

14 Getting (and Sharing!)
COST Facts: Factors,
Analogies, CERs &
Tools/Studies

20 ICEAA Professional
Development & Training
Workshop 2013 Wrap-Up

28 Integrated Cost-Schedule
Risk Analysis, Part 2

ICEAAWorld

The International Cost Estimating and Analysis Association

Summer 2013



Picturesque New Orleans...

The 2013 Workshop was held in New Orleans, LA!
See inside for more information.

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International Cost Estimating and Analysis Association
A non-profit organization dedicated to advancing the profession of cost estimating and analysis, through the use of parametrics and other data-driven techniques, and enhancing the professional competence of its members.

TABLE OF CONTENTS

4	President's Address <i>By Brian Glauser, ICEAA President</i>	12	Ask an Analyst <i>Edited by Joe Hamaker</i>
5	Letter from the Editor <i>By Joe Wagner, ICEAA World Editor</i>	14	Getting (and Sharing!) COST Facts: Factors, Analogies, CERs & Tools/ Studies <i>By Daniel Harper and Ruth Dorr</i>
6	Certification Director's Corner <i>By Peter Andrejev, ICEAA Director of Certification</i>	20	ICEAA Professional Development & Training Workshop 2013
7	Certification Congratulations	28	Integrated Cost-Schedule Risk Analysis, Part 2 <i>By David I. Hulett and Michael R. Nosbisch</i>
8	Business Office Update <i>By Erin Whittaker, ICEAA Executive Director</i>	36	Book Review <i>By Lt Col David Peeler</i>
10	Training Corner: What's Cousin' All This? <i>By Brian Welsh, Training Chair and Kevin Cincotta, Chapter & Organization Training Coordinator</i>	38	Chapter Updates
11	Chaptering & Membership <i>By Mike Thompson, Chaptering and Membership Chair</i>		



President's Address

by Brian Glauser, President

The Beginning of Many "Firsts"

ICEAA has accomplished several "firsts" over the past few months and we'll have many more to come.

This is my first President's Letter. I'd like to first say that it's an honor to serve such a distinguished membership. As of July 1st, the Association has its first elected Board of Directors. I look forward to this Board's efforts in continuing and furthering the mission and goals of the Association. I believe the Board members recognize that it is our obligation to maintain good stewardship of the Association and to ensure that we continue to serve our membership, our profession and our community.

In this issue you will find numerous articles and photos recapping the first Annual ICEAA Profes-

sional Development & Training Workshop, which was held in New Orleans June 18-21, 2013. While attendance was impacted by budgetary constraints, primarily affecting government sector participation, attendance exceeded expectations. More importantly, the content of the training and presentations were of the highest professional standards. A collective gratitude goes out to the many volunteers, instructors and speakers for their time, effort and commitment in making the workshop a success. Of course a collective "thank you" goes out to the International Office staff and to the Workshop Chairs, **Mike Thompson** and **Brett Cayer** with assistance from **Mel Etheridge**, **Andrew Drennon**, and **Brian Welsh** for all of their hard work. The venue was incredibly accommodating for this event and I'm sure that all in attendance walked away for the better due to the richness of information provided as well as stimulating discussions with old and new colleagues alike. I also believe that a good time was had by all who ventured out and took in the local attractions.

Of course, with it having been the first ICEAA workshop, the Association presented the first series of honors and awards in New Orleans. Congratulations to the winners, all of whom are highlighted later in this publication.

A "thank you" to **Rich Harwin** and **Andrew Drennon** for agreeing to take on the responsibility of Co-Chairs for next year's Workshop in Denver.

One of the first actions of the newly elected Board was to appoint people into various Director positions. Several of the previously serving Directors have already expressed a willingness to continue in their current capacity and in that regard, the majority of positions have in fact been filled and approved by the Board. We will be working to fill and confirm the remaining positions as quickly as possible so time is not lost in the work of these important committees. We are fortunate to have a membership that is willing to serve and make contributions. We hope to fill as many of the positions as possible with non-Board members.

I welcome your ideas on how we continue to make ICEAA stronger and better serve our members, our profession and the community we serve. Who will submit first? ■

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- Go to <http://careers.iceaaonline.org/>
- Click on "Job Seekers"
- Follow link for "Post your Resume"
- Get your name out as an employee who will go the extra mile for the job!





Letter from the Editor

by Joe Wagner, ICEAA World Editor

In a time of many firsts as an organization, this Summer 2013 issue of *ICEAA World* represents another – our first on-line only magazine issue. There will be no hard copy printing. This issue is also the second of a planned three issues for this year, with the third 2013 issue coming out in late Fall.

Despite the accelerated schedule of three issues per year, we are maintaining the quality and quantity of content that you should expect. In this issue we have a book review from our prolific contributor, **Lt. Col. David Peeler** of the Air Force Budget Office.

The second and final installment of Integrated Cost Schedule Risk Analysis by **Dr. David Hulett** and **Michael Nobsch** begins with a discussion of simulation of program performance using the Risk Drivers method. We also have a feature article from **Dan Harper** and **Ruth Dorr** of MITRE Corporation. The successful conclusion of our June 2013 Workshop in New Orleans came about due to the efforts of the ICEAA Business Office staff in conforming the content and reach of the conference to the smaller attendance dictated by the government sequester and other political issues beyond our control. A recap of that success is presented by conference chair (and newly installed ICEAA Treasurer) **Mike Thompson**. Along with the recap of the conference are announcements of award winners and other achievements by attendees.

As a past member of the active Air Force and staff member at the Air Force Institute of Technology (AFIT), I have always had an abiding interest in nurturing a strong relationship between ICEAA and the AFIT Cost Masters Degree program. This program has been in existence for decades, and its connection to our organization over the years has ranged from strong to tenuous. I am happy to report that under the leadership of **Lt Col. Dan Ritschel**, the relationship is strong and flourishing. Please see the latest news in LTC Ritschel's report. And we add our

congratulations to the newly certified students who passed their CCEA exam as well as graduated with their cost Master's degrees.

Your chapter reports and pictures are an important section of our magazine that tells us what you are accomplishing and perhaps offer some ideas for more and better cooperation among the chapters. You may have already noticed an up tick in webinars and other cooperative efforts among chapters. This will continue and grow, and we will record that growth in the chapter reports presented here. ■

WANTED

CCEA EXAMINATION TEST QUESTIONS

1 Topic Category
Parametric Estimating: CER

2 Topic
CER

3 Question

1. **QUESTION:** If a CER for Site Development was developed giving the relationship, y (in \$K) = $31.765x + 145.32$ (where x is the number of workstations) for a data set cost driver that had a range minimum of 2 workstations to 52 workstations, and the independent variable has tested positively for significance, the predicted cost for a site that had 33 workstations would be:

a. \$1,193.57
b. \$1,193,565
c. \$1,797.10
d. \$1,797,100
e. \$208,850

4 5 multiple choice responses

ANSWER: B

5 The Answer

SOLUTION: $y = 31.765 * 33 + 145.32 = 1,193.57$ but must convert to \$K; value is $1,193.57 * \$1000 = \$1,193,565$

6 The Solution

REFERENCE: CEBok Module 3

7 Reference

REWARD

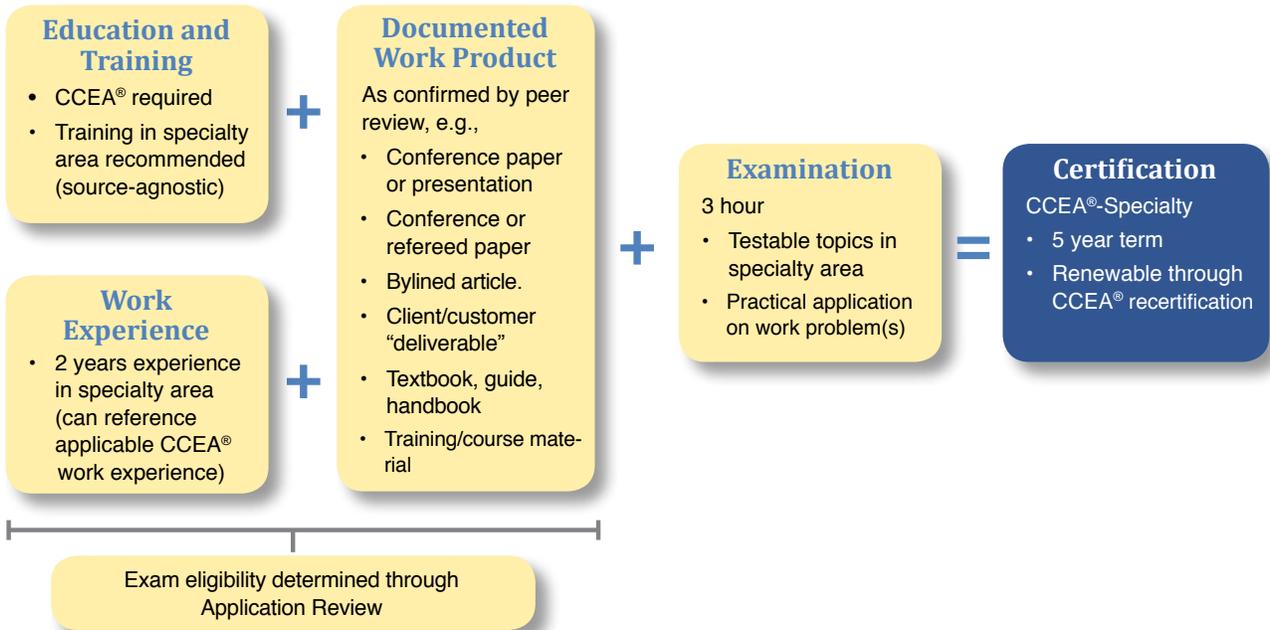
Re-Certification Points for Questions Fully Documented as Above

Contact the ICEAA Office or Director of Certification at iceaa@iceaaonline.org for Specifics.



ICEAA Certification Director's Corner

by Peter Andrejev, Director of Certification, CCEA®, PMP



The Board of Directors approved development of the Certified Cost Estimator/Analyst-Parametric (CCEA®-P) as the first of ICEAA’s specialty certifications. Our specialty certifications are modeled akin to achieving a graduate degree: beyond coursework study, the applicant must pass a comprehensive examination AND create their thesis or doctorate paper. In our case, we require applicants to submit a work product that demonstrates competency in the specialty area. The depiction above provides the guiding principles for our specialty certification programs.

We are currently in the process of reengineering the existing CPP examination to align with overarching certification program principles and to ensure consistency and integration with the current CCEA® examination. Specifically, we are eliminating overlaps and omissions between the existing CCEA® examination and the new CCEA®-P examination by logically harmonizing questions in terms of topical content and “degree of difficulty.” (Remember, to achieve the CCEA-P, one must have passed the CCEA examination.) We are also abiding with the “science of testing” by synchronizing a question’s “degree of difficulty” with its scoring point value.

We expect to complete the pilot version of the CCEA®-P examination this autumn and intend to beta test the examination before end of calendar year. ■

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ertification ongratulations

ICEAA would like to acknowledge both those who volunteer their time to proctor the Certification Examination and those who achieve certification.

Without CCEA[®] certified proctors to manage exam administration, ICEAA would be unable to offer the exam in so many locations throughout the year. If

you are CCEA certified and would like to proctor an exam in your area, please contact the ICEAA International Business office.

Thanks go out to following individuals for volunteering their time to proctor the certification exam during the spring and early summer of 2013: **Brad Boehmke, Kurt Brunner, Ian Cappitelli, Sam Cooke, Stacy Dean, Will Evans, Daniel Garcia, Chris Kaldes, Chuck Knight, Mitch Lasky, Chris Milo, Alan Nicholls.**

Congratulations are extended to the following individuals for passing either the CCEA[®] or PCEA[®] exam during the spring and summer:

CCEA[®] Achievers

- Michael Allen, Tecolote
- Aditya Alurkar, Booz Allen Hamilton
- David Biron, MDA
- Sandy Burney, Northrop Grumman
- Courtney Chiazza, Deloitte
- Robert Cisneros, Tecolote
- Adriana Contreras, Tecolote
- Klara Emelianova, Booz Allen Hamilton
- Joy Ann Fritz, Tecolote
- John Paul Gardner, CSC
- Scott Hardy, Booz Allen Hamilton
- Jeffrey Herrera, Tecolote
- Michael Herrington, Boeing
- Gerard Heydinger, Tecolote
- Edward Jankowski, Deloitte
- Jeffrey Jardine, Deloitte
- Christopher Jerome, Booz Allen Hamilton
- Debra Knudson, Tecolote
- Nicole Leighton, Tecolote
- Jennifer Leotta, DHS
- Edwin Mainar, Deloitte
- Brad Markiewicz, Booz Allen Hamilton

- Atwill Melton, III, Deloitte
- Daniel Mezzera, Tecolote
- Justin Moulton, Tecolote
- Lauren Nolte, Technomics
- Cynthia Prince, Rockwell Collins
- Susan Read, Boeing
- Harlan Swyers, System Planning and Analysis
- Angelica Torres, Tecolote
- Liana Trescot, Boeing
- Nicole Tucker, Tecolote

PCEA[®] Achievers / CCEA[®] Eligible

- Jenna Bernhardson, Booz Allen Hamilton
- Kendall Craven, Boeing
- Kevin Crumrine, USAF
- Matthew Edelman, Booz Allen Hamilton
- Daniel Geissmann, Boeing
- David Gold, Booz Allen Hamilton
- Allison Hufford, MDA
- Gary Jones, USAF
- John Lee
- Howard Ly, Booz Allen Hamilton

- Carina Rosado, Booz Allen Hamilton
- Eric Sommer, SMC

PCEA[®] Achievers:

- Erin Barkel, Parliamentary Budget Office
- Peter Bedard, Booz Allen Hamilton
- Gregory Ferry, USAF
- Charlton Freeman, USAF
- Ryan Hayes, Deloitte
- Benjamin Hooten, MDA
- Joseph Marshall, URS Corporation
- Christopher Morton, CSC
- Will Quarles, Deloitte
- Mary Swaffar, Systems Planning & Analysis

Recognized below are those who have been recertified:

- Brian Alford
- John Bielecki
- Peter Braxton
- Janice Burke
- Ian Cappitelli
- Zelphia Cobb
- Thomas Conner
- Benjamin Costley
- Aileen Donohue

- Eric Druker
- Joseph Frisbie
- Kevin Gagnier
- James Hamilton
- Malcolm Hatherley
- Hetal Patel
- Richard Hoffacker
- Allison Horrigan
- Ross Jackson
- Christopher Jarvis
- Jonathan Joo
- Greg Kiviat
- David Krueger
- Walter Kuo
- Grant Lawless
- Weland Mahar
- Antony March
- Nicholas Morales
- Eric Mosier
- Andy Nicholls
- Daryl Ono
- Joe Parisi
- John Reddy
- Crystal Rudloff
- Kirk Schneider
- Joanna Scott
- Richard Shea
- Dale Shermon
- Linda Williams



Business Office Update

by Erin Whittaker, ICEAA Executive Director

Welcome to the first online issue of *ICEAA World*! As ICEAA continues to grow with the times, we're looking for ways to reach out to our members and connect virtually. Long gone are the days of waiting to meet each other in person at a conference! The ICEAA Business Office wants to be a 24/7, 365 resource for you. Follow us on Twitter and "Like" us on Facebook to get the latest updates on Chapter events and member benefits, Association news, and headlines from around the world.

