2019 AWARDS

Risk and Scope of Work

Using a QRA Maturity Model for Continuous Improvement
SAVE THE DATE!

June 28 - July 1, 2020
Hilton Chicago
Chicago, Illinois, USA
The real relationship between your age and your chance of success

Backed by mathematical analysis, network theorist Albert-László Barabási explores the hidden mechanisms that drive success — no matter your field — and uncovers an intriguing connection between your age and your chance of making it big.

A pioneer in network science, Barabási uncovers the hidden order behind complex systems. His work uses the quantitative tools of network science, a research field that he pioneered, and led to the discovery of scale-free networks, helping explain the emergence of many natural, technological and social networks.

Source: www.ted.com

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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For additional industry news and updates, you can always visit us at web.aacei.org.
The Top 10 Reasons To Join AACE International

Ready to advance your career and begin enjoying the advantages that our members enjoy? Whether you are an experienced cost engineer or a student, we have a membership ready for you.

1 Time
Gain access to a wealth of resources that will save you time and money! You’ll stay informed about the complexities of the cost and management profession - plus you’ll have access to discounts on educational programs, publications, and more!

2 Information
Locate thousands of technical papers and publications in the Virtual Library. AACE’s database is keyword searchable for quickly locating appropriate reference articles.

3 Career
Members can post resumes at no additional cost in our Career Center and keep your career on track through information sources such as our annual Salary and Demographic Survey of Project and Cost Professionals.

4 Learning
We offer numerous online learning courses on estimating and project management. The Approved Educational Provider program helps maintain high quality development courses and providers. AACE also holds many seminars throughout the year.

5 Resources
Starting with the TCM Framework and Recommended Practices that are available for free only to members to our bi-monthly publication Cost Engineering featuring articles for cost professionals around the world. Through the AACE International website, the Cost Engineering journal is a great current resource for members and as a member, you gain access to an archive of past issues.

6 Technical Development
Increase your knowledge and expertise by joining one of AACE International’s many technical subcommittees, subcommittees, and Special Interest Groups (SIG’s) at no additional cost to members. Discuss industry problems with your peers or help experts develop new and improved techniques and practices for the profession.

7 Networking
By attending a local section or our Annual Conference & Expo for interesting speakers, informational tours, social dinners and much more. The online Membership Directory is an excellent source for a list of contact information on thousands of members. Join one of our many technical subcommittees and participate in the AACE Forums - a great way to tap into the collective wisdom and experience of our world-wide membership.

8 Excellence
Our certification programs are independently accredited by the Council of Engineering & Scientific Specialty Boards. AACE certifications are a recognized credible standard in the cost management field. A recent study shows that individuals with an AACE Certification earn 17.4% more than their counterpart without a certificate.

9 Discounts
On products and services ranging from AACE International Conference & Expo registration fees, archived webinars and presentations, certification examination registrations, and more!

10 You!
We are your professional partner bringing you information and support you can trust. Join and become part of a unique network of individuals who are dedicated to improving the cost and management profession.

JOIN TODAY! web.aacei.org
This is my first President’s Message.

I’d like to begin by thanking our outgoing Past President Charlie Bolyard and our current Past President Dr. Alexia Nalewaik for lessons learned and mentoring over this past year. Twenty-five years ago, when I joined AACE International, never did I imagine that one day I would be honored to start my year as Association President. I have seen a succession of amazing leadership involved in our Association. I am in awe of the leaders, who have come before me. I pledge that I will take my responsibility seriously to safeguard our Body of Knowledge and the Association during this next year.

SUCCESSFUL CONFERENCE & EXPO IN NEW ORLEANS

I would further like to voice the appreciation of the entire Association towards our Headquarter’s staff and to our Executive Director/CEO, Charity Quick. These dedicated professionals worked over the past year to ensure a successful Conference and Expo in New Orleans. I have witnessed the logistical buildup to the Conference and Expo over many years. This work, much of which is behind the scenes, is only possible through a coordinated effort of all of our staff working with our Board of Directors, our Associate Boards, vendors, exhibitors, sponsors and countless volunteers. They deserve our thanks and appreciation for their efforts on our behalf.

WHAT YOU CAN EXPECT

So, what can our members expect from their Board of Directors over the next year?

One of the most important duties of the Board of Directors is to set organizational direction and conduct strategic planning. As with any business, external conditions change, social norms evolve, and the impact of a changing world necessitates that we continue to evaluate how we keep AACE international both relevant and member centric.

In October, the AACE International Board of Directors as well as our various Associate Boards will convene at our headquarters in Morgantown to conduct a strategic planning session. Our goal is to ensure all association components, including the sections, regions, boards, committees and staff have the right goals—and are moving forward in tandem in meeting these goals. The idea is to use this strategic session to serve as our road map and baseline for efforts throughout the year.

The AACE International bylaws establish an Executive Committee as a sub-set of the Board of Directors. It is the plan that this Committee will meet monthly and review the ongoing progress of the Certification, Education, Marketing, Membership and Technical Boards. The work of the Association all happens within these Boards and their Sub-Committees. The Board of Directors wants to be engaged in their efforts and not be just bystanders. We want these entities to fulfill their responsibilities and the Board’s role will be one of guidance and oversight.

YOUR ROLE WITHIN THE ASSOCIATION

Lastly, what can the Association expect from our membership?

I believe that if AACE International is properly doing its job, our membership will have as their core competency the AACE International Technical Body of Knowledge to enhance their day to day work experience. Each member needs to work towards becoming experts in Total Cost Management and the subsequent AACE Recommended Practices.

Become familiar with all the information that your membership affords on the AACE International website. Discover the unique, value adding and not easily duplicated AACE International Body of Knowledge, that is unlocked through membership in AACE International.

Spread the word. Our best marketing comes from our members. Educate your management, co-workers, peers, and professional contacts on the benefits of membership in AACE International. Every day bring AACE International Recommended Practices to the attention of your project teams, work groups, and clients. The project successes, that we know will flow from the use of our Body of Knowledge will provide an unparalleled marketing effort on our behalf.

Each of us must strive over the next year to encourage one new member to join AACE International. One small effort for the year, but the result potentially will be a doubling of the size of the Association. Become involved in your AACE International local section, participate on your Section Board, attend meetings, mentor new members, present at Section meetings. The level of effort that you contribute, will more than be matched by the benefits you will realize.

In the upcoming months, my monthly message will focus on the contributions of our member volunteers. We enjoy the products of their efforts, but too often we normally do not see the work itself. That work is too often far in the background.

IN CONCLUSION:

Enjoy the rest of the summer, be safe, learn something new, and thank you for your continued participation in AACE International.
Every new project, or an existing project to be modified, requires scope-of-work. Every project has certain risks associated within the scope. This short write-up will help in establishing good scope of work. In addition, this will highlight how to address the associated risks.

In order to establish a project scope of work, a five-step process is being suggested to ensure all the required work is included in the project. The five steps are: Establish Requirements, Define Scope of Work, Create Work Breakdown Structure (WBS), Verify Project Scope, and Monitor Scope Creep.

1. Establish Requirements – This is the first step for defining all project requirements to meet overall project objectives. The project charter and the stakeholders register are the two most important documents for the project team to follow. This also helps the project team in defining actual project scope.

2. Define Scope of Work – This step in general defines all the required work activities for the project, including all assumptions, exclusions, and deliverables. This step establishes the basis within which the project work must be executed.

3. Create WBS – In order to manage project effectiveness, this step requires breaking the entire project deliverable list into small manageable components. A Work Breakdown Structure (WBS) also helps in controlling project cost and schedule.

4. Verify Project Scope – This step helps the project team verify project scope and deliverables with a sponsor through an established sign-in procedure.

5. Monitor Scope Creep – This step is required for constant monitoring to prevent project scope creep from the scope baseline.

In addition, it is very important to establish all project exclusions — items which will be considered outside the scope of the project. The project team should establish a list of all assumptions that stakeholders are going to follow to complete the project.

The project team should be aware of all constraints imposed by the corporate on money, staffing, or schedule. Based on these five steps that create a scope management plan, the sponsor, project manager and project team will be responsible in managing the scope of any project. Any member of the project team can initiate a scope change by formally submitting the same to project manager for approval. Once all the changes are approved by the project sponsor, the project manager will revise all documentation and communicate the scope changes to all stakeholders. Ultimately the project sponsor is responsible for final acceptance of all project deliverables and the project scope of work. Overall roles and responsibilities for managing project scope of work are suggested as shown in Table 1:
Action Plan for Your First Year in Business

It feels as if that number is unknowingly taking risk into account with our daily chores. On our mind at ease. You provide valuable expertise and a fresh, objective point of view, plus in the emerging “big economy,” companies depend on consultants more and more. The real question is, what constitutes a “fair price”? Biech offers a few insights:

1. Risk management planning
2. Risk identification
3. Qualitative risk analysis
4. Quantitative risk analysis
5. Risk response planning
6. Risk monitoring and control

In order to implement effective cost controls or effective schedule controls, the risk management process should be based on industry best practices. The following best practices are currently in use:

- Create an integrated project controls system
- Develop an accurate cost estimate
- Establish a comprehensive project budget
- Develop an integrated schedule baseline
- Develop an effective risk management plan
- Implement an earned value management system

Technical risks are risks, associated with project development for items like scope of work, detailed design, construction and operation of facilities and processes. In addition, technical risks may affect the functional and operational requirements of the project.

FACTOR 1: The type of client you serve. Generally, for-profit companies have bigger budgets than do nonprofits. Daily rates for consultants working in the corporate arena tend to start around $1,000 per day and go as high as $6,500 per day (for Silicon Valley clients). Government, nonprofit organizations, and associations are usually lower, in the $600 to $4,500 range.

