on cell phones. For photos to be published, they must be in focus, of print quality, and wide enough to fill the width of the column layout.

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TCM: We do it our way.
At the age of 36, Mike Abrashoff became the Commander of U.S.S. Benfold, at the time he was the most junior commanding officer in the Pacific Fleet. The challenges were staggering with exceptionally low morale and poor performance results.

Few thought that this ship could improve, but Mike only became more resolved. By instilling a sense of urgency and by creating an atmosphere of commitment to excellence, Benfold became the best ship in the Pacific Fleet.

“A lot of people do whatever it takes to secure the next promotion. All I ever wanted to do in the navy was to command a ship. I did not care if I ever got promoted again. And that attitude enabled me to focus solely on results instead of doing the right things for my career. Along the way, it was my people that created the results that ensured my next promotion.”

The solution was a system of beliefs that Mike calls GrassRoots Leadership. A process of replacing command and control with commitment and cohesion, by engaging the hearts, minds, and loyalties of workers—a belief that Mike achieves with conviction and humility.

“The most important thing that a captain can do is to see the ship through the eyes of the crew.” This meant interviewing every single person on his ship, from the most senior officer to the lowest recruit. It was an experience that began to generate invaluable ideas, often from unexpected sources.

GrassRoots leadership is a principle that inspires every individual to share the responsibility of achieving excellence. “It’s your ship,” Mike was known to say. To this day, his former sailors still remind him of it.

By every measure, these principles were able to achieve breakthrough results. Personnel turnover decreased to an unprecedented 1% and operating expenses were slashed by 25%. The U.S.S. Benfold became regarded as the finest ship in the Pacific Fleet, winning the prestigious Spokane Trophy for having the highest degree of combat readiness.

Mike’s leadership skills have been honed through a number of challenging roles. Prior to commanding U.S.S. Benfold, Mike served as the military assistant to the Secretary of Defense, the Honorable Dr. William J. Perry. In this demanding role, Mike accompanied the Secretary of Defense throughout the world on critical missions of national security.

Mike’s book, It’s Your Ship, is a fascinating tale of top-down change for anyone trying to navigate today’s uncertain business seas. The 10th anniversary edition of It’s Your Ship was released in the fall of 2012. His next book, Get Your Ship Together, was released in January 2005.

Mike is now an experienced entrepreneur having co-founded a leadership development company called GLS World Wide. Mike is originally from Altoona, Pennsylvania, and is a 1982 graduate of the Naval Academy of Annapolis.
QUALITY/ACCURACY OF STUDY ESTIMATES: Facilitators will discuss order of magnitude, pre-feasibility and feasibility estimates as they relate to historical cost overruns on mining projects. Risk management and project cost uncertainties will be explored. The panel discussion will be led by George Sturgis, vice president for project development at Hecla Mining Company.

THE EFFECTIVENESS OF THE STAGE GATE PROCESS: Most major mining firms use a stage gated discipline for business case development, validation, project shaping, scope development, capital cost estimating, planning and risk assessment. Each step of the stage-gate process has a specific set of deliverables to be met in order to take a go or no-go decision and progress through the next gate to eventual project execution and delivery. This panel discussion will cover the key aspects of this process, lessons learned, as well as pros and cons of the stage gate process. The panel discussion will be led by Rene Mendoza, manager projects at BHP Billiton in Chile.

THE OWNER’S ROLE AND ORGANIZATION FOR MINING PROJECTS: Challenges in managing mining mega-projects: with mining companies operating internationally, what global systems and methods are being used to establish a consistent approach to project management and project controls. What portfolio reporting processes do mining firms have in place for projects using EPCM contractors and on self-managed projects? What type of organization and best practices do the owners have in place to provide oversight and management? What governance processes are in place? Mining company representatives will discuss available strategies. The panel discussion will be led by Andrea Georgopoulos, manager of project controls for Freeport-McMoRan Copper & Gold Inc. in Arizona.

LESSONS LEARNED FROM THE LATEST “MINING CYCLE”: During the last mining cycle, projects often chased commodity prices, were accelerated and/or set aggressive commissioning date targets. Many projects had difficulties with this strategy. What lessons can be learned from this experience? What did we learn to improve project delivery? What were the challenges, opportunities, and successes? How do we retain and apply these lessons learned to future mining projects? The panel discussion will be led by Nelson Bonilla.

DEVELOPING STANDARDS FOR MINING: Mining projects differ greatly in relation to location, extraction method; commodities extracted, and scale. The mining industry has not settled on a common code of accounts and therefore cost comparisons, benchmarking and control are more difficult than in other industries. Several major mining companies have started working together to develop a common standard. Presenters will report on this activity, identify any opportunities in this approach, and discuss how the balance of the industry can adopt this standard. The panel discussion will be led by Fred Biery, who manages the mining, minerals and metals area for Independent Project Analysis (IPA), the industry’s leading capital project benchmarking firm.

The Mining Track is led by John Gravel, director mining and metals for Turner & Townsend in Vancouver. Gravel has over 18 years of experience in mining, having worked the majority of his career for Rio Tinto, and now is consulting to senior, mid-tier, and junior mining clients. His experience is in procurement, project management, project controls, and cost management across many commodities and extraction methods.
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**TIP #1** - Take $100 off your registration fee for staying at the MGM Grand Hotel. Enter the discount code found in your reservation confirmation email at check-out to receive the discount.

**TIP #2** - Please note, register before the Early Registration Cut-Off Date of **May 25, 2015**, and save an additional $100!

**TIP #3** - If you are not a member of AACE, join now to experience the benefits of membership and save money on your meeting and seminar registrations! Go to **http://www.aacei.org/mbr/** and start your AACE International membership today!

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