Of course, nothing can replace the value of meeting in person to discuss the latest developments in the field, hear presentations on best practices, and network with colleagues. We recently wrapped up the 2013 ICEAA Professional Development & Training Workshop in New Orleans, LA, and it was quite a success! Even with the uncertain fiscal environment and lower government participation, we still had over 300 attendees, and had a robust program with 43 training sessions and 80 papers presented.

This issue of *ICEAA World* is filled with workshop wrap-up information and articles by members of the Conference Planning Committee, but let me just take a few minutes to recognize some important people: **Mike Thompson** and **Brett Cayer**, Conference Chairs, did a tremendous job of coordinating between all the committee chairs and bringing their ideas to fruition; Program Chairs **Mel Etheridge** and **Andrew Drennon** and Training Chair **Brian Welsh** put together a top-notch program; and **Jeff Moore** (Best Paper Chair) and **Joe Hamaker** (Annual Awards Chair) both worked tirelessly to continue the ISPA and SCEA traditions of recognizing excellence in the field. Thanks to all of them for helping establish the first ICEAA Professional Development & Training Workshop as a must-see event for training, professional development, and networking.

The Conference Program featured insightful, engaging presentations, made by seasoned speakers and first-time presenters. It is always difficult to select just one paper from each track as the winner of a Best Paper Award, and this year, we saw many papers with very

close scores (some winners edging others out by just a few decimal points!). We would like to thank everyone who presented at the 2013 ICEAA Workshop, and we would also like to offer our congratulations to the Best Paper Award Winners: **Eric Druker, Christian Smart, Peter Braxton, Richard Coleman, Daniel Harper, Ruth Dorr, Aidan Depetro, Rhyan Hoey, Lauren Nolte, Kevin Cincotta, Eric Lofgren, Rennie Arnold, Justin Hornback, Kathryn Connor, James Dryden, Jeremy Eden**, and Best Overall Paper winner **Shu-Ping Hu**. You can read more about the winners in **Jeff Moore's** article in this issue, and you can also download their presentations online at <https://www.iceaaonline.org/awards/bestpaper.cfm>. The ICEAA Business Office will be conducting webinars of the Best Paper winners from mid-July through mid-August.

The 2013 Integrated Program Management (IPM) Conference will be held November 18 - 20 at the Bethesda North Marriott Hotel & Conference Center. Once again this year, ICEAA will host a Cost Estimating/EVM integration track with presentations from industry experts. This is a great opportunity for local DC residents to get a little taste of the ICEAA Workshop program, if you haven't yet attended our Annual Workshop. You can get more information at www.ipmconference.org.

If you missed out on the 2013 ICEAA Workshop, don't worry! The 2014 ICEAA Workshop planning is already well underway, where you can attend professional papers, training workshops, CCEA study sessions, and much more! The Workshop will be held at the Denver Marriott City Center in Denver, CO, from June 10 - June 13. **Rich Harwin** and **Andrew Drennon** will co-chair the conference, and they've already begun lining up exceptional keynote speakers. If you'd like to speak at this workshop, see the Call for Papers in this issue.

In May, ICEAA unveiled CEBoK® Version 1.2, a maintenance release that expands on the material from the previous version and features: new and enhanced content on Function Point Analysis, Agile Software Development, EVM Contract Requirements, and CER Calibration; updated guidance on MIL-STD-881C Work

Breakdown Structure (WBS), 2009 Weapon Systems Acquisition Reform Act, and Better Buying Power 2.0; and the latest research from DoDCAS, SCEA, and ISPA conference papers in 2011 and 2012. Current license holders were invited to download the material from the ICEAA website, and CDs were sent out to those who did not download the material by the end of June. CE-BoK is now, bigger, better, and more comprehensive, so it's the perfect time to purchase a license! If you or your company have interest in procuring CEBoK, contact Erin Whittaker at erin@iceaaonline.org.

We've also recently announced the new online manuscript submission system for the *Journal of Cost Analysis and Parametrics*, ICEAA's scientific journal featuring refereed papers. Now it's easier than ever to submit a manuscript for consideration. Just visit <http://mc.manuscriptcentral.com/iceaa>. We plan to increase production to 3 issues per year starting in 2014, so help us generate some top notch content, and submit your paper for refereeing today!

From mid-August to late September, we will be conducting our semi-annual Membership Survey. This

anonymous survey will ask lots of questions designed to help ICEAA better serve its members, but it will also ask (completely optional) questions on salary, education level, geographic area, etc, making it an invaluable resource for our members. You can look forward to detailed salary data, specific to your field, every other year as one of the many benefits of ICEAA membership. The survey will close on September 20, and the results will be announced and posted online for member download by the end of October.

Last, but certainly not least, I would like to take a moment to welcome the new ICEAA Board of Directors. The ICEAA Pro Tem Board did a terrific job keeping the ICEAA ship sailing smoothly since the merger. The 2013 ICEAA International Board election was held in May, and the new Board took office on July 1. I am confident that the new Board will continue the fine work of the Pro Tem Board and keep ICEAA on a course for future growth, expanded member benefits, and an increased international presence. To get contact information for the new Board members, visit <https://www.iceaaonline.org/about/board.cfm>. ■



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For more information, contact the ICEAA Business Office at 703-938-5090, or iceaa@iceaaonline.org.



What's Causin' All This?

By *Brian Welsh, Training Chair and
Kevin Cincotta, Chapter & Organization Training Coordinator*

We want to thank everyone involved for helping to make the inaugural ICEAA Professional Development and Training Workshop a huge success! The 2013 annual conference was held in New Orleans, LA, which provided many with the opportunity to walk down Bourbon Street, get fresh beignets from Café Du Monde or try a tasty praline. In addition to the wealth of cultural activities, we had a great training event. This year, we increased the number of training courses from 42 to 43 and maintained the same four training tracks: Cost Estimating – Basic, Parametric Training, Cost Estimating– Advanced and Integration. This is the second year of significantly expanded training when compared with previous conferences (2011 and prior). As before, content was culled from the Cost Estimating Body of Knowledge (CEBoK®), *Parametric Estimating Handbook* (PEH), and other authoritative sources, including the *GAO Cost Estimating and Assessment Guide*.

Next, a big shout-out to Training Track Chairs (all of whom also contributed individual training sessions): **Rachel Cosgray** and **Tom Reese** (Cost Estimating–Basic); **Eric Cohen** and **Jennifer Strawn** (Parametric Training); **Allison Horrigan** and **Ken Rhodes** (Cost Estimating– Advanced); and **Casey Trail** and **Michael Yanavitch** (Integration). Conference chairs **Mike Thompson** and **Brett Cayer**; **Erin Whittaker** and **Brittany Walker** from the ICEAA International Business Office; as well as our counterparts leading the program paper tracks, **Andrew Drennon** and **Mel Etheridge**, all put in a yeoman effort in ensuring a balanced program of Papers and Training.

This year, as with every year, the training program is made possible by the hard-working training instructors who raised the bar yet again. The 52 dedicated instructors included: **Neil Albert**, **Tim**

Anderson, **Peter Braxton**, **Andrew Busick**, **Mike Butterworth**, **Eric Cohen**, **Rick Collins**, **Luis Contreras**, **Rachel Cosgray**, **Colleen Craig**, **Rob Currie**, **Tom Dauber**, **Stacy Dean**, **Jason Dechoretz**, **John Deem**, **Eric Druker**, **David Eck**, **Joyce Friedland**, **Dan Galorath**, **Marc Greenberg**, **David Harris**, **Allison Horrigan**, **Shu-Ping Hu**, **David Hulett**, **Christopher Hutchings**, **Steven Ikeler**, **Shawna Jones**, **Kent Joris**, **Hervé Jomier**, **Greg Kiviat**, **Justin Knowles**, **John Krahula**, **William Laing**, **Richard Lee**, **Zac Lindemann**, **Michael Noshisch**, **Daniel Nussbaum**, **Rachael Peoples**, **Tom Reese**, **Ken Rhodes**, **Pamela Robinson**, **Wilson Rosa**, **Luke Sayer**, **Blaze Smallwood**, **Christian Smart**, **Christina Snyder**, **Jennifer Strawn**, **Sam Toas**, **Casey Trail**, and **Michael Yanavitch**. If you provided training this year and we neglected to list your name above, please let us know (and accept our apologies). The feedback we've received so far has been overwhelmingly positive, and it's a testament to each of your abilities as trainers that the sessions continue to be so popular. The International Business Office staff has compiled the results of the formal course evaluations, which will be used to provide feedback to instructors and help shape next year's training in the spirit of continuous improvement. We're also pleased to hear that the sessions provided many with the final preparations needed for the Certified Cost estimator/Analyst (CCEA®) exam, and to see that so many people sat for the exam offered at the end of the conference. Lastly we would like to thank our conference training mentor and newly-elected Vice President for Professional Development, Peter Braxton, for his continued assistance in organizing training.

This was the second year that we opened the call for training instructors and training track chairs to the

entire ICEAA community. This meant that the entire Association and past conference participants received (or should have received) the Call for Trainers. This approach translates to greater diversity of trainers' backgrounds, perspectives, education, experience levels, and organizations (not to mention increased richness and diversity of training content). We will continue to grow and broaden the scope of the training program, so we always need more instructors experienced in teaching CEBoK[®], including the Related and Advanced Topics sections, as well as non-CEBoK[®] topics. If you would like to volunteer (as a Trainer or Track Chair) for future conferences please contact **Brian Welsh** (bwelsh@technomics.net).

Conference attendance was down this year, and many veterans as well as potential first-timers were

not able to attend due to the austere fiscal environment. For those who were not able to attend, this fall we will be offering a series of training courses similar to those at the conference but delivered via webinar. These courses will be an extension of the conference training and participants will receive Continuing Education Units (CEUs). Be on the lookout for more details.

Do you (or someone you know) have training content to share? Or maybe you have feedback about the conference training. Or maybe you just want to ask what everyone else asks me: What's causin' all this?!? Whatever the feedback, you may share it with us, and it just might appear in the next *Training Corner*. ■

ICEAAWorld

Chaptering & Membership

by Mike Thompson, Chaptering and Membership Chair



These have been exciting times in the world of Chaptering and Membership; our annual Training and Professional Development Workshop in New Orleans was a success and I spoke with several people who expressed interest in starting a chapter, reviving a chapter, or pumping new life to an existing chapter.

Last year we welcomed Central Virginia and Detroit, as new chapters. This year we have had interest from Europe, the UK, and Canada.

This past year the Membership and Chaptering Committee has held discussions about:

- ICEAA Communication Tools, which include:
 - Chapter Presidents' Calendar
 - Membership and Chaptering Committee Telecoms
 - LinkedIn Sub-Group
 - Chapter Presidents' Telecom

- Getting the word out about potential speakers:
 - Chapter use of the ICEAA Business Office GoTo Meeting, to broadcast their luncheon speakers to other chapters or individuals
 - Chapter event checklists, to make holding a luncheon or workshop easier with an outline of what needs to happen.

These tools have spawned the development of the comprehensive ICEAA Chapter Manual, being prepared by the Business Office. This guide will be posted online when complete and contain all reference materials that a chapter would need.

Providing the chapters with the tools they need to meet the expectations of the members is a challenge, the philosophy behind the committee and guide is to provide the chapters with communication and tools to meet or exceed those expectations. ■



Ask an Analyst

Edited by Joe Hamaker

This column ran in ISPA's *Parametric World* beginning in 2009 with the aim of featuring knotty cost analysis questions from members with answers provided by experts in the field. I am excited about continuing to edit this column, re-named "Ask An Analyst" for *ICEAA World*.