FACTOR 2: The location of the client. Ranges of fees are different in different areas. It’s natural to expect consultants in large cities like New York, Boston, or Frankfurt to charge more than consultants in smaller towns. In the U.S., consultants working on both coasts command a higher fee.

FACTOR 3: Your own consulting foundation. What expertise do you have? How long have you been in your specialty area? Is it unique or commonplace? How much experience do you have? With what type of clients? Do you work internationally, statewide, locally? How well are you known? What perceived value do you add to your stature in the business, authored books, or university affiliations? The answers to each of these will help to determine your rate.

Carefully consider the “Big 3”: Client Type, Location, What YOU Bring to the Table. Here’s more detail on these factors:

- Change in Scope of Work requests – approval
- Establish Project Objectives
- Evaluates all scope changes
- Final acceptance of all project related deliverables

TABLE 1 Role/Responsibilities

Managing risk is nothing more than identifying risks, providing necessary risk analysis, and a risk response. However, managing risk is the most important function in making any project successful. In general, every company is initially responsible for all project related risks; as it is usually a company decision whether to execute the project or not. Risks must be proactively managed throughout the project life-cycle.

In our day-to-day affairs, we are constantly exposed to risks, yet we are managing our lives with some degree of success, by unknowingly taking risk into account with our daily chores. On any project through all phases of work, the question of managing risk comes down to acting responsibly on behalf of all stakeholders, owners, contractors, or any other affected parties. However, the risk management process increases the project budget for handling risks. This cost should be balanced against the expected values of the risks to be assessed. The risk process relies heavily on the judgments and experience of the person or the project team that will handle the process. It also depends on the historical data base established by the company from previous projects. Taking all appropriate steps to get the process going is probably one of the most critical decisions a company can make to address all types of risk. Overall, the processes identified in the Project Management Body of Knowledge (PMBOK) will support any risk management concept for all disciplines. Six major processes are as follows:

- Participate in defining scope change
- Participate in impact assessments of scope of work suggested changes
- Participate in verifying project scope
- Participate in validating scope of work change requests
- Participate in evaluating all scope changes
- Participate in approving scope changes
- Participate in communicating appropriately within project team

How Much Should I Charge?
A New Consultant’s Most Worrisome Question

By Elaine Biech

You’re finally ready to take the leap and become a consultant. But there’s one question standing between you and your dream career: How much should I charge?

If you’re really nervous about making this decision you’re not alone says Elaine Biech: price is one of the biggest stumbling blocks for new consultants. “Most of us have insecurities about attaching a cash amount to our work, which is why this decision feels emotional in nature,” says Biech, author of The New Business of Consulting: The Basics and Beyond and its companion workbook, The New Consultant’s Quick Start Guide: An Action Plan for Your First Year in Business. “It feels as if that number is tied to your value as a person.”

First, if you worry that you’re not “worth” a fair price, put your mind at ease. You provide valuable expertise and a fresh, objective point of view, plus in the emerging “big economy,” companies depend on consultants more and more. The real question is, what constitutes a “fair price”? Biech offers a few insights:

For more information or a free consultation, visit Elaine Biech at www.elainebiech.com or email elainebiech@elainebiech.com.

Editor’s Note: This is part of a continuing series of short articles provided by members of the AACE International Technical Board.
An interview with Mark Guevara, Esq., CFCC PSP
AACE International Certification Board
CFCC Team Chair

QUESTIONS BY PENNY WHOOLEY, MANAGER CERTIFICATION AND MEMBERSHIP

Q: What is a CFCC?
A: A Certified Forensic Claims Consultant, or CFCC, is an experienced claims professional and testifying expert in the construction dispute resolution and litigation arenas.

What advantage is there to being CFCC certified?
The CFCC is an expertise level certification – the highest level of certification offered by AACE. Being a CFCC carries great weight, both amongst industry peers and legal counsel because it demonstrates that an individual has the educational background, competency, experience and professional license/certification of a testifying expert in the field of claims analysis and dispute resolution in construction litigation. Individuals holding the CFCC certification hold themselves out as an expert in one or more of the fields of total cost management.

What advice would you give someone interested in being CFCC certified?
First, consider whether you meet the qualifications, including a college degree, hold an additional certificate/license, professional paper, recommendations and 12 years of relevant claims experience, which can be found on the AACE website at https://web.aacei.org/certification/certifications-offered/expertise-certifications. The requirements to sit for the CFCC exam are much more stringent than many of the other certifications that verify competency, but not expertise.

Regarding the claims experience requirement, many candidates do not fully realize that their experience must be “centered on” and “deal directly” with the prosecution, defense and resolution of claims and disputes. It is not enough to have general, indirect or periphery experience with these matters. If claims and disputes are not one’s full-time job duties and a candidate has other responsibilities, e.g., marketing, business development, contact administration, or project controls not directly dealing with claims and disputes, a candidate is required to quantify the actual time he/she spent performing just claims and dispute resolution work compared to other job duties.

What does the CFCC exam look like?
Well, you’ve probably heard that not all candidates cleared to sit for the CFCC pass the exam, especially on the first attempt. The exam is a rigorous 5-hour computer-based testing (CBT) examination, which has two components: multiple choice questions and four written essay assignments. The 100 multiple choice questions cover 5 general areas:

1. legal knowledge, dispute resolution and evidentiary rules
2. cost damages, estimating and lost productivity
3. planning, scheduling and delay analysis
4. project management and documentation; and
5. ethics and professional practice.
The written essay assignment consists of choosing from a list of suggested scenarios, which are similar to those a testifying expert would encounter. The purpose of the essays is to test a candidate’s experience, knowledge, analytical abilities and communication skills.

Why do candidates commonly fail the CFCC exam?
Candidates who fail the exam generally receive lower than passing scores on the essay portion of the exam. The essays are difficult, but with the proper preparation, definitely doable. Here, the CFCC Certification Study Guide offers a good approach to answering essays – the “BIRAC” method: (1) briefly layout the background or situation (2) identify the issues arising from the facts (3) provide the relevant rules of law (4) analyze and apply the facts and rules to the situation, and (5) reach a conclusion.

That said, what advice would you give to pass the essays? Learn and develop your skill at issue-spotting. Identifying all relevant issues arising from a given fact-pattern is perhaps the single most important skill needed to pass the essays. Said differently, if a candidate fails to spot a relevant issue in a given fact pattern and fails to address it through the essay, he/she will lose all related points for failing to mention the rules, provide analysis or offer any conclusion. On the positive side, the CFCC Certification Team recently revised the grading criteria to allow some level of flexibility, i.e., no mandatory failures for the candidate’s failure to spot/address a single issue. Even so, the inability to identify all key issues arising from a given fact-pattern will only curtail a candidate’s chances of successfully passing the CFCC exam.

ABOUT THE AUTHOR
Mark Guevara, Esq., CFCC PSP, AACE International Certification Board CFCC Team Chair, received his Bachelor of Science degree in construction management from Cal Poly, San Luis Obispo and his JD from the University of La Verne, College of Law. He has over 30-years’ experience in the engineering and construction industry as an attorney, civil engineer, and construction claims consultant on large-scale, public and private sector projects with the US Army Corps of Engineers, Fluor Corporation, multiple law firms, and Arcadis. Since 2016, he has served as the Chairman, CFCC Certification Team, AACE International Certification Board.

Two new AACE International Recommended Practices Posted

AACE International is announcing the release of two new Recommended Practices to its collection of RPs. The RPs are available as free downloads to AACE members and other can purchase the RPs through the online store. The RPs are offered as pdf downloads and no print version is available for these or any of the RPs.

RP 57R-09: INTEGRATED COST AND SCHEDULE RISK ANALYSIS USING RISK DRIVERS AND MONTE CARLO SIMULATION OF A CPM MODEL
This recommended practice (RP) defines and explains the integration of cost and schedule risk analysis using a Monte Carlo simulation of a critical path method (CPM) resource-loaded schedule. It explains in some detail the use of risk drivers to represent the identified risks to a project’s cost and schedule in an integrated approach. There are generally three overall purposes of such an exercise:

• To estimate the probability of finishing on or before the schedule date and on or under the cost estimate.
• To determine the amount of cost and schedule contingency needed to provide a chosen degree of confidence of hitting both targets.
• To identify the risks that cause any estimated overrun.

Using root-cause risks to generate the simulation results permits the prioritization of identified and quantified risks by their impact on the schedule. This focus on risks facilitates identification of effective risk treatment options and estimates of the post-treatment results.

RP 101R-19: ROLES AND RESPONSIBILITIES OF A PROJECT COST ESTIMATOR
This RP outlines the roles and responsibilities based upon the knowledge, skill levels and years of experience as a cost estimating practitioner. It covers:

• Core estimating competency areas
• Educational and/or experience levels
• Communication and interpersonal skills
• Cost component knowledge
• Cost engineering knowledge
• Computer and software skills and knowledge

It also outlines the career progression of a cost estimator for the following typical levels of estimator roles and responsibilities:

• Entry level (junior) estimator
• Mid-level estimator
• Senior level estimator
• Chief estimator
• Principal estimator
• Estimating manager or director
Nicole Johnson was born in West Philadelphia, PA and early on she liked to fix things and put things together. Her most endearing memory was taking the stereo she got for Christmas apart just to see if she could put it back together. Her parents were furious, but she did put it back together without issue. From that moment on she knew she had to do something in life associated with putting things together.

According to her mother, it was second grade when she decided to become an engineer. She came home from school saying she would be an engineer, largely prompted by the fact that they had a career day at school and the engineer in attendance said that he put things together.

While it did not seem real at that time, she would go to college. The cost was way out of her family’s financial means, but engineering remained in the back of her mind throughout her school years. With a lot of hard work and determination (and some hefty student loans) she did make it to college and naturally she chose engineering as her major.

Nicole graduated from Temple University with a bachelor’s degree in mechanical engineering. And after deciding she wanted to do something a little different, decided to pursue her master’s in business. As a result, she received an MBA in production and operations management from Drexel University.

Prior to earning her MBA, she worked for a few years in the design arena. While doing so, she was introduced to construction equipment and ultimately the world of construction. While it never occurred to her, she would enjoy such a thing and she took a great liking to it and started working for a site work contractor in California. The introduction to this work was thorough and she learned so much. Ultimately Nicole ended up as a junior estimator and finally as an estimator. The estimating role was perfect for her. It allowed her to enjoy the world of construction and perform math on a regular basis (which she loves) and to communicate with people across the company business structure all in one job. It was eye opening for her.

Today, she still works as an estimator and despite some days thinking that it is “the most thankless job in the world”. She knows it is not. It really is of great value to each and every project in the world. Everyone needs to know “what will this cost?”

About one month ago she was promoted to Vice President of Cost Estimating Services at Envision Consultants Ltd, in Philadelphia. Prior to this she served as Director of Cost Management with Envision Consultants Ltd. In that role, Nicole managed a group of estimators performing estimating mainly on the predesign and design side of projects. Some of her staff has years of experience and some are brand new to the world of estimating. She does her utmost best to not only make sure the team meets its client’s expectations, but that the team works together, so they all perform well, and they all continue to learn. It is her feeling that you never know everything, rather skill is relative to your desire to keep learning and to keep growing.

Nicole has had many mentors in her life; teachers, managers, coworkers, colleagues, etc., but she believes the best mentors are people that tell you no or you can’t do something or that you aren’t good enough. If you can stay determined thru the nonsense and use negativity as a catalyst to do better, the world can be your oyster.

She received her CEP (Certified Estimating Professional) certification from AACE because she knew that estimating would be her chosen career until she decides to retire. She is hoping through AACE she can extend her estimating and project control experiences to other countries. She also hopes to be a motivator for folks like her that don’t necessarily gravitate to construction or estimating or project controls because they don’t look atypical for the role, particularly for those that have the capabilities to perform well in the craft.

This past year Nicole served as Secretary of her AACE section—the Delaware Valley Section and she hopes to continue as a board member over the next few years to reinvigorate our section. She also served on the planning committee for the Northeast Symposium. She really enjoys volunteering her time to promote AACE and its members because AACE is the one organization that understands how important project controls is to the world. It allows her to network with the best and brightest in the industry and keeps her up to date on the latest trends in the industry. Without project controls, projects could not be successful. Her goal is to see more women and young professionals become bigger participants in the section and in the organization as a whole—broadening our perspectives on all things project controls.

If Nicole had to provide someone with an inspiring thought, it would be “YOU CAN!” Don’t listen to the naysayers, because simply “YOU CAN!”
SPOTLIGHT ON
Srinath Purushothaman

Srinath Purushothaman was born in Tamil Nadu, a Southern State in India. He completed his bachelor’s degree in civil engineering and master’s degree specializing in construction management and technology from VIT Vellore – a top ranked private university in India.

Srinath began work as a quality assurance intern with Dorsch Consult India Limited in Mumbai, India. His responsibilities were conformance reporting, specification testing and assessment of workmanship. This experience exposed him to the multifaceted and complex world of construction which is often plagued with practical challenges.

Driven by the curiosity to augment technology to solve construction problems, Srinath’s master’s thesis focused on development of a Building Information Modeling (BIM) methodology to identify workmanship quality issues in construction. He also successfully earned an Autodesk professional certification in BIM during this time. These experiences inspired him to delve deep into construction project management with an interest in project controls.

Srinath got an opportunity to work as a project officer at the prestigious Indian Institute of Technology Madras (IIT Madras). At IIT Madras he was part of a research team that developed virtual models for planning and execution of public sector retrofit projects with Bharath Heavy Electricals Ltd (BHEL). He was fortunate to work with a dynamic team of likeminded individuals at IIT Madras.

Srinath is presently a doctoral research scholar at IIT Madras specializing in project controls under the guidance and mentorship of Prof. Koshiy Varghese. His research work focuses on studying the abuses and errors occurring in construction scheduling with precedence diagram method schedules. His research involves reviewing industry best practices with standards from the United States Government Accountability Office (GAO) Schedules Assessment Guides and the Defense Contract Management Agency (DCMA) 14-point assessment. He plans to uncover causes that lead to quality violations in construction project schedules.

An aspiring teacher, Srinath also worked as a teaching assistant/tutor for creating course content in a massive online open course (MOOC) platform called the NPTEL (National Course on Technology Enhanced Learning). The platform is a joint initiative by top ranked graduate schools in India which includes seven IIT’s and the prestigious Indian Institute of Science (IISC). During this period, Srinath had the opportunity to be a part of the design and development of an online course in project controls. The course, named “Project Planning and Control,” is pursued and most sought after by both graduates and construction professionals. About 4,925 students were enrolled in the course and Srinath was leading the tutor team for this course.

Besides his doctoral work, Srinath actively engages in collaborative research exercises within industry professionals through industry-academia interaction forums. He is currently engaged with such a forum, called Ci3 (Construction Industry Institute India). Ci3 is designed along the lines of CII (Construction Industry Institute) in the United States. The forum was setup with a long-term vision for value-driven project delivery championed and driven by a core group of

“A focused plan and schedule are the primary foundation of execution brilliance.”
— SRINATH PURUSHOTHAMAN
enlightened large construction clients in India along with researchers at IIT Madras.

Srinath played a crucial role in coordinating with the key representatives from industry for developing this massive initiative. He was part of two joint task groups that studied and identified major issues in design, procurement and technology adoption barriers in the Indian construction industry. The outcomes of collaboration resulted in the development of a client's charter which is a joint manifesto of leading construction clients in India based on common core values, goals and principles. The technical and white paper findings are available from the Ci3 website. Notably during this period, Srinath had the opportunity to closely work with a senior academics in the construction management domain. He works alongside Prof. Mohan Kumarasamy, former chair and professor at IIT Madras and honorary professor at the University of Hong Kong. Besides these engagements, Srinath also actively participates in several other professional forums such as AACE International and the Project Management Institute (PMI).

Srinath was introduced to AACE in 2015 through his advisor Prof. Koshy Varghese, who advised him to attend the AACE South India Section launch event. Prof. Koshy Varghese said, ‘AACE International is an excellent platform to attain professional development in the project controls.’ Srinath enjoys learning from AACE Recommended Practices and uses them as a resource to review baseline PDM schedules as a part of his doctoral investigations. Srinath enjoys attending section events. He attended last year’s India national workshop on “Megaprojects Managing Risk and Uncertainty” and says it was amazing with a great variety of technical presentations and focus group discussions. He says ‘participating in section events is a great opportunity to meet and network with industry experts from different parts of the world.’

Srinath is an AACE International Certified Scheduling Technician (CST). He acknowledges that the certification greatly helped him to understand and demonstrate proficiency in the general skills and knowledge of scheduling. Srinath strongly recommends, professionals in project controls who wish to be recognized for their planning and scheduling skills to obtain AACE international certifications.

His advice to fellow professionals is that a ‘focused plan and schedule are the primary foundation of execution brilliance, so concentrate all your thoughts upon the work at hand.’

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Albert J. Bevacqua

Albert J. Bevacqua, a longtime AACE International member, died on July 3, 2018, in Katy, Texas, where he had been residing. He formerly lived in Hawthorne, Pleasantville and Town of Southeast in New York state. He was 88 years old. Al was a veteran serving in the 9494 TSU Army from 1952 to 1954 stationed in Japan.

Albert joined AACE International in 1969 and was first certified in 1976. He later received Emeritus status as a Certified Cost Engineer (CCE). The CCE designation has since been replaced by the designation of Certified Cost Professional (CCP). He was named an AACE Fellow in 1990.

He had a long career as an engineer for several large construction companies. He was politically active in both Westchester and Putnam Counties and a member of the Upper Harlem Commuter Council who were instrumental in the electrification of the Upper Harlem line. After he retired, he was a counselor for SCORE and consulted for Southeast and Putnam Valley. He loved tennis, the Mets and the Jets.

He is survived by his wife of 61 years, Nancy Tesoro, three children, Amanda, Melissa (Michael Gallagher) Katy, Texas, Neil (Tina) Lagrangeville, NY, seven grandchildren, Morgan (Ryan Schweller) Ian (Britani) Gallagher, and Devan Gallagher, of Texas, Andrew and Stephanie Blot of Southeast, Rebecca and Emily Bevacqua of Lagrangeville, three great grandchildren, Weston Gallagher and Grace Schweller and his sister Joyce Bevacqua Robichaud of Redding, CT.

The Texas family had a memorial service on the beach at Galveston on July 13th. The New York family had a memorial service at the Beecher Funeral Home, Brewster, New York on Thursday, July 26th. There was a funeral mass at 10 a.m. on Friday, July 27, at the St. Lawrence O’Toole Church, Brewster, New York with the Rev. Richard Gill officiating. Burial was private at the Mt. Calvary Cemetery in Greenburgh, N.Y.