In the last issue I put out a call for questions. One of the questions I received sort of broke the mold from previous questions featured in the column—prior questions had all been about technical or management issues revolving around cost analysis. **Barbara Stone Towns** who works for NASA Headquarters emailed me the question: "How does a cost analyst survive layoffs?" I talked to Barbara after receiving her email and while she said that in a way she meant the question as a joke, the more she and I discussed it, the more I liked the question—because the issue is pretty germane right now to some analysts what with the economy and sequestration. When Barbara and I brainstormed who might be most appropriate to answer the question, Barbara came to the rescue again by suggesting who among us has their hand on the pulse of such a question better than the ICEAA front office. Brilliant, I thought! So **Erin Whittaker** and **Joe Wagner** crafted the following response to the question: "How does a cost analyst survive layoffs?" They chose to approach it as follows:

What is the real threat out there right now (i.e. do you sense that layoffs are a threat to a significant number of our members? Anecdotally, yes, we are seeing that layoffs due to funding restrictions are occurring in greater numbers over the past year than we had previously seen. 1% of survey respondents in 2011 identified as unemployed, but it's likely we may see an increase in that number with the 2013 survey results. That said, cost estimating/cost analysis does still appear to be an industry with tremendous growth potential, especially as the government and contractors continue to put greater emphasis on efficiency and cost effectiveness.

What should estimators do to guard against and/or prepare for such a threat? While there is likely little to do to guard against a layoff, a good

way to prepare for the possibility of losing one's job is to begin (or ramp up) building your professional network. ICEAA has an online Cost Estimating Career Center where resumes can be posted anonymously, and the ICEAA LinkedIn group (currently with over 6,000 members, many of whom are not paid ICEAA members) is an excellent resource for reaching out to peers. Attending chapter events and meetings is another good way to meet others in the field and strengthen professional contacts.

What can/does the ICEAA organization do to help? ICEAA is dedicated to advancing the profession of estimating and analysis by fostering the professional growth of our members. To that end, we try to create various avenues for members to connect directly with one another (through LinkedIn discussion boards, Chapter events, our Annual Conference, etc.). We also provide the Cost Estimating Career Center as a way for potential employers to post jobs (and review posted resumes) and for employees to post their resumes anonymously. In addition to these ways of connecting people and jobs, we also strongly encourage people to consider becoming certified as either a Professional Cost Estimator/Analyst (PCEA) for those with 2 years of experience (but less than five), or a Certified Cost Estimator/Analyst (CCEA) for those with over five years of experience. Maintaining a professional credential that demonstrates your mastery of concepts and skills related to the profession will help make you a more attractive job candidate. Based on the results from the 2011 Member Survey, those with the CCEA credential earned 15% over the median overall salary of those with 6-9 years of experience, and those with the PCEA credential earned 30% more than the median salary than those with less than five years of experience.

What can you do in the near-term to help protect your value to your organization? If you have done all the long-term planning and personal preparation possible to increase your value to your organization, there are also some near-term actions and strategies that may improve your chances of staying.

1. Organizational Location. In every organization there are subsets of the management structure where there are more projects, more activity,

more management emphasis, and often, more money involved through budgets or contracts. That is where you want to be. The people working in those programs or departments are often perceived as more critical to the organization, and therefore, better protected from job changes or removal. You should not find yourself in an out-of-the-way office working on small, unnoticed projects. That is where the first reductions are more likely to fall.

- 2. Value to the Program.** It is often said that you should stand out in your job. Yes – teamwork and cooperation is often an organizational mantra, but when you can discover something or develop something or complete a difficult task better than your contemporaries, it brings notice and increases the perception of your value to your managers. The appearance of professionalism and dedication to the task are ways of exhibiting your value to the organization—try to make these a constant in your behavior.
- 3. Personal Relationships.** In every organization there are always people you are compatible with

and people you are in conflict with at some level. When you are assigned a position or task, the likelihood is that there will be co-workers and supervisors who either make your work easier or make it more difficult, depending on how you interact with them. To recognize this reality and take action to control it as much as possible can be vital to your job performance and the perception management has of you. It can mean changing how you react to a co-worker who is negative towards you or the task. Or it can mean having a better understanding of a supervisor's needs who is unclear about what you are to accomplish. Getting along with people, especially team members and managers, is a basic ingredient to staying aboard the organization.

So there you have it readers! As the editor of this column I want to thank **Barbara Stone Towns** for her question and **Erin Whittaker** and **Joe Wagner** for writing one of the very best answers I have experienced in all the years of doing this. I think their advice is accurate, insightful and truly inspirational. ■

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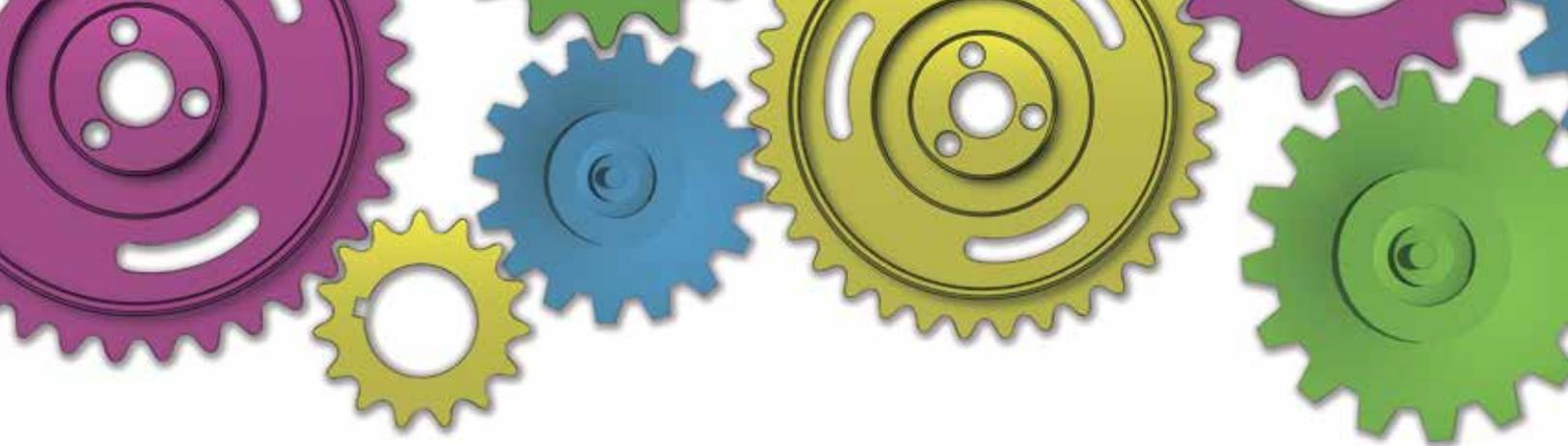
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Getting (and Sharing!) the Cost FACTS: Factors, Analogies, CERs & Tools/Studies

By Daniel Harper and Ruth Dorr

Many Government Agencies Share Similar Elements Across Cost Estimates

Many government agencies have programs exclusive to that agency, e.g., only the Army will likely be buying tanks. However, estimators work with many programs, and across multiple or, even in some cases, all government agencies. For example, estimators will frequently have cost components such as: Software development and licenses/ IT Hardware; Help Desk Support; Facilities; Cloud Computing; Biometrics; and PIV/CAC Card Implementation.

Although we work for different companies and organizations, many of us support the same customers. Our competitor today maybe our teammate tomorrow when we bid on a contract. Or we've worked for another organization and we still of office mates at those companies. Throughout an estimated career he may work for multiple companies. Even for those of us who stay with one company are entire career, we will likely support dozens of customers during that span.

The illustration in Figure 2 depicts just some of the likely hundreds of organizations endeavoring in this field of cost analysis at some level.

Crowdsourcing

Much could be said about crowdsourcing, but a few salient points from Saxton, et al (2011) sum it up well:

- “In a profound move from the ‘pre-Web 2.0’ [note the term ‘web 2.0’ is often used to mean the social networking aspects of the Internet] platform, Web 2.0 does not ‘impose on users any preconceived notions about how work should proceed or how output should be categorized or structured’ (McAfee, 2006, p. 25).”
- “The crowdsourcing model [taps] the collective knowledge of the community to harness the crowd to directly produce goods and services. [...] the crowdsourcing model actively involves the community in the process of online *production activity*.” [emp. mine]

In other words, the traditional top-down approach to knowledge management is antithetical to tapping into the wisdom of crowds. It's reminiscent of the story of the newly built University where students ignored many of the sidewalks designed by the architect. In his next project, the architect waited to see what pathways emerged organically from students walking across the quad to and from dorms and classes before deciding where to pave. The lesson is that the architect, or in this case a designer of a virtual cost community, may have in mind something entirely different from what the community itself will build.

Open Government and Open Source

In 2009 President Obama's signed the Memorandum on Transparency and Open Government

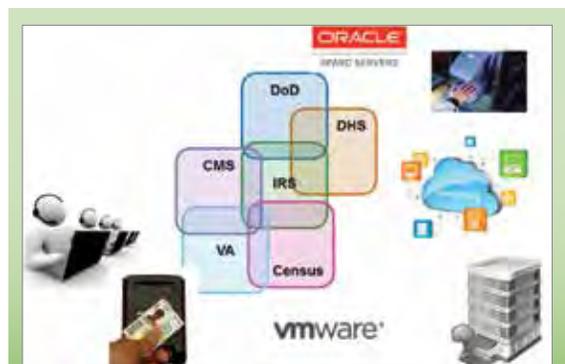


Figure 1: Many Government Agencies share Similar Elements across Cost Estimates

(http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment/) and declared:

- Government should be transparent
- Government should be participatory
- Government should be collaborative

Cost FACTS enables this initiative and embodies the philosophy of open source. “Open source refers to a program in which the source code is available to the general public for use and/or modification from its original design. Open source code is typically created as a collaborative effort in which programmers improve upon the code and share the changes within the community (Wikipedia).”

Wikipedia and Mechanical Turk

Perhaps the most famous example of using open source and crowdsourcing is Wikipedia, the on-line, free encyclopaedia that anyone can edit. Another less well-known example, Amazon’s Mechanical Turk (see http://www.youtube.com/watch?v=2Uj_YwBbzVI), is a crowdsourcing Internet marketplace that enables computer programmers (known as Requesters) to coordinate the use of human intelligence to perform tasks that computers are currently unable to do. According to Wikipedia (2013), the Requesters are able to post tasks, such as choosing the best among several photographs of a store-front, writing product descriptions, or identifying performers on music CDs. Workers can then browse among existing tasks and complete them for a monetary payment set by the Requester.

Note that open source does not necessarily mean free. Red Hat and TopCoder are private companies that have leveraged the open-source model to create products and services for private industry as well as government entities such as NASA and the Center for Medicaid Services.

Social Networking vs. Traditional Knowledge Management

E-mail lists and traditional knowledge management sharing tools are to social networking what 1995 technologies are to 2013’s...i.e., what a Michael Bolton CD is to today’s MP3 cloud services such as Spotify. In other words, why are we using such outdated technology to share knowledge when there are so many advantages to the bottoms-up social networking approach taking hold across industries?

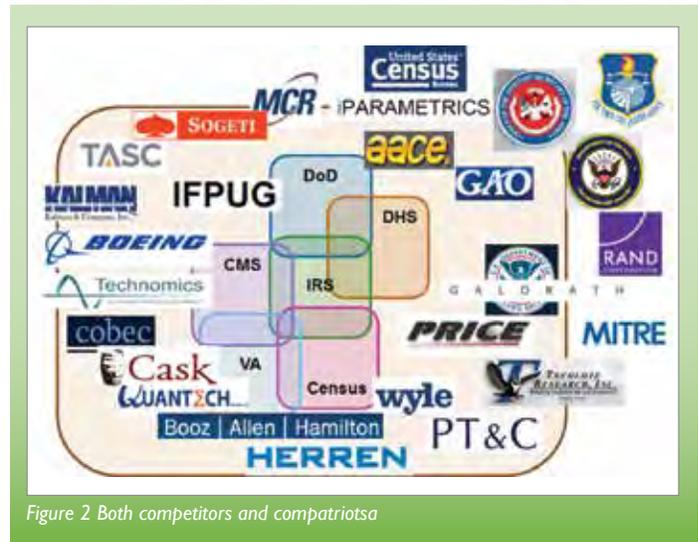


Figure 2 Both competitors and compatriots

Enterprise Social Networking vs. Traditional KM

There are many advantages to using an enterprise social networking tool such as Handshake. Handshake is a business networking system built by the MITRE Corporation using the open-source Elgg® tool. It allows the creation of groups, which are defined as “spaces” created for collaborating and communicating around a project, a community of practice, an event, an organization, a social group, and more.

One major advantage of Handshake over traditional knowledge management tools is it is much simpler, providing much of the functionality of SharePoint, but with minimal training. These tools employ the bottoms-up, wisdom-of-crowds methodology...as opposed to the top-down, SharePoint approach. Handshake functions as a sort of a “SharePoint lite,” allowing for collaboration and file sharing (including metadata tagging) without the need for a SharePoint administrator. For that matter, no license at all is required-just a web browser.

And you can throw away those “Generation Y/slacker” stereotypes going through your mind (don’t feel bad, they were in my mind too!). Social networking is not only for the “under 40” set — at least at MITRE, most Handshake contributors (approximately 70%) are more senior (mid-level manager to principal). Even on Facebook, says Lafferty (2013), nearly half of the user population is over 45.