This obituary is provided by the Beecher Funeral Home. Proudly serving the communities of Brewster, Patterson, and North Salem. Beecher Funeral Home is in New York. All rights reserved. This obituary is also archived at obittree.com and online at: https://memorial.beecherfuneralhome.com/Bevacqua-Albert/3562905/service-details.php
ABSTRACT
Organizations who rely on the successful delivery of capital assets, need to set stretch goals that can help improve their capability and develop or maintain a competitive advantage. Dr. D. Hillson once likened the successful application of a maturity model to, “walking up the down escalator.” This article will review a high-level Quantitative Risk Assessment Maturity Model (QRAMM), that describes the full spectrum of capabilities including reactive, ad-hoc, centralized, mature and optimized. The strategies and capabilities presented in this article offer a risk-based Kaizen approach, helping DRM practitioners identify performance gaps and develop plans for QRA capability improvement.

INTRODUCTION
“The wise know their weakness too well to assume infallibility; and he who knows most, knows best how little he knows.” — Thomas Jefferson.

To step-up and maintain a competitive edge, it is crucial that practitioners, and project professionals in general, are committed to continuous learning. This notion holds true at the personal, organizational, and as the reader may note later in this article, at the machine level.

While maturity models are becoming relatively widespread in the project management world, there is an opportunity to shine a light on capabilities in the risk management sphere and more specifically, Quantitative Risk Analysis (QRA). What does best-in-class look like today and what are reasonable developmental stretch goals for the next three to five years?

This article shall propose an evergreen framework for assessing QRA maturity. Additionally, it shall explore a range of QRA strategies and capabilities that range from basic through leading-edge.

CONTINUOUS LEARNING
Progressive organizations, committed to be leaders in their field, commonly embrace a kaizen philosophy. Maturity models are an invaluable means for benchmarking current risk and helping understand where gaps can be readily addressed to improve capabilities.
Dr. D. Hillson once likened the successful application of a maturity model to, “walking up the down escalator.” A good maturity model will not be set in stone in perpetuity. It should have some flexibility so that an organization may update its capability objectives and strive to attain stretch goals that will help keep the organization competitive.

In this context, leaders are interested in a means for securing a risk-based-competitive advantage.

**A ROADMAP FOR OPTIMIZING QRA**

Today, mature organizations are looking beyond standard statistical techniques for quantitative risk analysis and exploring the potential for employing more advanced methods, such as predictive analytics. This is something one might anticipate becoming standard in five to ten years. For organizations routinely employing predictive analytics, a meaningful goal beyond that may be prescriptive analytics. What is being described here is an incremental improvement in data science maturity. [5]

As a broader concept, this could be referred to as TCMA or Total Cost Management Analytics. [1] Both TCMA and data science maturity are beyond the scope of this article. Instead, at a summary level, this article shall consider what steps are to be followed in order to achieve the highest levels of QRA capability and what are the characteristics or benefits that an organization can expect to enjoy. The following sections will describe the roadmap illustrated in Figure 1.

**QRA PROCESS LEVEL 1 – REACTIVE**

For a naïve organization, that neither formally defines risk roles or employs QRA methods, they will be very much unaware of the levels of risk they could be exposed to. Theoretically, they could be exposed to impact costs and unfunded liabilities that are on an exponential scale.

All organizations manage risk in some manner, even in the absence of formal risk controls, so there will be some cost of risk management that is incurred, even if the organization at this level may be unaware of the magnitude.

Risk analysis reports are unlikely to exist. If schedule or cost contingency reports do exist, they would be generated on an ad-hoc basis leaving little opportunity for incremental improvement. Intuition-based decision-making (or gut-feel) is the primary method employed when making critical investment decisions.

There will likely be little tolerance for risk within an organization at this maturity level. However, there will neither be a clear understanding of the levels of risk the organization could tolerate. The organization is sailing blind. Since teams possess no means to understand how their likely exposure to risk may vary from one period to the next, organizational culture is inherently risk adverse. In the absence of a clear understanding of risk, contingency may be applied to projects in a blanket manner, for example, using a fixed percentage for certain project types. Cost management crises are not uncommon, and the organization frequently operates in a reactive, fire-fighting mode.

**QRA PROCESS LEVEL 2 – AD-HOC**

Formal QRA processes start to emerge at this second maturity stage. Diagnostic analytics [1] are employed to help explore the root causes behind potential delay and overrun but their application is informal and ad-hoc, only arising infrequently and techniques applied inconsistently, from one venture to the next. At this level, in the absence of internal skills, the organization may be reliant on external analytical expertise.

There may be some limited use of technology, perhaps, for example, applying a Monte-Carlo simulation add-in over the top of an existing Excel-based estimate. When performed by untrained or inexperienced personnel, ranging is likely ill-informed or biased, so any analytical insight will be limited. Overall, the QRA process will be manual and there is little integration between cost and schedule data.

At this stage, as discussions about risk and uncertainty begin to interest the organization, there will be a growing appreciation for the enterprise’s likely risk capacity (i.e., the maximum adverse impact that could be borne) and tolerance for risk (i.e., the levels at which risks will be triggered for escalation or de-escalation across the enterprise). During QRA, this insight will factor into risk prioritization and the likely cost of risk response planning.

The enterprise may also develop a formal risk policy, describing in general, high-level terms, the organization’s appetite for risk. Necessary for helping provide strategic guidance on the right type and appropriate level of risk for teams. During QRA, this guidance will help teams determine which risks could be reasonably incorporated within the contingency analysis and which will warrant a response strategy for either avoiding or sharing the potential exposure in question.

Finally, at this stage, with an albeit largely experimental roll-out of basic risk management practice and an increasing ability to more reasonably estimate cost contingency, the potential residual risk impact now begins to tangibly fall within tolerance. Additionally, with increasing buy-in and broader team engagement, the cost of risk management will start to slowly rise.

**QRA PROCESS LEVEL 3 – CENTRALIZED**

At level 3, QRA process are formally defined and consistently applied from one project (or program) to the next. The organization will possess internal QRA expertise.

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**FIGURE 1 Spectrum of QRA Process Capability Characteristics**
and rely on external consultants only infrequently. Risk are no longer identified and ranged in group setting. Techniques are employed to minimize bias. QRA roles and responsibilities are formally defined.

This formal approach facilitates the development and maintenance of centralized records, in turn, providing an opportunity for evidence-based decision-making. Not all projects may make use of this development though. Culturally, some organizational pockets may be unaware of these resources or simply resist changing their way of working. Conversely, other groups will actively support, what may be seen by some, as a new way of working. This will manifest itself as inter-departmental co-operation between risk, estimating/cost and planning and scheduling. Estimating groups will share roll-up estimates in a consistent and standard form that aid the timely development of CRA models. Planning and scheduling teams develop a familiarity with the minimum quality standards required of schedules before they can be dynamically modelled. Activity and cost line item owners develop familiarity and comfort with the notion of developing three-point uncertainty ranges (i.e., ranging only the element in question and sharing rationale or corroborating information to support any judgment they make). The leadership team will review and agree which risk events contained in the risk register warrant contingency funding. Discipline leads vet where in the cost and/or schedule model events should be mapped. At this stage, contingency analysis starts to become a collaborative endeavor and not the sum of siloed inputs or disjointed contributions.

At a level some may consider to be standard QRA capability, cost and schedule simulations models are typically run as standalone or in a serial manner (i.e., CRA findings are transposed into a CRA model). This is common practice even though it degrades the accuracy of the CRA component. Moreover, in the absence of an integrated approach, more typical of a mature organization, it is hard to argue that time driven costs are adequately accounted for.

Tornado or sensitivity charts help highlight and prioritize key drivers by correlation coefficient. Some stakeholders may ask for these charts, distribution curves and accompanying percentiles, but there is little interest in interrogating the details behind the initial summary findings.

Beyond MCS (Monte Carlo Simulation), QRA teams will begin to experiment with other statistical analysis techniques such as MLR or multiple linear regression.

With a more rigorous and formal QRA approach, run internally by dedicated professionals, the reduction in the potential residual risk impact falls more rapidly and sits comfortably within tolerance. Now, as enterprise-wide engagement increases, so the cost of risk management rises further. However, it is reasonable to expect there’s little chance that such costs will exceed the cumulative cost of any risk scenario teams are working to account for.

**QRA PROCESS LEVEL 4 – DYNAMIC**

At level 4, QRA practices have fully matured. Practices are both formal and dynamic affording teams a level of agility required to adjust to change driven by anticipated business conditions or typical contextual change.

This dynamism is facilitated by the consistent adoption of practices on all projects/programs, the efficient integration of contributory systems, along with the effective capture and dissemination of risk data. With this foundation in place, the organization is empowered to make timely fact-based decisions. To clarify, evidence is no longer solely tied to historic performance but contemporaneous records too.

Uncertainty ranging for cost and schedule is captured online and incorporated into the risk analyst’s QRA modelling suite. Additionally, approved risk events are seamlessly transferred from an online risk register for inclusion into an integrated cost and schedule model, capable of generating results that accurately discern between, and account for, both time dependent and time independent costs. Analysis techniques are sophisticated enough to not only prioritize drivers by correlation coefficient but also quantify them in more comprehensible dollar or day terms. An integrated approach will also enable teams to identify cost and schedule funding targets that can be achieved with joint confidence (or equal chances of success).[11]

Risk data sources are obtained from outside the parent or primary organization, shared by contracted or third parties in a consistent reporting format. This provides holistic organizational awareness of the risk ecosystem [3], awareness of imminent scenarios most likely to trigger disruption, thereby allowing QRA efforts to properly account for this broader context.

Effective data capture may reach levels (e.g., measured on a petabyte scale, where one petabyte is equal to 1,000,000 gigabytes) where some automation or Big Data analytics become plausible. Certainly, standard statistical analyses may give way to advanced methods like predictive analytics. [1] Artificial Intelligence (AI) or machine learning, will be confined to supervised learning techniques. The consistent tagging of risk data is critical in effectively supporting this initiative.