Typically, when something is posted to SharePoint, other users have no idea how useful the item is or what other users think of the artifact. However, Handshake or other enterprise social networking tools allows members

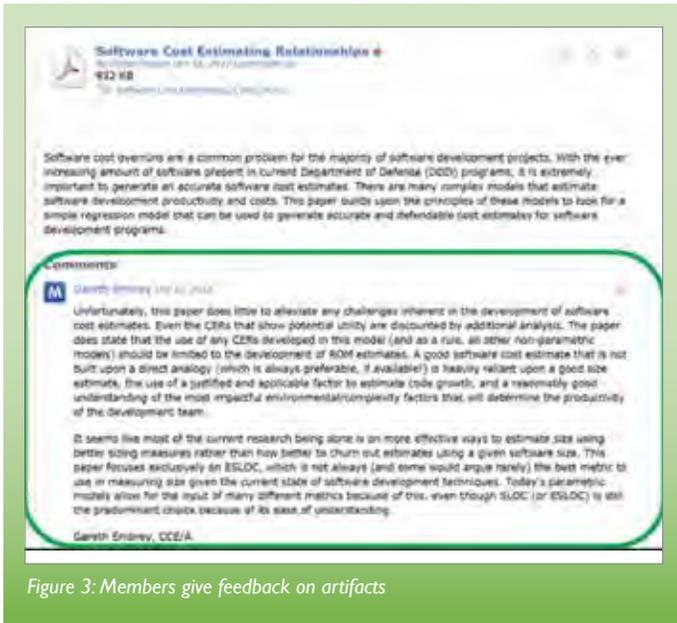


Figure 3: Members give feedback on artifacts

to provide feedback on artifacts via comments...or they can simply “Like” it. This ability to dialogue greatly enhances the usefulness of a posted study or cost factor. Members can provide their feedback, caveats, or lessons learned in their use of the artifact. A good example of this value-adding discussion is shown in Figure 3, where a member provided his opinion of a shared study about software cost estimating.

In Handshake, users can even see how many members viewed a given document or discussion. For example, a general Excel-based tool for calculating travel costs has much broader appeal than a DISA pricing catalog for telecommunication services.

Finally, Handshake integrates well with Outlook e-mail for those with firewall issues. In other words, a PC or Mac with a browser is not required to participate in the discussion. Users can participate strictly via e-mail on their mobile device if they prefer, and the dialogue will be synchronously posted to the group site for others to view. This is preferable to traditional e-mail dialogue as it is also preserved for future members (versus sitting in individual e-mail inboxes, inaccessible to new employees).

One unforeseen benefit of the site is the “snowball effect.” I posted some information on cloud cost estimating, which prompted another colleague to share some information he had in regards to a cloud cost estimating tool:

Sent: Wednesday, March 13, 2013 11:19 AM
To: Harper, Dan
Subject: Commercial cloud vs internal VA hosting

Dan,
I noticed you posted some cloud cost estimating info (IBM in particular) on Handshake.
I am wondering if you have come across any formalized criteria for sponsors deciding whether to host an application within their infrastructure versus with a commercial cloud service provider.
VA sponsored an operations cost estimating tool, and it includes an internal cloud hosting cost estimate of sorts. The tool is publically available at <https://t4.systemsmadesimple.com/preAswEstimate.do#>



Figure 4: Handshake users can see how many members viewed a given document or discussion

Visualization Tools-Explore Group Membership

Handshake has some insightful visualization tools for exploring to what other groups your group members is connected. This allows you to find “nodes” or “hubs,” e.g., well-connected individuals. In the example in Figure 6, you can see Tyndall Traversa is connected to multiple groups of interest such as Big Data Analytics.

You can also explore individual networks of other members. The example in Figure 7 shows that Jack Gerdeman is connected to several individuals I do not have relationships with. Jack could be the connection point between me and an individual with a particular expertise.

What’s In It for Me?

Why should companies and organizations give away hard-earned intellectual capital?

Throughout history new technologies have challenged business models across industries. In the mobile apps world, software developers give away apps and charge for additional features. In the music industry, MP3s have certainly changed the way artists make a living. Some bands give away the album or stream their music for free online, but charge for concerts or make money selling merchandise such as T-shirts. Others employ a charge-

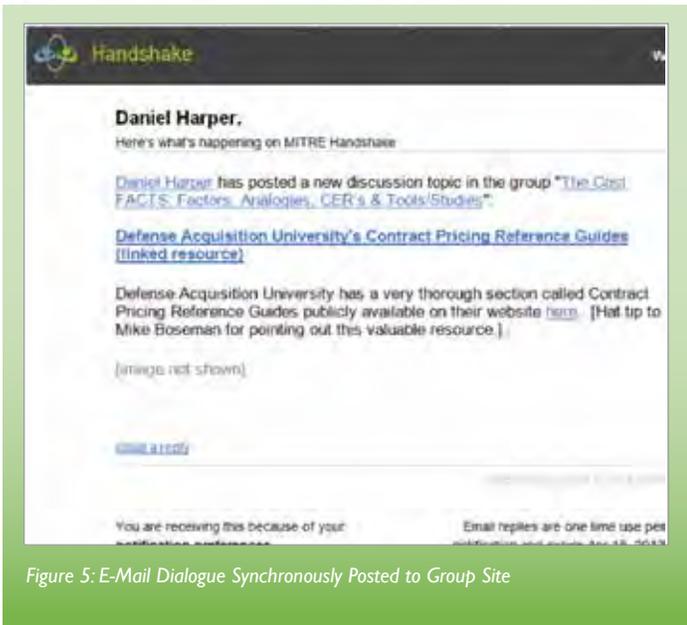
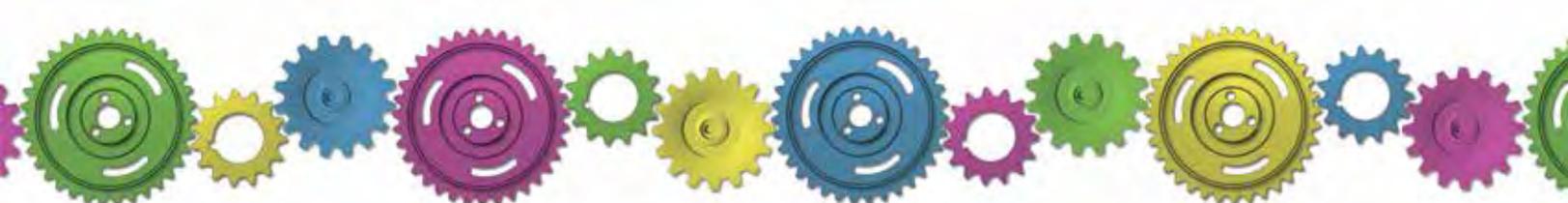


Figure 5: E-Mail Dialogue Synchronously Posted to Group Site

per-song model vice the traditional single consumer option of purchasing an entire 10 song album having only heard one single.

A cheeky upstart known as “someecards” creates the ubiquitous cards which consumers can post to their Facebook profiles for free, while the website charges advertisers.

Admittedly, providing cost support to the federal government is different from starting up an Internet company in the garage: the point is, social networking and other technologies have affected businesses of all types throughout history. The best companies and organizations figure out the smartest way to adopt new technology for their industry, and ours is no exception.

For the individual employee, the incentive is even clearer. The adage “scratch my back and I will scratch yours” comes to mind. If you are seen as helpful and contribute when a colleague or partner needs help, others will reach out return when you have a question or are looking for a cost factor to figure out systems engineering costs. If that doesn’t convince you, then how about The Golden Rule (do unto others as you would have them do unto you). It’s simply the right thing to do!

Of course, there is always the appeal to our more base instincts: customer and management recognition. When you take the time to post a study or answer someone’s question gratis, you demonstrate that you have intellectual capital to contribute to the company and/or customer. More importantly, you

demonstrate that you care about them and their problem. Managers tend to remember these things during annual review time, and customers may also factor in this somewhat intangible quality of “helpfulness” when awarding a new contract or task order. Not to mention, the colleague you help out today just might be your manager or employer tomorrow!

Fear Factor

Another benefit to Handshake groups is that they can easily be opened up to partners or customers. Some organizations are hesitant to embrace technology such as this for fear they will be letting the customer “see how the sausage is made.” Or they may be afraid of how someone outside of the company/organization may perceive some potentially frank discussion. This is a legitimate concern. However, organizations cannot simply bury their head in the sand and avoid using social networking tools out of fear. Employees need to be empowered as professionals and trusted to conduct themselves accordingly in their correspondence, just as they would be expected to in a face-to-face meeting with the customer.

However, it is naïve to think there is no risk to using this technology. Inevitably, mistakes will be made, people will be embarrassed, and perhaps a customer will even be off-put by a comment. However, the potential benefits far outweigh the perceived risks. Finally, for discussions that may need to be kept in-house, an employee-only subgroup has been set up (though as of yet there has not been a use for it).

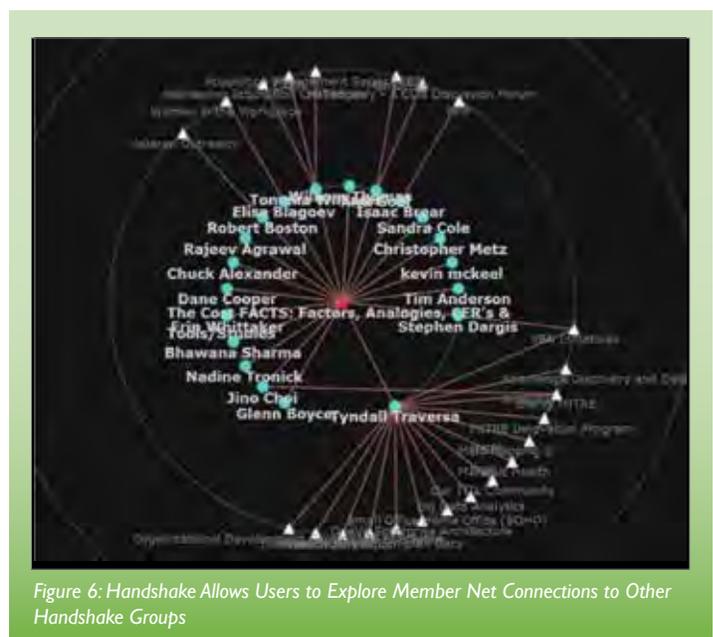


Figure 6: Handshake Allows Users to Explore Member Net Connections to Other Handshake Groups

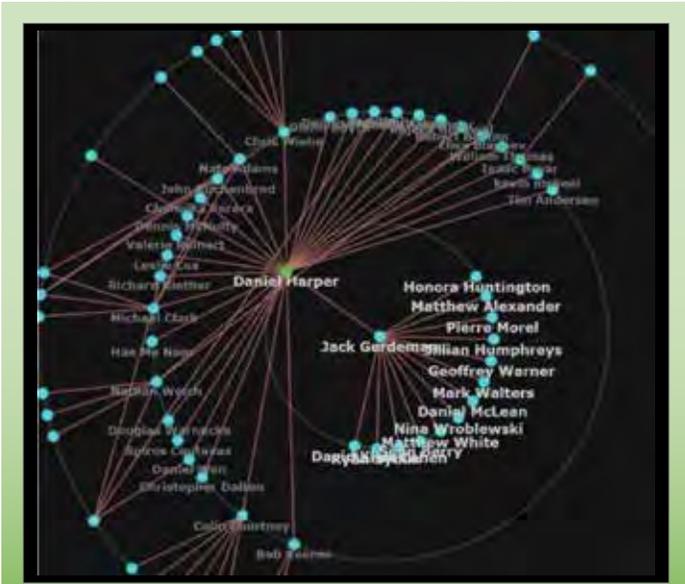


Figure 7: Handshake Allows Users to Explore Member's Connections to Other Members

This open approach allows for interaction with a wider variety of experts in the traditional e-mail discussion lists. Generally, only cost analysis “wonks” sign up for e-mail discussion lists. However, someone without a lot of cost experience who perhaps has relevant IT experience — for example, managing a help desk, could answer a Handshake-posted question about cost of implementing help desk management software. Using the e-mail model, he would never even have a chance to see the question!

Handshake makes site metrics visible for all participants. For example, the Group Metrics widget depicted in Figure 8 reveals that the Cost FACTS site has a total of 81 files as well as 21 posted discussions and six “WIKI” style Pages that have generated over 400 total comments! In addition, total membership is visible to all: the site currently includes 79 members across MITRE as well as five non-MITRE partners. With SharePoint, none of these metrics are visible to the average user.

User Guide and Best Practices

Users should be wary of simply thinking of the group as a marketing channel to exclusively post information about webinars hosted by your company, or nothing but marketing materials (the kind of thing you see sometimes on LinkedIn.com). Don't become the guy in the Oxi-Clean commercials!

Also do not post anything marked FOUO (For Official Use Only), Proprietary or Sensitive. For exam-

ple, do not post Forrester or Gartner Studies without permission (they frown on posting those to SharePoint OR Handshake) without prior permission. Typically these companies allow for “fair use” i.e., using information from their studies in an estimate. Also many allow for the forwarding a copy of the study to an immediate project team for review, but not for mass distribution or posting to a group SharePoint site. Bottom line, it is up to the user to use discretion and know what is allowable and appropriate. If unsure contact the original provider, or simply post a public-facing hyperlink to the original source.

If you make a mistake, it's okay, it can be fixed. Artifacts and posts can be deleted. For more information, there is a Handshake User Guide available to members at http://info.mitre.org/communications_services/fastforward/handshake.shtml.

Handshake 101

An excellent four-minute Handshake primer can be accessed by going to http://www.mitre.org/work/info_tech/software_collaboration/ and is publicly accessible.

If you would like to know even more about Handshake you can learn by watching a 45 min. webinar at http://info.mitre.org/communications_services/fastforward/Handshake.shtml (accessible to non-MITRE Partners, but you must be a Handshake member).

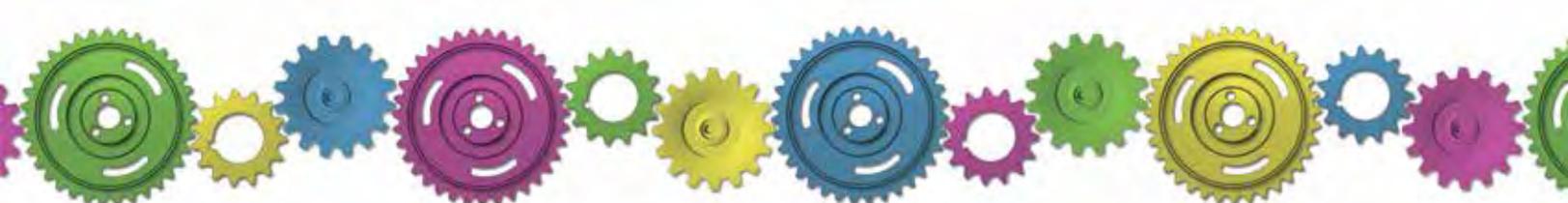
If you're a super-Handshake geek (like I am) you can join the Handshake user support group. No, it is not a 12 step support group-it's a user support group!

Recruitment Strategies: Getting Others Engaged

This is still a work in process, and as community leaders we've learned a lot about getting others engaged with



Figure 8: Group Metrics widget



the site. These techniques have included:

- “Shameless” promotion: In Top 100 of over 800 groups on Handshake
- Publicly unveiled to MITRE cost community via June Cost newsletter, “brownbag” brief
- Pointing others to the site (vs. e-mailing files to them) and soliciting comments
- Created Fast Jump (MITRE Internet keyword search term)-”FACTS”
- Created personal intro e-mail, short orientation brief sent to new members; calling new employees to encourage them to join
- Promoting the idea that “benefits members receive outweigh the ‘costs’” (a best practice according to Higgins and Clark)
- Increasing awareness via Association for the Advancement of Cost Engineering International, ICEAA conferences
- Recruiting champions: The message below is from the league for our internal Cost Analysis Tech Team.

Finally, we aren’t trying to create a new community out of whole cloth: it exists informally already. There was a great example provided in the Higgins and Clark article referenced below:

“Failure to consider the needs of network members is the principal reason why so many online social im-



Figure 9 Screenshot of the Handshake User Support Group



Figure 10: screenshot of the Cost FACTS Handshake Group

plementations have failed so spectacularly in recent years. One humorous example, relayed to us by a marketing professional for an organization that shall remain nameless, involved a consumer packaged goods (CPG) company that attempted to create an online community for fans of its brand of toilet paper ... and was shocked when the community never got any traction.”

“If network members think that the cost of a relationship with an enterprise is too high relative to the benefits they receive, they will be disinclined participate.” — “Leveraging Social Science to Boost Adoption of SMAC Technologies by Dave Higgins and Sam Clark, The Journal of Information Technology Management, February 2013, page 10

The cost estimating community already exists: You call up a former colleague to ask for help, or e-mail somebody you had a beer with last year at the International Cost Estimating and Analysis Association conference. Enterprise social media simply makes it more efficient and available.

For additional info or to join the Cost FACTS group contact Daniel Harper (djharper@mitre.org) or Ruth Dorr (rdorr@mitre.org)

To view References and Appendices for this article, please see the original paper, posted on the ICEAA website at https://www.iceaaonline.org/awards/papers/2013_Methods_Models-1_paper.pdf.

ICEAA Professional Development & Training Workshop 2013

by *Mike Thompson, Workshop Co-Chair*

The 2013 ICEAA Professional Development & Training Workshop, the first such event for ICEAA, took place 18 – 21 June 2013 in New Orleans, with a smaller but just as enthusiastic cadre of members. This year our plans were impacted by sequestration, resulting in a lower overall attendance, smaller government participation, and some down-to-the-wire changes, including keynote schedule conflicts! There was a good deal of last-minute scrambling to iron out the many wrinkles that popped up, but we are very proud to have successfully put on the first ICEAA Workshop, especially in such an inflexible fiscal environment.

Even before the extent of the sequestration impacts were realized, the Workshop Planning Committee had agreed to make this a leaner, “greener” event. We hope to continue to move past the days of paper copies of everything from the schedule, to the training, to the Program information. This year was our first foray into the concept of a green meeting, with training copies provided ahead of time online, via our new online schedule at Sched.org. We also used Twitter and Facebook to post changes and announcements in real-time, and recognized our speakers with a donation to the Special Operations Warrior Foundation, in lieu of individual gifts.

Over 300 attendees converged on New Orleans to learn, network, and see the sites in their downtime. This conference saw lots of new faces, with new exhibitors and 30% of the attendees being first-timers. We’d like to thank the exhibitors and sponsors who supported this event: AACE International, ACEIT, Booz Allen Hamilton, The Boeing Company, Cobec Consulting, Galorath Incorporated, Herren Associates, IFPUG, Kalman & Company, MCR, MEE, Inc., Palisade Corporation, PRICE Systems, Project Time & Cost, ProjStream, Quantech Services, RAND Corporation, TASC, Technomics, and WPI: Systems and Cost Optimization.

The Conference schedule was filled with 43 training sessions, and 80 professional papers. We’d like to thank all of the speakers and trainers, and especially the members of the Workshop Planning Committee, who helped bring it all together: **Mel Etheridge** and **Andrew Drennon**, Program Co-Chairs, **Brian Welsh**, Training Chair, **Joe Hamaker**, Annual Awards Chair, and **Jeff Moore**, Best Paper Awards Chair. We’d also like to thank the keynote speakers who provided their insight to our attendees: **Kathy Hedges**, SAIC, **Karen Richey**, GAO, and **Cherie Trumbach**, University of New Orleans. **Dave Harris** and **Nathan Honsowetz** ran this year’s CCEA Exam Study Session, which always proves to be an invaluable opportunity for test takers to sharpen their skills before the exam on Saturday. In addition to everyone mentioned above, we’d like to thank the Track Chairs and Committee Members who worked tirelessly under the guidance of their Committee Chairs. And, we would like to congratulate all of this year’s Annual Awards and Best Paper Awards winners. You can read more about the winners of the Annual Awards and Best Papers in this article, and on the ICEAA website at <https://www.iceaaonline.org/awards/awards.cfm> and <https://www.iceaaonline.org/awards/bestpaper.cfm>. Knowing that we can rely on solid, informative, award-winning presentations such as these helps the Workshop Planning Committee look good! You can see photos from this year’s conference, download keynote presentations, and get more information online at <https://www.iceaaonline.org/events/conference/2013/2013Conference.cfm>.

Certainly there are lots of uncertainties surrounding the fiscal environment still, but one thing is for sure, we can expect top-notch training and presentations at our 2014 Workshop in Denver, CO, 10-13 June 2014. We’ll see you there! ■

Photos provided by Joe Wagner and Robert Currie.



ICEAA Annual Professional Awards

by Joe Hamaker, Annual Awards Chair



As in the past, a highlight of the 2013 Conference in New Orleans was the Conference banquet and the presentation of the annual Society Awards. I chaired the Awards Committee this year and I want to thank all of you who nominated one or more of your colleagues for an award — without your nominations and supporting justification the process would not work. This year marked the first awards competition since the merger of the two heritage societies. In that regard I want to thank **Hank Apgar** of ISPA and **Carol Hibbard** of SCEA for hammering out the new award structure by merging and tailoring the heritage SCEA and ISPA awards. Finally I want to thank the members of my committee, all of whom are winners of SCEA and ISPA awards in the past. The committee members were **Tim Anderson, Hank Apgar, Ellie Bassett, Hollis Black, James Boswell, Kevin Cincotta, Tom Dauber, Greg Kiviat, Michael Mahoney, and Virginia Stouffer.**

And lastly I want to congratulate once again this year's Award winners as shown in the table below. I encourage you to personally congratulate any of these individuals as you cross paths with them in the coming months. You can read the biographies for these award winners online at <https://www.iceaaonline.org/awards/awards.cfm>. The awards winners this year were:

Educator of the Year



Eric Druker

Annual Achievement – Management



Robyn Kane

Frank Freiman Award



Alf Smith

Annual Achievement – Technical



Robert Nehring

Lifetime Achievement Award



Brian Flynn

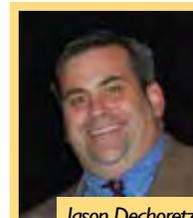
Service to the Association



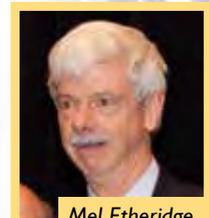
Neil Albert



Hank Apgar



Jason Dechoretz



Mel Etheridge

Not pictured: Peter Andrejev, Bob Carlton, Dan Ferens, Bill Haseltine, Andy Prince, and George Stratton

ICEAA Best Paper Awards

by Jeff Moore, Best Paper Chair

At the 2013 ICEAA Professional Development and Training Workshop in New Orleans, LA, there were a great number of talented people to recognize. The Best Paper Awards were given to ten distinguished individuals. The papers presented are stringently judged, ensuring the highest quality of research, writing, and analysis. Recognizing excellence in our profession and awarding the efforts of our colleagues to push the state of the art in cost analysis through the Best Paper Awards process is an important part of every workshop.

The selection of the best papers at this year's workshop was particularly challenging due to the 82 papers that were presented. The number of papers this year is lower than the past few years but higher than numbers from three-four years ago. Each of the nine tracks had two primary judges. A total of 95 papers were presented, divided into nine tracks: Earned Value Management, Information Technology, Life Cycle Cost, Management, Models & Methods (1 & 2), Parametrics and Risk (1 & 2). In addition, there were papers submitted that were not able to be presented but were considered for Best Paper Award in their own track (the eTrack). The task of selecting the winning papers was taken on by a dedicated group of volunteers, which I chaired. The judges for this year were **Aileen Donohue, Blake Boswell, David Harris, David Holm,**



Shu Ping-Hu

Eric Druker, Eric Laird, Greg Hogan, Greg Tomberlin, Lt Col David Peeler, Paul Gvoth, Raymond Kleinberg, Ricky Peralta, Scott Willette, Steve Sheamer, Tae Lee, Tom Sanders and William Laing.

What is particularly noteworthy is that over two-thirds of the judges were not able to attend the conference, yet they still gave up many hours of their own time to evaluate the papers. The process that the judges used to make their selections was similar to that used in the past however with slight changes to the weighted percentages. The judges assigned a score from 1 (marginal) to 5 (clearly superior) in four areas: 1) technical content (45%), 2) creativity (15%), 3) potential application to our profession (25%), and 4) overall quality and style (15%). These four area scores are weighted by the given percentages to give a composite score for each paper from all judges in the track. The average of the scores of the judges was the overall score for that paper. The paper receiving the highest overall score in each track received an award as the Best Paper for the respective track. The process was repeated among the track winners to determine the Best Overall Paper. A subset of the judges scored the track winners using the same scoring methodology.

The winner of the 2013 Workshop Overall Best Paper Award:

Dr. Shu-Ping Hu, for her paper *Fit, Rather Than Assume, a CER Error Distribution*.

The individual Track Winners:

EVM Track:

"Time is Money": The Importance and Desired Attributes of Schedule Basis of Estimates by **Justin Hornback**

Information Technology Track:

ODASA-CE Software Growth Research by **Lauren Nolte, Kevin Cincotta, Eric Lofgren, and Remie Arnold**

Life Cycle Cost Track:

Can DoD Inflation Indices and Discounting Processes be Improved? by **Kathryn Connor and James Dryden**

Management Track:

Back to the Big Easy: Revisiting Hilbert's Problems for Cost Estimating by **Peter J. Braxton and Richard Coleman**

Methods & Models 1 Track:

Getting (and Sharing!) the FACTS: Factors, Analogies, CERs & Tools/Studies by **Daniel Harper and Ruth Dorr**

Methods & Models 2 Track:

Rapid Generation and Optimisation of Ship Compartment Configuration Based on Life Cycle Cost and Operational Effectiveness by **Aidan Depetro and Rhyan Hoey**

Parametrics Track:

Fit, Rather Than Assume, a CER Error Distribution by **Shu-Ping Hu**

Risk Track 1:

Deciphering JCL: How to use the JCL Scatterplot and Isocurves by **Eric Druker**

Risk Track 2:

Robust Default Correlation for Cost Risk Analysis by **Christian Smart**

eTrack:

The Utilization of Visual Basic in Cost Estimating and Analysis Tools — Anyone Can Cook by **Jeremy Eden**

Congratulations to the winners, as well as all the other presenters, whose top-notch papers made this year's program one of the best yet. Thanks also to the judges for the hours of work, their fair readings, and their dedication to the profession. The winning papers can be viewed at <https://www.iceaaonline.org/awards/bestpaper.cfm>

I'd like to thank all of the authors, whose contributions to the profession are no better seen than in the quality of all the papers that were presented. I'd also like to thank the judges once again, who worked hard so that we could recognize these contributions. ■



Braxton



Cincotta



Druker



Harper



Hu



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Need More Information?

Contact Mel Etheridge, Workshop Program Chair (metheridge@mcri.com), or Brittany Walker (brittany@iceaaonline.org), ICEAA Member Services Assistant, 703-938-5090.



Integrated Cost-Schedule Risk Analysis

By David T. Hulett, Ph.D., Hulett & Associates, LLC and
Michael R. Nobsch, CCC, PSP, Project Time & Cost, Inc.

Summary

A variation of this paper was first published by AACE International and it defines a methodology for the integrated analysis of schedule and cost risk to estimate the appropriate level of cost and schedule contingency reserve on projects. The example used is for construction, but the concepts are applicable to any defined-length project, whether a ship, aircraft, or software development project.

Please see the Spring 2013 issue of ICEAA World for the first part of this article.

Simulation Using the Risk Drivers Method

In the simple example used in this article, the risks' impacts are specified as ranges of multiplicative factors that are then applied to the duration or cost of the activities to which the risk is assigned.