Stakeholders have confidence in their understanding of the QRA process and actively ask for supporting details so they can identify key risk drivers and better comprehend if funding recommendations are reasonable.

At this stage, project controls experts will continue to interface heavily across departments, business units and the enterprise in general, however, more specialist skills will begin to emerge. The projects controls function may start to develop working relationships with mathematicians and computer scientists as they actively explore the art of the possible.

With increasing capability, the organization’s risk appetite continues to grow. As such, the risk culture must be one that avoids extremes on the risk attitude spectrum [10] and maintains a balanced mindset. Internal review of the effectiveness of the risk management process also becomes increasingly important to guard against the cost of risk management exceeding the cost of risk impact.

**QRA PROCESS LEVEL 5 – OPTIMIZED**

Level 5 capabilities are optimized and market leading. Process and practice are highly integrated across the organization. Like level four, data-driven fact-based driven decision-making is valued by the organization, however, systems offer higher levels of flexibility to more readily adapt to novel, emerging conditions. Data available for analysis is not just big, it is also fast. Fast data or near real-time feeds are generated by sensors in the field (e.g., providing highly accurate readouts on productivity).

Advanced analytical methods can generate prescriptive insight, advising teams on the deployment of resources necessary to achieve an optimal outcome. The project controls or project management function will develop an interest in IT, anxious to hear that their ambitions for data storage and retrieval can be satisfied. Personnel are
incentivized and recognized for successfully pursuing risks that are both relevant [4] and rewarded. [2, 3] The organization will become a risk intelligent meritocracy.

Expectations may be for machine learning capabilities to evolve to a point where, unsupervised systems process unstructured data (such as video feeds), tracking progress against plans and alerting teams of both potential delay and safety incidents. In addition, and with a twist of irony, machines can finally explain their own findings, finally pulling back the curtain on the black box world of AI.

With an intoxicating array of exotic AI or machine learning techniques at their disposal, the QRA team must keep track of the cost of risk management. At this stage, such costs may well exceed the likely cost of risk impacts which the team initially set out to guard against.

BRINGING IT ALL TOGETHER

Table 1 provides a summary of the QRA Process maturity stages that we have just reviewed. By determining where an organization’s current capability may fall on this five-point scale, it is possible to use this model as a vehicle for discussion, plot a new destination and then devise an appropriate capability improvement plan to help navigate this roadmap.

The goal here is to secure a superior quantitative risk assessment capability relative to competing organizations and, subsequently, a risk-based competitive advantage. It is important that the highest levels are barely within reach and stretch-goals frequently reviewed and periodically reset. For example, when predictive analytics become mainstream (i.e., the level 3 midpoint), a future stretch-goal at level 5 may be cognitive analytics.

**MANAGING THE BROADER PERSPECTIVE**

An effective QRA capability cannot exist in a vacuum. QRA capability will be a function of an organization’s overall risk management capability. One could argue that risk management capability is the engine that spurs QRA capability.

Risk management capability assessment in this broader sense is beyond the remit of this article, however, there is value in taking a moment to review the attributes of a risk management program so they can be held in mind when seeking opportunities to raise QRA process capability described earlier in this article.

**CULTURE**

QRA capability will be poor if personnel required to support such efforts do not witness demonstrable and visible top-down commitment. If the “tone at the top” is not tuned correctly, it will be extremely difficult for risk practitioners to engage stakeholders and elicit high quality QRA inputs.

Risk policy acceptance will be consistent across the organization when robust and effective quantitative risk analysis is recognized as a primary method for improving capital asset delivery or business performance in general.

**PROCESS**

The nature in which the risk management process is applied in all projects (and departments) directly impacts the quality of an organization’s quantitative risk analyses. As the infamous GIGO principle warns “garbage in, garbage out.” Only when the risk management process is embraced and employed with appropriate rigor can one anticipate that an organization will be capable of providing meaningful contributions that aid the risk practitioner and, ultimately, help improve the quality of QRA analysis results.

Ideally, risk management process will be at level of maturity that recognizes the value of risk-based knowledge management, evolved to a level capable of supporting data-driven decision-making. As standard practice, professionals should ensure that a formal close-out process is applied by project teams to consistently capture and share relevant risk data. Mature organizations may have a dedicated resource capable of locating both historical and contemporary records required to support fact-based decision-making.

As a stretch-goal, organizations should strive to develop data feeds for risk practitioners to corroborate uncertainty ranges (or other QRA inputs). When risk quantification is performed and results disseminated using increasing levels of automation, the organization will be better positioned to make intelligent business decisions.

Performance metrics should exist for an organization to track and monitor measurable value derived from a risk management program. Success should be tracked, not only enterprise-wide, but across the whole supply chain.

Note, during a maturity review or assessment, the profile described earlier as the vision for optimizing QRA techniques (i.e., Table 1) would sit under this risk management maturity attribute. The accompanying Excel file and example risk management maturity assessment template is shared to help further underscore and explain this broader context.

**EXPERIENCE**

This attribute addresses the level of risk management understanding and/or training the organization at large may or may not

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**FIGURE 1 QRA Maturity Mode**

<table>
<thead>
<tr>
<th>Level 1 Reactive</th>
<th>Level 2 Ad-hoc</th>
<th>Level 3 Centralized</th>
<th>Level 4 Dynamic</th>
<th>Level 5 Optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td>No capability exists; intuition-based decision-making</td>
<td>No defined roles</td>
<td>Formal processes; some evidence-based decision-making</td>
<td>Formal and dynamic processes; fact-based decision-making</td>
<td>Highly adaptive processes; fact-based decision-making</td>
</tr>
<tr>
<td>No defined roles</td>
<td>No automation or systems (highly manual)</td>
<td>Defined roles &amp; responsibilities</td>
<td>Specialization of roles and skills, in-house expertise</td>
<td>Advanced skill sets; market-leading capabilities</td>
</tr>
<tr>
<td>Reactive fire-fighting culture (worship the hero)</td>
<td>Ad hoc / Informal processes; infrequent and limited analytical insight</td>
<td>Some centralized repositories</td>
<td>Consistent adoption / integration of systems</td>
<td>Highly integrated systems across the organization</td>
</tr>
<tr>
<td></td>
<td>Basic technology, still highly manual process</td>
<td>Inconsistent adoption of systems across projects</td>
<td>Some automation; some Big Data analytics</td>
<td>High automation; advanced analytics using Big &amp; Fast Data</td>
</tr>
<tr>
<td></td>
<td>Reliance on external experts</td>
<td>Some inter-department cooperation between Risk, Estimating / Cost and Planning &amp; Scheduling</td>
<td>Close collaboration / alignment between Project Controls departments, BUs &amp; Enterprise</td>
<td>Risk intelligent network with awareness of current and near-term Risk Ecosystems</td>
</tr>
<tr>
<td></td>
<td>Little integration between Cost &amp; Schedule Data</td>
<td>Frequent use of analytics; MCS, MLR or other</td>
<td>Organizational awareness of current Risk Ecosystem</td>
<td>Risk intelligent Meritocracy</td>
</tr>
</tbody>
</table>
possess. One may also consider learning from experience or lessons shared.

An organization can reasonably expect high levels of risk management program success when teams are assured of consistent access to personnel with meaningful risk management experience. This will help ensure risk policies are implemented and any performance gaps flagged for remediation.

The skills and capabilities of the population at large must not be overlooked too. The best risk management programs are driven by sophisticated and savvy customers who know what they want. Organizations should empower their leadership teams to ask the right questions. If needed, leaders should be trained to interpret quantitative risk analysis results (i.e., have an awareness of how to identify underlying risk drivers) and be capable of mentoring other project team members on risk process methods. Conversely, the rest of the team should be offered risk management training opportunities as part of a training plan that is frequently updated to address emerging needs.

Finally, team members should be recognized for, or encouraged to, adopt a professional approach toward their work. When teams consistently capture and share learnings, there exists the greatest opportunity for establishing a learning organization. Risk-based kaizen is a key enabling factor for enabling intelligent risk management strategies. [3]"}

**APPLICATION**

Finally, this maturity attribute considers the consistency of risk process application, availability of dedicated resources and the state/capability of available risk tools and software.

Clearly, for risk policy goals to be achieved, teams need to be equipped with the tools that allow them to execute the risk process at an adequate level. Appropriate systems and tools will enhance risk identification, facilitate time risk response implementation and enable timely knowledge sharing for the benefit of future projects.

To ensure risk process application remains stable and consistent, feedback mechanisms must be established and used by managers to proactively notify leadership teams of changes in organizational context, significant enough to warrant changes to risk process or policy.

**CONCLUSION**

While many organizations seek to employ Quantitative Risk Analysis (QRA) methods, some may not yet have mastered the rudimentary prerequisites (such as effective risk identification [4]) essential for reasonably estimating contingency. An effective QRA capability cannot exist in a vacuum. QRA capability will be a function of an organization’s overall risk management capability. With that in mind, this article reviewed both the attributes of an effective risk management program and a road map for improving QRA capability.

Additionally, this article explored how projects may account for contingency in the absence of a formal risk process and considered how mature organizations, looking beyond the employment of standard statistical techniques for quantitative risk analysis, are exploring the potential offered by more advanced methods such as predictive analytics.

As an organization’s QRA capability increases, so should its risk appetite. Organizations are well advised to use new technology and novel capabilities to not only better quantify project contingency but also compare the anticipated cost of residual risk impacts to their increasing cost of risk management.