The risks operate on the cost and schedule as follows:

- A risk has a probability of occurring on the project. If that probability is 100% then the risk occurs in every iteration. If the probability is less than 100% it will occur in that percentage of iterations.
- The risks' impacts are specified by 3-point estimates of multiplicative factors, so a schedule risk will multiply the scheduled duration of the activity to which it is assigned. The 3-point estimate, for instance of low 90%, most likely 105% and high 120%, is converted to a triangular distribution. For any iteration the software selects an impact multiplicative factor at random from the distribution. If the risk occurs during that iteration the multiplicative factor selected multiplies the duration of all the activities to which the risk is assigned.
- The cost risk factor is applied differently depending on whether the resource is labor-type or equipment-type.
 - For a labor-type resource, the cost risk factor varies the daily burn rate, representing more or fewer resources applied, higher or lower cost of those resources per day. For these resources, their total cost is also affected by the uncertainty in the duration, but they may cost more or less even if their durations are as scheduled.
 - For equipment-type resources the cost risk factor varies the total cost since for these resources the cost may be uncertain but it is not affected by time.

Simulation Tools

Monte Carlo simulation is the most commonly applied method for conducting quantitative risk analysis. A Monte Carlo simulation calculates the possible project cost and schedule values that may result from individual risks and translates them into project-level cost and schedule histograms or distributions from which statistical statements can be made.

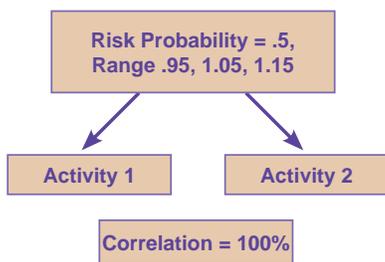
Since we do not know whether any risk will occur on any specific project or what its impact will be, we cannot tell when a project will finish or how much it will cost. We can only tell probabilistically when the project might finish and how much it might cost.

Suppose the simulation contains 3,000 iterations – separate runs using randomly-selected risk data – and creates 3,000 pseudo-projects. Each of the 3,000 projects could be ours, since it is based on a different combination of risks applied to our project schedule and cost. These different combinations

of input data generally compute different completion dates and project costs. The Monte Carlo simulation provides probability distributions of cost and schedule from which we can make probabilistic statements about our project.

The degree of correlation between the activity durations has long been understood as being important for estimating correctly project schedule risk analysis. The activity durations are uncertain, and the degree to which the impacted durations are longer and shorter together is called correlation. Correlation arises if one risk affects at least two activities' durations. The activity durations are uncertain, and the degree to which the impacted durations are longer and shorter together is called correlation. If a risk occurs it occurs for all activities it is assigned to, and if it takes a multiplicative factor of, say, 1.12 for that iteration it is 1.12 for all of those activities. Hence, if one and only one risk affects two activities they become 100% correlated.

If, however, there are other risks that affect one activity but not the other, the correlation



between the two is reduced.

The Risk Driver Method models how correlation between activity durations arises so we no

longer have to estimate (guess) at the correlation coefficient between each pair of activities.

Risk Data used for the Construction Case Study

The following is a sample case study but the risks are similar to those found on real projects.

Suppose there is a project with the activities shown in Figure 1 above and resources/costs as shown in Table 1 and assigned to the activities as shown in Table 3 above. Also, suppose we have identified risks through workshop or interviews and have elicited the probability and time/cost impacts as shown in Table 4.

After the risks are listed and their parameters quan-

tified they need to be assigned to the activities and their resources. For this case study the risks are assigned according to Table 5.

Results from the Construction Case Study Simulation

The schedule risk results from a Monte Carlo simulation are shown in the histogram for the case study below in Figure 2. It shows that the deterministic date of 29 April 2013 is about 4% likely to be achieved following the current plan and without further risk mitigation actions. Next, suppose that the project stakeholders have agreed that their acceptable level of confidence is at the 80th percentile. At that point, it is 80% likely that the current project plan with all of its risks will finish on that date or earlier (and, if it is applied to cost, with that cost or less). At the P-80 the project finishes on 26 November 2013 or earlier and needs about a 7-month contingency reserve of time. These results are shown in Figure 2 and in Table 6.

The cost risk results, including the impact on cost of schedule risk, indicate the need for a contingency reserve of cost of about \$169 million or 27% at the 80th percentile (P-80). At that level there is an 80 percent probability that the project will cost \$793 million or less, given the risks and following the current plan. These results are shown below in Figure 3 and table 7.

We can find out whether cost-type risks or schedule-type risks are more important in determining the cost contingency to, say, the P-80 point. The source of the cost contingency can be discovered by eliminating all schedule risks to compute the marginal impact of cost risks, then repeating the process by eliminating the cost risks and computing the impact of schedule risks on contingency. The results are shown below in Table 8.

Table 8 shows that if only cost risks were present (the schedule is static) the cost contingency at the P-80 could be \$78 million whereas if only schedule risks were included

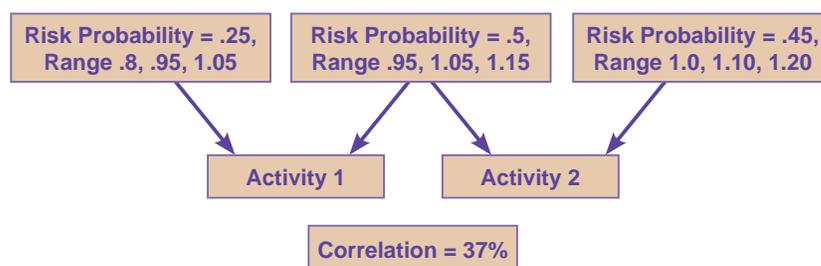


Table 4 — Example Risks and their Parameters for the Case Study

Risk ID	Risk Description	Prob	Duration Impact Ranges (%)			Cost Impact Ranges (%)		
			Min	M L	Max	Min	M L	Max
1	S/C – Design Complexity may Challenge Engineers	40	90	110	135	100	105	110
2	S – Site Conditions / Site Access may Slow Logistics	50	100	110	125			
3	S/C – Equipment Suppliers may be busy	60	100	105	120	100	110	120
4	S – Capable Management may not be Assigned	40	90	105	115			
5	S – Environmental Agency May be Slow	50	95	110	135			
6	S – Activity Duration Estimates is Inaccurate	100	90	105	115			
7	C – Cost Estimate is Inaccurate	100				95	105	115
8	S/C Key Engineering Personnel may be Unavailable	65	95	105	120	90	100	110

(no cost risk on burn rate or on procurement / materials) the contingency needed at the P-80 is \$103. These results depend on the case study assumptions, but in many examples of integrated cost and schedule risk conducted on projects the majority of the risk to cost arises from uncertainty in the schedule as it does in the example in this RP.

Joint distribution of Cost and Schedule

The time-cost scatter diagram shown below in Figure 4 is diffuse because there are some

time-independent cost risks that affect the burn rate of labor-type resources and total cost of procured items. The cross-hairs shown on the diagram cross at the deterministic point of 29 April 2013 and \$624.2 million. The sparse collection of points in the lower-left quadrant indicate that there is only a 1% chance that this project will satisfy both cost and schedule targets without contingency reserve. There is also a 95% chance that this project, following this plan,

will overrun both cost and time objectives.

There is clearly a positive slope running through the cloud or “football (US version) chart” showing the strong impact on cost of schedule risks. The correlation between time and cost is 77% in this case study, which is somewhat higher than is common in these analyses.

Probabilistic Branches or Project-Busting Risks

Some risks will add activities to the project schedule if they occur, and hence will add

Table 5 — Assigning Risks to Activities

Risks	Activities						
	Approval Process	Environmental	Design	Procurement	Install Equipment	Construction	Commissioning
S/C-Design Complexity may Challenge Engineers	X		X				
S-Site Conditions / Site Access may Slow Logistics						X	X
S/C-Equipment Suppliers may be busy				X			X
S-Capable Management may not be Assigned	X					X	X
S -Environmental Agency May be Slow		X					
S - Activity Duration Estimates is Inaccurate	X		X	X	X	X	X
C - Cost Estimate is Inaccurate	X		X	X	X	X	X
S/C Key Engineering Personnel may be Unavailable	X	X	X	X	X	X	X

time and cost. Most often a project plan assumes that the project goes well and that there are no major problems. It is also common that something goes wrong leading to a mandatory change in plans as the project tries to recover from a discontinuous event. An example of this problem might be the failure of the project at commissioning or final testing. These activities might be:

- Determine the root cause of the failure
- Decide what to do
- Implement the action
- Re-test and, hopefully, pass the test this time.

One common characteristic of these activities is that they are almost never found in the initial project schedule, which assumes success. However, in risk analysis the possibility of test failure, or some other discontinuous uncertain event, must be modeled using existence risks or probabilistic branching.

Suppose that the commissioning activity might uncover a problem that takes time to fix. Simple changes can be made in the project schedule to accommodate this potentially project-busting occurrence. We cannot use the risk drivers that are assigned to existing activities since when we introduce them they are given a duration of zero (0) days. Their uncertainty is represented by traditional 3-point estimates, but their risk source is known. An implementation of probabilistic branching is shown in Figure 5. The probability that commissioning will not complete successfully the first time is estimated as 40%.

The schedule results for adding a probabilistic branch are shown in Figure 6. Notice that the schedule is slightly bi-modal, with 60% of the results in the

Figure 2 — Histogram with Cumulative Distribution (S-Curve) for the Project Completion Date

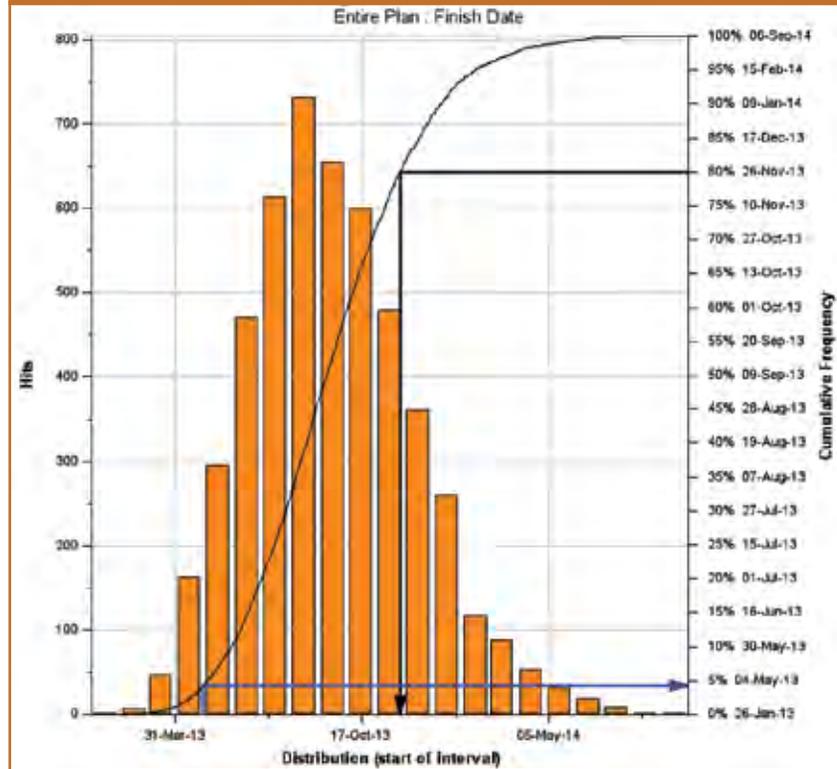


Table 6 — Summary Schedule Risk Analysis Results for the Example Construction Project

Summary Schedule Risk Analysis Results Example Construction Project						
Scenario		Schedule Probabilistic Results				
Deterministic	29-Apr-13	P-5	P-50	P-80	P-95	Spread
Prob. Deterministic	4%	4-May-13	9-Sep-13	26-Nov-13	15-Feb-14	P-5
	to P-95					
All Cost and Schedule Risks		Months				
Difference from Deterministic		0.2	4.4	6.9	9.6	9.4

Table 7 — Summary Cost Risk Analysis Results for the Example Construction Project

Summary Cost Risk Analysis Results Example Construction Project (\$ millions)						
Scenario		Cost Probabilistic Results				Spread
Deterministic	624	P-5	P-50	P-80	P-95	P95-P5
Prob. of Deterministic	2%	641	734	793	852	
Difference from Deterministic \$		17	110	169	228	211
Difference from Deterministic %		3%	18%	27%	37%	

left-hand part of the distribution and 40% in the right-hand part. There is a bit of a “shoulder” in the cumulative distribution at 40% that follows the specification that the

Figure 3 — Histogram with Cumulative Distribution (S-Curve) for the Project Cost

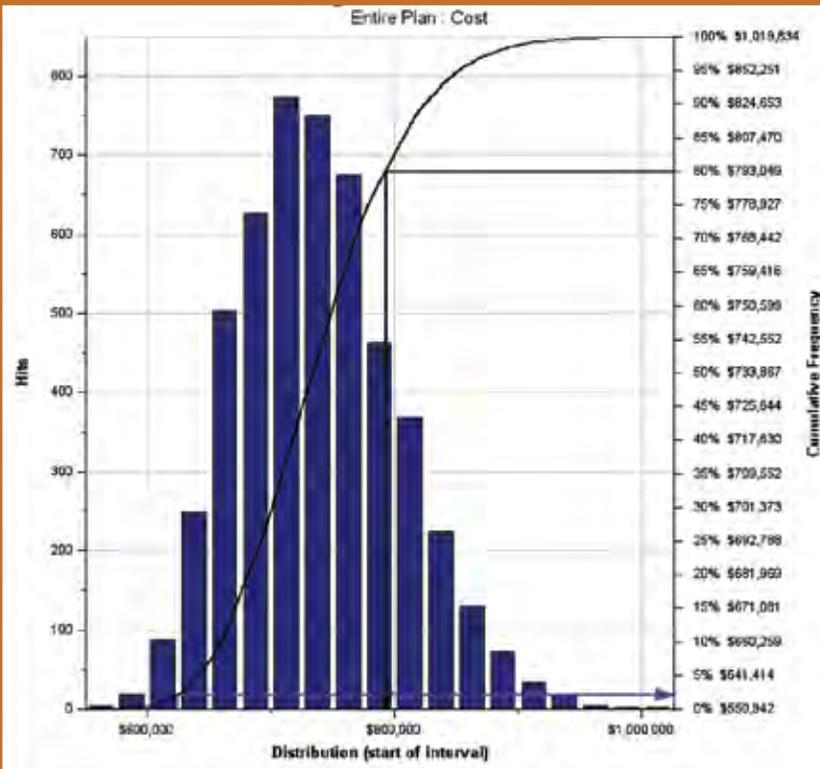


Table 8 — Cost, Schedule and Interaction Effects

Decompose the Cost Contingency at the P-80

	P-80	Marginal Impact
	(\$ millions)	
Contingency-Free Cost Estimate	624	
All Risks	793	
Cost Risks Only	702	78
Schedule Risks Only	727	103
Total Contingency All Risks	169	

Note: Amounts do not add at P-80, only at means

commissioning will fail 40% of the time.

The cost of the project goes up at the P-80 since resources are placed on the activities in the probabilistic branch. The impact on cost and schedule of a 40% probable problem during Commissioning, with the parameters shown here are shown below in Table 9.

Prioritized Risks to Schedule and Cost

If the risk results for the overall schedule and cost are not “acceptable” to the customer, the analyst can prioritize the risks for the project manager who will want to mitigate the highest-priority risks.

For schedule risk we need to identify the most

important risk by taking each risk out entirely (make the probability = 0%) one-at-a-time and re-run the simulation to determine the P-80 date, allowing us to identify the risk that has the greatest marginal impact on the P-80 date. Then, keeping the most important risk out, we explore the remaining risks to see which of those is next-most-important, and so forth.

For cost risk this is done by taking each risk out of the project one at a time, computing the impact to the P-80 cost compared to the all-in results, and finding the risk that has the largest impact on the P-80 cost. It is logical to identify the schedule risks that have cost risk implications as described above but the list of the risks in order of priority may differ for time and for cost.

Tables 10 and 11 below show which risks are the most important for schedule and for cost.

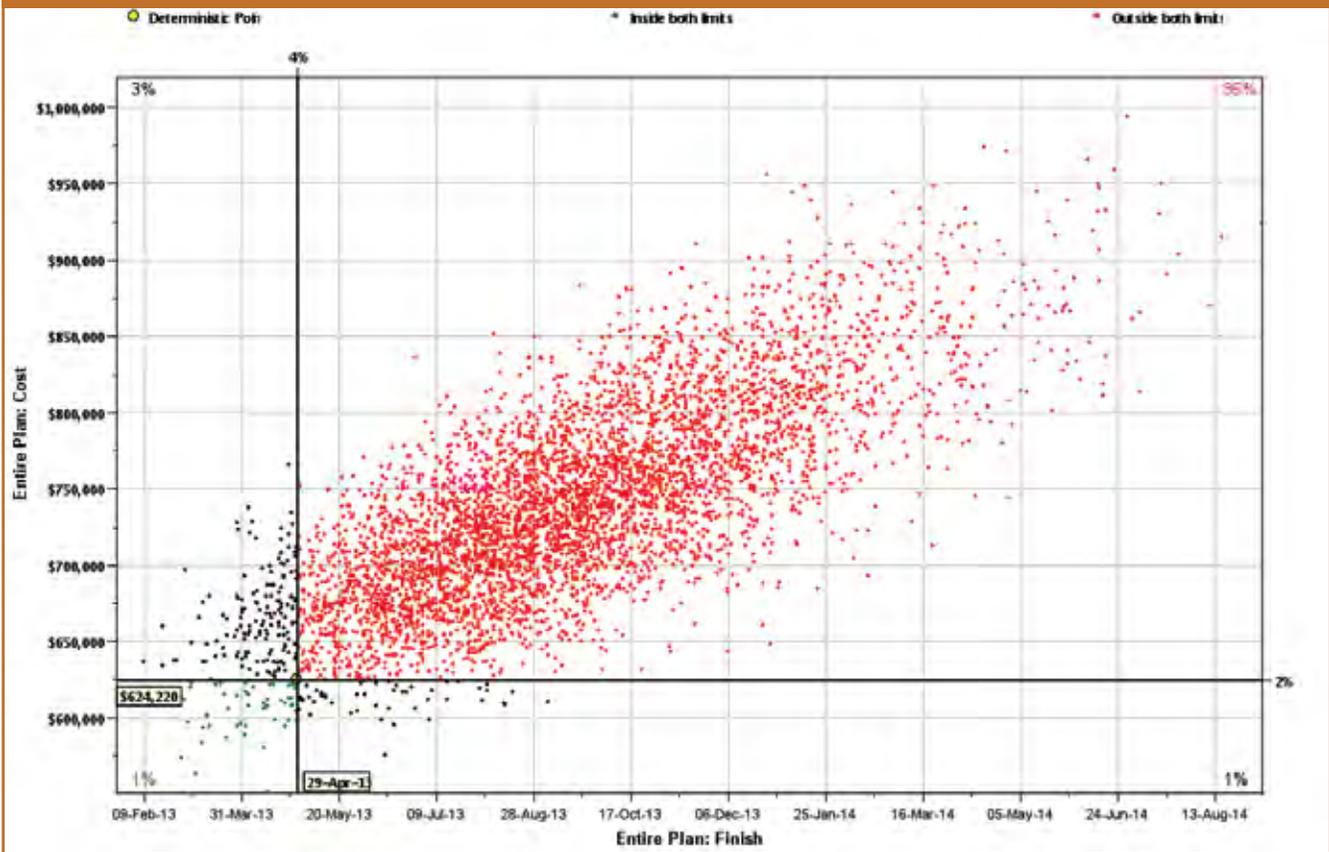
Risk Mitigation using Prioritized Risks

Using the prioritized risks in Table 8, we can recommend risk mitigation. The first thing to recognize is the inaccuracy of the estimates, which is viewed as moderate at risk impact multipliers of 95%, 105% and 115%. However this risk is 100 % likely to occur, since estimating error is with us until project financial completion, and it is assigned to each activity in the project, hence its importance.

The next item to be concerned about is the probability of problems during commissioning, which is also the highest schedule risk. The next largest item would be the unavailability of key engineering staff. Down the list at position five is the inaccuracy of the schedule.

In fact, in the simple example made up for this article, only the top risk to project cost is a pure cost risk. The other important risks are mostly schedule risks (some with cost risk components, see Table 4 above) that increase cost if their activities are longer than assumed in the schedule. These schedule risks may be missed or underestimated if the cost risk analysis does not explicitly handle the relationship of time and cost risk, as is shown in the approach described here. It is com-

Figure 4 — Histogram with Cumulative Distribution (S-Curve) for the Project Completion Date



mon to find that schedule risks are important in driving cost risk. It reinforces the benefits of integration of cost and schedule.

Conclusion

Integrating cost and schedule risk into one analysis based on the project schedule loaded with costed resources from the cost estimate provides both: (1) more accurate cost estimates than if the schedule risk were ignored or incorporated only partially, and (2) illustrates the importance of schedule risk to cost

risk when the durations of activities using labor-type (time-dependent) resources are risky. Many activities such as detailed engineering, construction or software development are mainly conducted by people who need to be paid even if their work takes longer than scheduled. Level-of-effort resources, such as the project management team or QA/QC, are extreme examples of time-dependent resources, since if the project duration exceeds its planned duration the cost of these resources will increase over their budgeted amount.

Figure 5 — Activities Added to Provide for a Risk that Commissioning May Not Complete Successfully

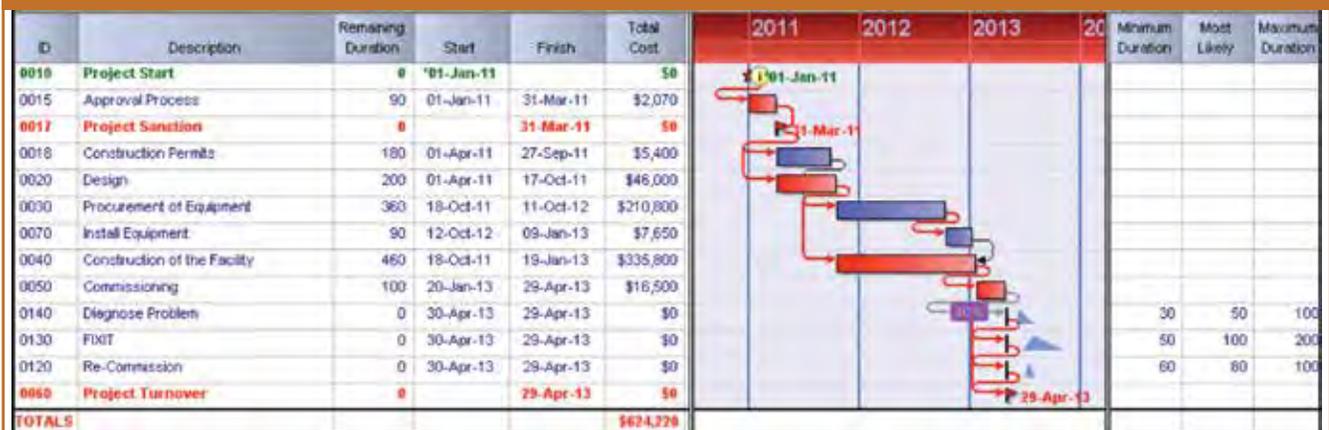
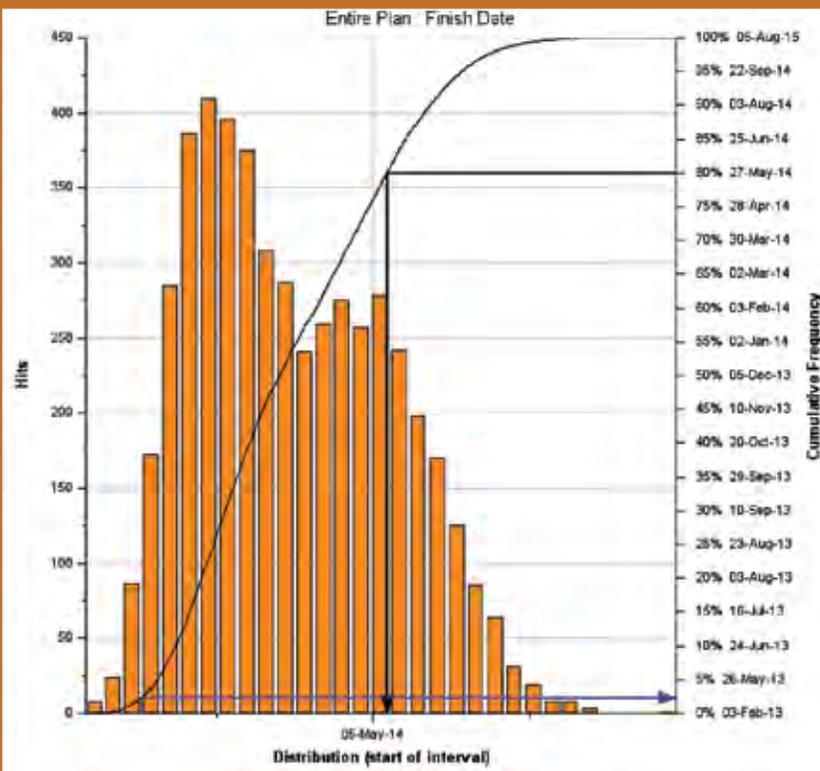


Figure 6 — Schedule Impact of Probabilistic Branch on Commissioning



The integrated cost-schedule risk analysis is based on:

- A high quality CPM schedule.

- A contingency-free estimate of project costs that is loaded on the activities of the schedule using resources distinguishing them by their time-dependent and time-independent nature.

- Good-quality risk data that are usually collected in risk interviews of the project team, management and others knowledgeable in the risk of the project. The risks from the risk register are used as the basis of the risk data in the risk driver method. The Risk Driver Method is based in the fundamental principle that identifiable risks drive overall cost and schedule risk and that we can model this process.

- A Monte Carlo simulation software program that can simulate schedule risk, burn-rate risk and time-independent resource risk.

The results include the standard histograms and cumulative distributions of possible cost and time results for the project. However, by simulating both cost and time simultaneously we can collect the

Table 9 —Schedule and Cost Impact of a 40% Probable Commissioning Risk

Effect on Cost and Schedule Risk of Possible Commissioning Failure

	No Commissioning Risk	Commissioning Risk @ 40%	Difference
Schedule			Days
P-80 Date	26-Nov-13	27-May-14	182
Probability of 29 April 2013	4%	2%	-2%
Cost	\$ millions		
P-80 Cost	\$793.0	\$829.5	36.5
Probability of \$624,220	2%	1%	-1%

Table 10 —Highest Priority Risks to Project Schedule at the P-80 Level of Confidence

Priority Schedule Risks

Risk ID	Risks	P-80 Date	Contribution to the P-80 Contingency
	ALL RISKS INCLUDED	27-May-14	(Days)
Risks Removed			
9	S/C - May have Problems during Commissioning	13-Nov-13	195
8	S/C Key Engineering Personnel may be Unavailable	4-Oct-13	40
6	S - Activity Duration Estimates is Inaccurate	18-Aug-13	47
2	S -Site Conditions / Site Access may Slow Logistics	6-Jul-13	43
1	S/C - Design Complexity may Challenge Engineers	19-Jun-13	17
3	S/C-Equipment Suppliers may be busy	30-May-13	20
4	S - Capable Management may not be Assigned	6-May-13	24
5	S -Environmental Agency May be Slow	29-Apr-13	7

cost-time pairs of results and hence show the scatter diagram (“football chart”) that indicates the joint probability of finishing on time and on budget. Also, we can derive the probabilistic cash flow for comparison with the time-phased project budget.