**REFERENCES**


**ABOUT THE AUTHOR**

James E. Arrow, DRMP, is with Booz Allen Hamilton. He can be contacted by sending email to: jearrow@gmail.com
AACE International was honored to be able to recognize award winners at the recent Conference & Expo in New Orleans. It is through such outstanding ability, service, and dedication displayed by its members that AACE International can continue to be the strong organization that it is. AACE extends thanks to each of the award winners for their hard work, long hours, heartfelt involvement, and commitment to excellence that these awards symbolize. It is the association’s great pleasure to share these awards with its membership and with the Source readers and to acknowledge everything each award winner has given to AACE. Congratulations! The award winners include:

### 2019 Honorary Life Membership Award

**Dr. Stephen P. Warhoe, PE CCP CFCC FAACE Hon. Life** – joined AACE in 1986. He obtained the certification designations of Certified Cost Professional (CCP) in 1994 and the Certified Forensic Claims Consultant (CFCC) as a member of the task force that developed the certification in 2007. He has served AACE’s Malaysia Section as a Director and Organization Chairman (1997) and had an instrumental role in the founding of that section. He served in various leadership roles in the Rocky Mountain Section (1990-2003). Steve was elected and served in a variety of AACE Board of Directors leadership positions including as Director-Region 5 (2003-2005), Vice President-Administration (2005-2007), President-Elect (2007-2008), AACE President (2008-2009), and Past President (2009-2010). Since 2012, he has been an active member of AACE’s Technical Board. Steve has been a frequent author and presenter at AACE Conference & Expo and at AACE-related events across the globe. He is a contributor to 11 AACE Recommended Practices (RPs) and is the primary contributor to the draft of RP 100R-19: Change Management in the Construction Industry. He has previously been recognized as an AACE Fellow (2011). Steve is a Senior Principal at Long International.

Honorary Life Membership is given upon the unanimous approval of the AACE International Board of Directors to those individuals who have served the Association on the local and international levels in a variety of capacities. Minimum requirements are: Membership in AACE for 25 or more consecutive years. Candidates shall have attained the status of Fellow of AACE. In addition, candidates shall have distinguished service in two or more of the following functions: a.) Served on the AACE International Board of Directors; b.) Served as a member of an associate board, task force, standing, and/or ad hoc committee; c.) Presented two or more technical papers at the Conference & Expo, section meetings, AACE seminars, or to other professional societies; or d.) Engaged as a full-or part-time instructor teaching in total cost management subject areas. Membership in AACE is required.

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The Industry Appreciation Award is presented to a company or organization that has rendered exceptional support to the total cost management or cost engineering profession and to AACE International’s aims and objectives. This is the only award AACE bestows on a company/organization. This award is not based on recognition of financial contributions to AACE. The employers of members of the sitting Awards Committee and the sitting Board of Directors are not eligible for nomination or receipt of this award. Other professional associations as either complimentary to or in competition with AACE are not eligible for receipt of this award.
Bruce G. Elliott, CCP FAACE – is an Executive Partner of Conquest Consulting Group. He joined AACE in 1989 and became a Certified Cost Professional (CCP) in 2000. He has 45 years of industrial experience working with both owner and EPC global organizations. He was a charter member and served as an officer of the Genesee Valley Section for several years. Bruce served as a member of AACE’s Constitution and Bylaws Committee (2004-2018). He was a member of the Certified Estimating Professional (CEP) task force and is a member of AACE’s Cost Estimating Committee. He has been a frequent presenter and author of technical papers at the Conference & Expo, section meetings, and was a contributing editor for the Parametric and Conceptual Estimating Professional Practice Guide. He is also a contributor to two of AACE’s recommended practices. For many years, Bruce was influential in securing financial support to enable employees and peers to participate in AACE membership, conferences, boards, committees, and task forces. Bruce was previously recognized by AACE as the recipient of the Charles V. Keane Distinguished Service Award (2003) and as a Fellow (2011).

The recipient of the Award of Merit is selected by a majority vote of the members of the Awards Committee, based on evaluation of suitable nomination submissions and judgments of relative merit of the various nominated candidates. To be considered for this award, candidates must receive a minimum of three independent nominations. Candidates who are members of AACE must have 10 years minimum active participation in AACE and non-members must have a minimum of 10 years active service within the cost engineering industry. All nominations must be submitted in writing and accompanied by detailed evidence of the contribution by the nominee(s), together with suitable statements regarding the timeliness and importance of the achievement. Although significant contributions to the advancement of cost engineering and the precepts of total cost management are often the result of a joint effort by multiple individuals, not more than two individuals may be recognized for a particularly significant joint contribution. If it is not possible to limit the awardees to two individuals, the award will not be made for the group effort. Membership is not a requirement.

2019 AACE Fellows

AACE International awarded the membership classification of “Fellow” on five individuals at the Conference & Expo. Honored are: Martin R. Darley, CCP FAACE; Allen C. Hamilton, PE CCP FAACE; Kenji P. Hoshino, CFCC PSP FAACE; John P. Orr, PSP FAACE; and Hannah E. Schumacher, PSP FAACE.

Martin R. Darley, CCP FAACE – joined AACE in 2001. He became a Certified Cost Professional (CCP) in 2005. Martin has been very active with his local, Houston Gulf Coast, where he has served in a variety of leadership positions including president. He has served as a mentor to AACE members as part of the Mentoring Program. Martin has served AACE as a member of the Education Board (2016-2018); as well as a member of the Board of Directors including the following positions: Director-Region 5 (2009-2011); Vice President-Administration (2011-2013); President-Elect (2013-2014); President (2014-2015); Past President (2015-2016); and Vice President-Education Board (2016-2018). Through his work at Chevron’s Project Controls team, he has been influential in getting the company to adopt the AACE certification as part of their career path development as well as implementing the controls in the AACE TCM Framework as the standard for projects. Martin is the Cost Engineering and Project Services Manager at Chevron.

Allen C. Hamilton, PE CCP FAACE – joined AACE in 1976. He became a Certified Cost Professional (CCP) in 1992. Allen has been a frequent presenter at AACE conferences and other organization’s events. He has served his local, New Jersey, section in a variety of leadership roles including two terms as president. He served as the Chairman for the International Cost Engineering Council (1998-2000). He has been elected to and served AACE in a variety of leadership roles on the Board of Directors: Director-Region 2 (1994-1996); President-Elect (1999-2000); President (2000-2001); and Past President (2001-2002). Allen is the President at Project Management Associates, LLC.

Kenji P. Hoshino, CFCC PSP FAACE – joined AACE in 1998. He volunteers on the task forces that created the Planning & Scheduling Professional (PSP) and the Certified Forensic Claims Consultant (CFCC) certifications and was grandfathered into each designation as a result of his efforts (PSP in 2004 and CFCC in 2007). Kenji is a well-respected author/presenter at AACE’s Conference & Expo. He is the primary author of all three revisions of AACE’s Recommended Practice 29R-03: Forensic Schedule Analysis, and is a contributor to three additional RPs: 14R-90: Responsibility and Required Skills for a Project Planning and Scheduling Professional; 25R-03: Estimating Lost Labor Productivity in Construction Claims; and 52R-06: Prospective Time Impact Analysis - As Applied in Construction. Kenji is the Principal Member and Testifying Expert at Project Controls & Forensics, LLC.
John P. Orr, PSP FAACE – joined AACE in 2006 and obtained a Planning & Scheduling Professional (PSP) certification the same year. He has been a member of AACE’s Technical Board since 2011 where he is currently the director of conference quality. He is a well-respected author and presenter at AACE’s Conference & Expo. He is a contributing author to eight (8) recommended practices. John has served the North Florida Section as its President since 2013. He has previously been recognized by AACE with the Charles V. Keane Distinguished Service Award (2017) and the Technical Excellence Award (2018). John is a Senior Scheduler at AECOM.

Hannah E. Schumacher, PSP FAACE – joined AACE in 2006 and obtained a Planning & Scheduling Professional (PSP) certification in 2009. She served on AACE’s Certification Board from 2011-2018 where she was the lead member of the PSP Certification Team. She has served in a variety of leadership roles on AACE’s Planning & Scheduling Technical Subcommittee since 2008. She is a well-respected author and presenter at AACE’s Conference & Expo. She has been a contributing author to 12 recommended practices. Hannah has served as a member of AACE’s Women in Project Controls Committee and in a variety of leadership roles in her local section, Arizona, including two terms as president (2010-2012). She has previously been recognized by AACE with the Outstanding Woman in Project Controls Award (2011) and the Technical Excellence Award (2016). Hannah is a Scheduling Manager at Sundt Construction.

The membership grade of Fellow is a selective and prestigious honor for the recipients. Approval of Fellow is in recognition of professional attainment and significant accomplishment in cost management or cost engineering. Fellows are designated by the following acronym: FAACE. Nominees are vetted by the Fellow Admissions Committee and recommended for approval of a majority vote by the Board of Directors. The criteria used in awarding Fellow classifications are:

- Professional attainment based on contributions to the professional advancement of cost management, cost engineering, or the engineering profession and valuable service to AACE International; and contributions to the knowledge of the profession and dissemination of that knowledge based on publications, presentations, and bringing cost management/cost engineering to industry, educational institutions, forums, or government agencies.

2019 O.T. Zimmerman Founder’s Award

James E. Krebs, PE CCP FAACE – has been a member of AACE since 1986. He became a Certified Cost Professional (CCP) in 1996. He has served the Great Lakes Section of AACE in a variety of capacities, including President (1999-2000; 2010-Present), Vice President (1996-1997; 2003-2007), and Director (1995, 1998, 2001). He has also been an active member of AACE’s Claims & Dispute Resolution Technical Subcommittee. Jim was elected and served AACE’s Board of Directors as Director-Region 4 (2008-2010) and as Vice President-Administration (2015-2017). He has been a member of the AACE Ethics Committee since 2017. He is a frequent instructor of AACE Conference & Expo continuing education seminars. Additionally, Jim has been involved in the development of many training classes and publications in the construction, cost estimating, planning and scheduling, project controls, project management, and claim avoidance areas of study. He is the Senior Vice President, Owner, at Administrative Controls Management (ACM). Jim has previously been recognized by AACE with the Charles V. Keane Distinguished Service Award (2012) and as a Fellow (2012).

Formerly the Award of Recognition, this award was created by the AACE International Board of Directors in 1995. Candidates must be a member in good standing of AACE with a minimum of 10 years of continuous active participation in AACE activities. The O.T. Zimmerman Founders’ Award is given in recognition of significant continuous achievement and contributions by a member at large, who has been instrumental in the development of policies, practices, procedures, and products directed to the advancement of the precepts of total cost management and AACE International. The activities of the candidate shall be in direct support of the Board of Directors, one of AACE’s associate boards, or an executive-level committee (such as the Constitution & Bylaws Committee, Ethics Committee, Fellow Admissions Committee, etc.), or other similar efforts supporting the overall functions and activities of AACE International.

2019 TCM Excellence Award

DAVE KYLE, CCP CEP – joined AACE in 2012. He obtained the certification designations as a Certification Cost Professional (CCP) in 2018 and a Certified Estimating Professional (CEP) in 2015. He is Chair of the AACE Estimating Subcommittee (2018-present). Dave is currently working on three interrelated estimating Recommended Practices (RPs) which are currently out for public review. He presented
an overview of these three RPs during the 2019 Conference & Expo. Also, during the 2019 Conference & Expo, Dave conducted a series of three one-hour interactive sessions over three days walking the participants through the development of a plan to develop an estimating, planning/scheduling, or cost control department. He has also authored and presented technical papers at previous Conference & Expos. Dave is a Manager, Estimating at Canadian Natural Resources Limited.

The TCM Excellence Award is given to members in recognition of their contributions to AACE through a technical subcommittee or Special Interest Groups (SIG), or by a member at large, who has been instrumental in the development of technical products such as Recommended Practices (RPs), Professional Practice Guides (PPGs), Cost Engineers' Notebook (CEN), or other technical writings directed to the advancement of the precepts of total cost management. Membership in AACE is required.

2019 Outstanding Rising Professional

Nicole Tibbs, PSP  – joined AACE in 2018. She obtained the Planning & Scheduling Professional (PSP) designation in 2015. She has served AACE certifications as a PSP memo grader. She is an active member of the AACE Certification Board (2018-present). Nikki is a Master Scheduler at Emergent BioSolutions.

The Rising Professional Award is given to a rising professional – with ten (10) or fewer years of experience in the field of total cost management in recognition of their contributions made to the profession. Membership in AACE is required.

2019 Outstanding Woman in AACE International

Cindy Whitmill, PSP  – joined AACE in 2010, and earned her Planning & Scheduling Professional (PSP) certification in 2011. She has been an active member of the Women in Project Controls Committee where she has served in the position as Chair (2014-presenter). Cindy is a Senior Consultant at Cobec Consulting, Inc.

The Outstanding Woman in AACE International is to honor a woman who has achieved success through significant accomplishments in the industry and within AACE International. The candidate shall have chosen a career path that is focused on the advancement of AACE’s precepts of total cost management. Membership in AACE is required.

2019 Keane Award for Distinguished Service to an AACE Section

Valerie G. Venters, CCP FAACE  – joined AACE in 1998, and became a Certified Cost Professional (CCP) in 2001. She has been an active member of the Houston Gulf Coast Section for many years, holding a variety of positions including her current role of Treasurer. She was a founding member of the Women in Project Controls (WPC) Committee (2005) and served as Chair (2007-2009) under which time the WPC was promoted from task force to standing committee. She has been a member of the AACE Certification Board (2003-2005; 2009-Present). Valerie served on AACE’s Board of Directors as Director-Region 5 (2005-2007) and Vice President-Certification Board (2016-2018). She is a Senior Cost Management Lead – GOM Projects for Shell Oil Company. Valerie has previously been recognized by the Association as Outstanding Regional Director (2006), Fellow (2010), O.T. Zimmerman Founder’s Award (2012), and the TCM Excellence Award (2014).

Candidates for consideration to receive the Keane Award for Distinguished Service to an AACE Section must have been an active member of an AACE section, or sections, for a minimum of five years continuous engagement in section leadership in a section that has continuously achieved or exceeded section minimum standards, grown in membership and contributed to the furtherance of the precepts of total cost management. Membership in AACE is required.
At the May Bruce County Section meeting, Les McMullen, VP - Regions, North America, received a speaker’s gift from Shoshanna Fraizinger, Section President, Treasurer, Region 01, VP- Education.

The Bruce County Section celebrated its one-year milestone as a ratified section with a dinner meeting and technical presentation on Tuesday, May 21. Les McMullen, FAACE, who holds the distinction of being a former President of the Montreal Section, as well as Regional Director and President of AACE Canada, and who now currently sits on the AACE Board of Directors as the VP – Regions North America, came to Kincardine, Ontario (which is situated three-hours northwest of Toronto on the shores of Lake Huron) and presented on the topic of Proactive Trend and Change Management based on a previously submitted technical submission which was entitled "Avoiding the Iceberg Effect."

Trend and change management are key project critical controls for forecasting, cost management and control of outcomes. The challenge can in be the detection of change, classification and timely evaluation from a cost, risk and schedule perspective throughout the project lifecycle. The project change register items may only be the tip of the iceberg and unseen changes may be taking place on the project, only to surface later with major consequences. This is referred to as the iceberg affect and may include the secondary impact of change and other ripple effects. Aspects of the presentation included the key critical controls for successful trend and change management and the identification and discussion of 14 prime contributors to the iceberg affect and how to overcome them. This event was attended by representatives from nine separate companies and the audience was an almost equal mix of AACE members and non-members. This topic resonated with the audience and Les left all attendees with some excellent insights as to how they might enhance their understanding, planning, management and control of trends and changes on projects to avoid risking the “iceberg” using AACE best practices and recommendations to “control costs before they happen.”
The Bruce County Section celebrated its first anniversary with a dinner and technical program on May 21. The event was sponsored by APTIM and the audience for the event was comprised of project control professionals representing 11 different companies (both owner and vendors) and many from Bruce Power, an AACE corporate membership program company. Shown front from L-R: Rush Patel, Section Vice President; Novazar Dastor, Bruce Power; Chet Pokarel, Section Board Member; Victor Kaboga, Bruce Power; John Leslie, Williams Brothers; Next row back from L-R: Ken Steven, BHD; Darryl Zettler, Section Board Member; Ashvin Laia, Hatch; Shoshanna Fraizinger, Section Board Member; Next row from L-R: Robin Johnston, Bruce Power; Scott Morrison, Section Board Member; Roy Martin, Bruce Power; James Muraida, Sargent & Lundy; Next row from L-R: Vjera Schmidt, Bruce Power; Alexandra Johns, Section Board Member; Brooke Bittner, Bruce Power; Scott Lacey, Acuren Nuclear; Brian Jelke, Sargent & Lundy; and Ian Trotman, Hatch. Prenab Deb, Section Board Member, took the photo.

Participants came out to the May 21 dinner and technical event, a record for this one-year-old section whose membership in Region 01 totals only 12 members.

SEATTLE SECTION

The Seattle Section extends a thank you to the New Orleans Section for the warmest welcome to the recent 2019 AACE International Conference & Expo. Seattle Section attendees truly had a great time in New Orleans LA. Some Seattle Section officers/members presented technical papers at the Conference and Expo, including Brian Smith, CCP, and Harry Jarnagan, PE, CCP, who presented a paper titled, “Program Management Lessons Learned from the Alaskan Way Viaduct Replacement Program (AWVRP).” Also, Philip D. Larson, CCP CEP PSP FAACE, and John Newman, CCP CEP, presented a paper titled, “What is a UniModel?” The Seattle Section is looking for more Seattle members to participate and present technical paper presentations, as well as participate in the submission of Recommended Practices at the 2020 Conference & Expo in Chicago Illinois.
Left: Seattle Section members Brian Smith, CCP, former Project Controls Manager with Mott MacDonald and Harry Jarnagan, PE, CCP, former Program Manager Program with Mott MacDonald, presented a paper titled, Management Lessons Learned – Alaskan Way Viaduct Replacement Program (AWVRP) at the 2019 AACE Conference & Expo. Also assisting with the paper was David Sowers, PE, Deputy Administrator, WSDOT. This paper provides an overview of program management lessons learned from the Alaskan Way Viaduct Replacement program (AWVRP), being delivered by the Washington State Department of Transportation (WSDOT) in Seattle, Washington. This landmark program is changing the City of Seattle by replacing an aging, elevated section of State Route 99 with a two-mile-long, large-diameter, machine-driven single bore tunnel, one of the largest of its kind ever completed. This complex engineering and construction effort, with a current budget of $3.3 billion and a delivery schedule spanning more than a decade, is nearly complete. The many lessons learned and addressed in this paper cover topics such as earned value management; risk management and the use of contingency and reserves; right-of-way acquisition; change control; relations with oversight entities; and the use of alternative delivery contract methods.

Above: Seattle Section members Philip D. Larson, CCP CEP PSP FAACE, above left, and John B. Newman, CCP CEP, above right, presented a paper titled, “What is a UniModel?” at the 2019 AACE Conference & Expo in New Orleans. Leveraging the existing capabilities of BIM, and 2D representation, with the addition of metadata (3D + 2D + 1D) one will get a UniModel. What is a UniModel? It is a relatively new word that describes an adherence to a process that accounts for the majority (@99.9%) of project construction costs. Considering that the concepts of total cost management (TCM) involve determining the quantity of work, including costing and pricing; using a combination of a sophisticated library (or database) of cost items with detailed resources (labor, material, equipment, etc.), factored and intelligent assemblies, standardized cost and WBS (work breakdown structure) coding structures; will allow cost professionals to more efficiently provide valuable cost data. Project control at the Central Puget Sound Regional Transit Authority (RTA), aka Sound Transit (ST), which services Pierce, King and Snohomish Counties in Washington State, have successfully employed part of this process with their unit cost library (UCL) used for the ST3 program presented and approved by voters for $53.8B, in year of expenditure dollars (YOE). There remain challenges that have yet to be overcome. However, a proof of concept (POC) has been established and the future of managing project cost looks bright.
TORONTO SECTION

On May 14, the Toronto Section hosted a special presentation at the University of Toronto by Manjula Dissanayake, PhD, CCP, PQS, Chair of Decision Risk Management (DRM) and Total Cost Management Analytics (TCMA) subcommittees at AACE International and BHP’s Center of Excellence Project Services Manager. Les McMullan, FAACE and AACE VP Regions North America, was also in attendance and provided introductory comments and an update on the work of the AACE Membership Board. Dr. Dissanayake presented the timely topic Thoughts on the Past and Future of Cost Engineering which included a sneak peek into the exciting world of Artificial Intelligence (AI) and analytics and the future of cost engineering. The presentation introduced the concept of a project analytics center and a tool for cost engineers with topics such as analytic models and techniques, data engineering and team and skill development required for digital project delivery. This will provide greater focus on visualization, extraction of analytics and storytelling rather than traditional reporting. Dr. Dissanayake also discussed analytics maturity in data driven applications today and in the future from diagnostic and predictive forecasting to prescriptive and cognitive analytics. The session concluded with a lively interactive discussion period on the future of cost engineering.

Guest Speaker Benjamin Stupple from Turner & Townsend was the speaker at the June Toronto Section meeting and is shown above presenting the latest changes in the Ontario Construction Act. At right, Stupple is shown receiving thanks and a book from Toronto Section President Behrad Kiafar, CEP from PWC. The book is a token of appreciation from the section. At right is Toronto Section Board member Ghaith Al-Hiyari, CCP from Turner & Townsend.
Dr. Manjula Dissanayake is shown making a point on project analytics at the May section meeting of the Toronto Section. Dr. Dissanayake presented the timely topic Thoughts on the Past and Future of Cost Engineering which included a sneak peek into the exciting world of Artificial Intelligence (AI) and analytics and the future of cost engineering. Dr. Dissanayake also discussed analytics maturity in data driven applications today and in the future from diagnostic and predictive forecasting to prescriptive and cognitive analytics. The session concluded with a lively interactive discussion period on the future of cost engineering.

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At the May Toronto Section meeting were audience members, shown from left to right, Ernesto Llorens, Lise Bouchard, Ashwin Lala, Cem Anil, and Joao Ferreira Terenzi.
The 2019 AACE Canada meeting was conducted during the Annual Conference & Expo at New Orleans on June 18. The meeting was facilitated by Region 1 Director Bindu Amin who is also the President of AACE Canada. He was joined by the VP Membership North America, Les McMullan, FAACE. Overall, close to 30 people attended the meeting with delegates from virtually all Canadian Sections, including some section presidents and section board members.

The meeting was started by Les who also raised a motion to approve the 2018 minutes of meeting which was seconded and promptly approved. Les updated the attendees on news from AACE International Headquarters and the activities of the membership board. For roll call, attendees were asked for a show of hands when their sections were called.

Bindu Amin then provided a Region 1 update on the active sections, membership numbers, and other news related to filing of taxes and scholarships. Bindu thanked the section board members for their selfless work towards promoting AACE Canada and advancing project control as a discipline.

There were eight sections in attendance, including: Edmonton, Calgary, Toronto, Bruce County, Montreal, Saskatoon, Manitoba and BC. Each section was given an opportunity to speak about highlights, achievements, and challenges within their sections. Most sections expressed the need to engage young professionals and use technology to widen the area of influence and communication within the region. Members were also encouraged to use the Region 1 community site to share information. It was noted and commended that five Canadian Sections would be recognized with awards for outstanding performance in 2018 at the awards luncheon.

AACE International’s 2019/2020 President Douglas Leo was a special attendee at the meeting and provided words of encouragement to the delegates. He was given a Maple Leaf cap as a souvenir which he proudly wore at the start of his opening comments prior to the Tuesday keynote address. The meeting was concluded with closing remarks from Les and Bindu, following which the delegates posed for a group photo before heading out to listen to the day’s keynote speaker.
AACE Sections are recognized annually for their performance as a section based on Section Scorecard Reports that are submitted on a quarterly basis to the section’s Regional Director. Awarded sections score between 400 to 2,000 plus points with the awards divided into four categories, including:

- Platinum Award winners, those scoring 2000+ points
- Gold Award winners, those scoring 1000-1999 points
- Silver Award winners, those scoring 700-999 points
- Bronze Award winners, those scoring 400-699 points.

Congratulations to all winning sections!

BY JENNIE AMOS

PLATINUM AWARD (2000+ POINTS)
- Arabian Gulf
- Central Asia
- India
- Italy
- National Capital
- Nigeria
- Qatar
- Russia
- Seattle
- Southern California

GOLD AWARD (1000-1999 POINTS)
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- Bolivia
- Boston
- Brazil
- Bruce County
- Central Savannah River
- Central Virginia
- Chinook-Calgary
- Eastern Europe and Balkans
- France
- Great Lakes
- Greece
- Hawaii
- Houston Gulf Coast
- Indiana Hoosier
- Long Island
- Montreal
- New Jersey
- New Mexico
- North Florida
- Norway
- Omaha
- Peru
- Pittsburgh
- Rattlesnake Mountain
- Rocky Mountain
- San Francisco
- South Korea
- South Africa
- Toronto
- Turkey
- United Arab Emirates
- United Kingdom
- Utah

SILVER AWARD (700-999 POINTS)
- Baltimore Metro
- British Columbia
- Central Ohio
- China
- Connecticut
- Japan
- Louisiana
- Poland and Ukraine
- Southwestern Ohio
- Spain

BRONZE AWARD (400-699 POINTS)
- Atlanta Area
- Chicago-Midwest
- Kansas City
- Keystone-Manitoba
- Las Vegas
- Spokane

DOES YOUR SECTION HAVE NEWS TO SHARE? See below for complete instructions for how to submit news and photos from your Section’s happenings to be included in the AACE® International Bulletin.

SUBMITTING SECTION NEWS: We invite all sections to submit news and updates to be included in the International Bulletin section of each Source issue. Please submit any and all text as a part of the e-mail or as a Microsoft Word file attachment. Please submit any photos as individual attachments in 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). For photos to be published, they must be in focus, of print quality, and of sufficient resolution.

Please include the names and titles of each person shown in any photos. Please list names from left to right or refer to those shown as being above left or right. For group photos please list names from left to right, beginning with the front row and working to the back. All submissions should be e-mailed to editor@aacei.org. Please use the official name of the Section as approved by the AACE Board when the Section’s charter was approved. 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.

MISSING SUBMISSIONS: Generally, all submissions received in the above scheduled times will be published in the listed issue. Items are not held because of space restrictions. There is no waiting list and no preference is given to one Section over another. Questions about incomplete submissions or failure to follow these submission guidelines could delay publication. Text will be published without submitted photos if the photo does not meet the listed quality requirements. AACE reserves the right to edit all submissions and/or to refuse to publish any submissions determined by the Managing Editor or the Art Director to not meet the standards of the journal. Any appeals of these decisions will have a final decision determined by the Executive Director.

If a submission is not included in the designated issue, please e-mail or call the Managing Editor to ensure that it has not been lost or misplaced. Call or e-mail if you do not receive a confirmation e-mail within 3 business days of submission.

Source has a submission deadline of two months in advance of the issue date.

Source Dates | Publication Date
---|---
By Dec. 31 | February
By Feb. 28 | April
By April 30 | June
By June 30 | August
By Aug. 31 | October
By Oct. 31 | December

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AUGUST

1 CMAASC GERALD DESMOND BRIDGE DEMOLITION PROJECT UPDATE
Long Beach Marriott
Long Beach, CA
sccmaa@cmaasc.org

13 CMAASC HOAG – WHAT’S IN STORE FOR 2019 AND BEYOND?
Embassy Suites by Hilton
Anaheim-Orange County
sccmaa@cmaasc.org

15 CMAA INDUSTRY EXPERTS FROM CHILDREN’S HOSPITAL OF LA AND ORANGE COUNTY
The LA Hotel Downtown
333 South Figueroa Street, Los Angeles, CA
sccmaa@cmaasc.org

SEPTEMBER

10 TRAILBLAZERS: US VETERANS REINVENTING THEIR CAREERS IN THE A/E/C INDUSTRY
Long Beach Marriott
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12 CMAA WHAT OWNERS WANT FROM CMS
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19 CMAA HOSTS KEN ROSENTHAL, CSU NORTHRIDGE
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OCTOBER

8 CMAA THE PORTS OF LONG BEACH AND LA CAPITAL PROGRAMS UPDATES
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9-10 MODULAR, PREFAB AND CONSTRUCTION TECH SENATE
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