The risks to schedule completion and to cost can be prioritized, say at the P-80 level of confidence, to help focus the risk mitigation efforts. If the cost and schedule estimates including contingency reserves are not acceptable to the project stakeholders the project team should conduct risk mitigation workshops and studies, deciding which risk mitigation actions to take, and re-run the Monte Carlo simulation to determine the possible improvement to the project’s objectives. ■

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3. Hulett, D.G., 2011 *Integrated Cost-Schedule Risk Analysis*, Pages 211, Gower Publishing Limited Farnham Surrey England

Author Biographies

David Hulett, Ph.D., has been the President of Hulett & Associates, LLC in Los Angeles since 1990. H&A focuses on consulting and training in project schedule and cost risk analysis and on schedule assessment. His clients are international, multi-industry including government agencies. Dr. Hulett has written two books, *Practical Schedule Risk Analysis* (Gower 2009) and *Integrated Cost-Schedule Risk Analysis*

(Gower 2011) as well as a Recommended Practice for AACE International. He has presented on risk analysis and scheduling topics at many professional conferences. He is active in the Risk and Earned Value Integration working group of NDIA and in PMI standards development (PM-BOK, Practice Standards).

Michael R. Nosbisch, CCC, PSP, has over 24 years of experience in project management/controls within both the government and private sectors. In 2009, Michael joined a leading management consulting firm, SM&A, and was responsible for their successful EVM Compliance and Consulting practice. He currently is Managing Principal, Western Region, and EVM Practice Lead for Project Time & Cost, based in Long Beach, CA. Michael has been an active member of AACE International since 1999, earning numerous professional certifications as well as currently serving as Immediate Past President of the Association. In addition, he is an active member of NDIA’s Program Management Systems Committee (PMSC). mike.nosbisch@ptcinc.com

Table 11 —Highest Priority Risks to Project Cost at the P-80 Level of Confidence

Priority Cost Risks			
Risk ID	Risks	P-80 Cost	Contribution to the P-80 Contingency
	ALL RISKS INCLUDED	829.5	
Risks Removed			
7	C - Cost Estimate is Inaccurate	788.3	41.2
9	S/C - May have Problems during Commissioning	750.4	37.9
8	S/C Key Engineering Personnel may be Unavailable	719.1	31.3
2	S -Site Conditions / Site Access may Slow Logistics	687.7	31.4
6	S - Activity Duration Estimates is Inaccurate	664.6	23.1
3	S/C-Equipment Suppliers may be busy	641.7	22.9
4	S - Capable Management may not be Assigned	632.6	9.1
1	S/C - Design Complexity may Challenge Engineers	625	7.6
5	S -Environmental Agency May be Slow	624.2	0.8

The Weapons
Acquisition
Process

by Merton J.
Peck and
Frederic M.
Scherer

The Weapons Acquisition
Process:
An Economic Analysis

By Merton J. Peck and
Frederic M. Scherer

BOOK REVIEW

Lt Col Peeler currently serves in the Air Force's Budget Investments directorate in the Pentagon. His most recent master's degree is in Strategic Studies from the Army War College. Peeler is a Certified Cost Estimator/Analyst and an Air Force certified acquisition professional in both financial and program management.

Money Changes Hands... A Good Book Changes Minds

Book Review by Lt Col David Peeler

This installment of the book review series is a back to the future excursion. Acquisition reform and the weapons procurement process has remained a topic of consternation and debate for decades. Nothing serves to bring the lasting challenges of the acquisition process home more than reading a book from history – not about history – that resonates and broaches many of the same issues and questions we continue to ask today.

What can a 50-year-old book tell me? Quite a lot, actually! History is a good teacher, and in this case a conferrer of credibility. For the serious student of or informed practitioner involved in the weapons acquisition process, this seminal work by Peck and Scherer is a necessary read. Credibility as a serious acquisition professional is contingent upon familiarity with *The Weapons Acquisition Process: An Economic Analysis*. In this, likely the most thorough investigation into the acquisition process ever taken, Peck and Scherer provide insights for both process and economics.

The pages in this book are riveting for quants like us that enjoy quantitative discussions and process understanding, with an eye to getting at the heart of matters. The book exposes the meaning of bureaucracy for metal bending, and extrapolating forward in time... for software coding. We have layered an already cumbersome and imperfect process with additional inefficiencies.

While some things have changed (technology obviously!), bureaucracy, oversight, systemic obstacles, process, staffing, skill mix, etc. have, if anything, gotten worse. So much of this book will resonate and sound as familiar as yesterday's tasks and accompanying frustrations. This book is alluring. The history and progression of acquisition is exposed as staggeringly stagnate. The names and phrases used in reference to ideas and concepts are sometimes different, but for those that understand the acquisition business, not much has changed in 50 years.

The book is organized into 20 chapters, presented in three parts. Part I covers the nature of the process, and contains discussions of the unique environment of the uncertainty in weapons acquisition, and the non-market character of the acquisition process. The structure and dynamics of the weapons industry is featured in Part II, in which Peck and Scherer deal with the government as buyer, the American weapons makers, factors of production, and entry and exit from the weapons industry. Part III addresses the execution of weapons programs, examining innovation and choice of weapons, the structure of program decisions, buyer preferences, uncertainty and time in decision-making, competition, source selection criteria, sub-contractor selection, contractor effort in new programs, conduct of development programs, optimization, efficiency, and performance evaluation.

Given its 700 plus pages, only small samplings of the book's contents appear below. The authors engage the reader with a discussion of the general character of the technical problems of weaponry that deals with complexity, uncertainty and feasibility, as well as changes to the threat environment. The appropriations process is presented, with impacts on the contractors as well as government procurers. The authors grapple with the economics of weapons acquisition and describe the market conditions that either do or do not exist for large government acquisitions. [Is the market place for weapons acquisition a monopsony?]

Another interesting discussion regards the question of military or civilian control of the acquisition process. Also addressed are the increasing costs of electronics components in weapons – a prelude to and informative of the exponential growth of

software. Interestingly, in some ways, Peck and Scherer predicted the drastic reduction in defense contractors due to the dwindling of defense acquisition dollars in the 1990s. They also explain the dearth of dual market contractors – those that sell both military weapons and commercial products. Of particular interest, the authors also examine profit, innovation, risk, should costs, the lack of a generalized cost-value model, marginal productivity versus cost, cost as an independent variable, national security versus profit, and the value of the national arsenal.

The comprehensive nature of the book serves to educate and inform with respect to both the macro- and

micro-economics of weapons acquisition. Further, the duality of historical understanding and contemporary credibility provided by Peck and Scherer is invaluable to anyone wishing to engage in today's acquisition discussions. We need major changes. Historical perspective is critical to moving in positive directions, making beneficial changes – recapturing things that worked previously or averting relapses to the previously ineffective. For those of you that have read this book, recommend it to a friend and require it of subordinates. For those seeking to learn more, develop professionally, and enhance the ability to speak with increased credibility, this seminal work is required reading. ■

Air Force Institute of Technology (AFIT) News

LTC Dan Ritschel, Director, AFIT Cost Analysis Graduate Program

Graduation and ICEAA Awards

It has been another successful graduating class for the Air Force Institute of Technology. The Graduate Cost Analysis program at AFIT recently awarded Master of Science degrees in Cost Analysis to five newly minted cost analysts: Capt Shaun Carney, Capt Kevin Crumrine, Capt Greg Ferry, Capt Eli Freeman, and 1Lt Gary Jones. While we are sad to see them move on to their follow-on cost assignments, we are certain they will do great things for the Air Force and the cost community.

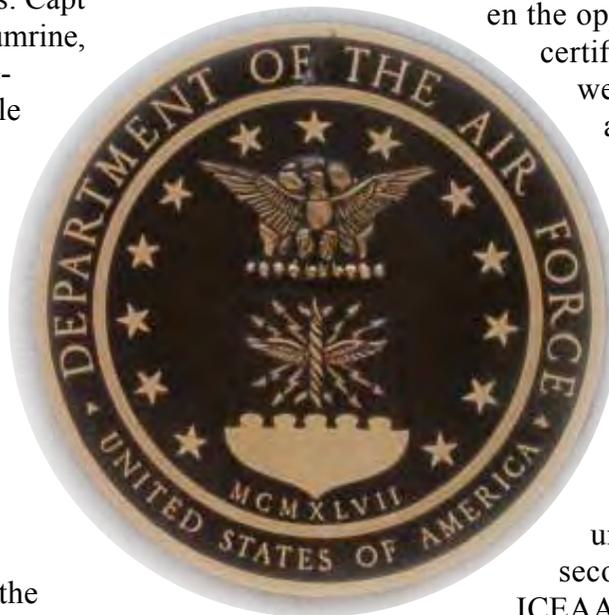
At the AFIT awards ceremony, Capt Shaun Carney was awarded the ICEAA award for most outstanding cost thesis for his research on Coefficient of Variation. The ICEAA award is presented to the author of the thesis which best qualifies both as an outstanding research effort and as a significant contribution to the development and/or application of cost analysis or cost estimating. Special thanks to Chris Hensley (Greater Dayton Chapter President) for presenting the ICEAA award. Two other

cost students were also recognized at the awards ceremony: Capt Kevin Crumrine won the PMI award for his thesis on Earned Schedule techniques and Capt Eli Freeman was recognized at the department level for his research using naïve Bayes techniques for early risk detection in ACAT I programs.

Certification Exam Success

Graduating AFIT cost students were also given the opportunity to take the CCEA® certification exams during graduation week. The certification exam is not a mandatory part of the AFIT cost program. Rather, it is a voluntary opportunity for those students who want to capitalize on their recently acquired cost knowledge. The practice of offering graduating AFIT students the opportunity to take the ICEAA exam was commonplace in the late 1990s – early 2000s.

We are very pleased to have resurrected this practice. This is the second consecutive year AFIT and ICEAA has offered this opportunity and the results are outstanding. Four students took advantage to earn their certification: Capt Kevin Crumrine, Capt Greg Ferry, Capt Eli Freeman, and 1Lt Gary Jones. Congratulation to all! We would also like to take this opportunity to thank Brad Boehmke for proctoring the exam. ■



Society for Cost Analysis and Forecasting (SCAF) – Costing News From the UK

by Dale Shermon, Chairman, Society for Cost Analysis and Forecasting (SCAF)



In the first issue of the *ICEAA World*, I wrote about the imminent SCAF Challenge that we had set for the younger members of the UK Cost community. The veterans of our community are always eager and ready to contribute ideas, papers and presentations so this is an event squarely and unashamedly aimed at our younger members.

Wow, did they respond. This is the third event and the momentum has been building. The challenge was an Economic Appraisal (EA) considering the options of moving home or building an extension to accommodate the imminent birth of twins. The scenario is non-defence, space, maritime or aerospace to ensure that all participants have an even chance with regards to background understanding and knowledge. The challenge is based upon an application of our cost analysis and forecasting capability following the structure that would naturally be adopted in the defence world. There is no winner and no incorrect answer, we just judge the approach.

“One of the best I have attended”. “Just a brilliant day all round. Excellent challenge, excellent presentations, keep it up!”

Not our words but comments from the attendees at the workshop. Teams were entered from: Atkins, BAE Systems, BMT Group, MoD (CAAS), Thales and QinetiQ.

The comments from the Senior Review Panel on all the presentations were excellent. They were particularly impressed with the depth of analysis, the presentational skills, their teamwork and enthusiasm. We are indebted to our Senior Review Team for this event who were:

- **Dr. Spencer Woodford**, Director, Burchelli Consulting Ltd



- **Alan Jones**, Chief Estimator, Professional Development, BAES
- **Dr Linda Newnes**, Head of Costing Research, Bath University
- **Philip Wardle**, Consultant Engineer, A J Wardle Consultants

In addition, a very active and interested audience reviewed the depth of the work put in by the teams. This was



Senior Review Team

an excellent workshop that exposed the whole estimating process and facilitated the benefits of assessing costs through an Investment Appraisal and deriving Value for Money. It was good to see six similar but different approaches to the problem, as we saw in 2012, and this in itself was educational for all the attendees. The feedback on lessons learnt is indicative as to the usefulness of the exercise.

Our thanks to all the teams and their organisations for their support to this excellent lessons learned workshop. ■

Detroit Chapter News

By David Holm, Chapter President

The Detroit Chapter has been busy in its first six months. After getting the Board of Directors approval in March for reinstatement of the Detroit Chapter, we quickly set up a detailed training plan for our members to prepare for the CCEA® certification exam. The training plan consists of 11 training modules taught by a team of senior Government cost analysts **Dan Germony, Matt Kleinberg, Dale Lingaur and Jessica Tucker** and Technomics' **Kevin Cincotta and Cab-in Samuels**. We are about halfway through the training

modules and will wrap up the training in early October with the exam to take place in early November. A special thanks goes out to **Brittany Walker** in the Business Office for helping us set up the webinars so other chapters can participate in our training modules.

We also have the pleasure of having **Mike Thompson**, ICEAA Treasurer, visit us on September 18th at a luncheon and give his unique and informative "Cost Price Journey through Winemaking" presentation and we will wrap up the year with a social event around the holidays. ■

Northwest/Washington Chapter News

By David Padineant, Chapter Secretary

The 2013 spring ICEAA Conference was held in New Orleans this year from June 18 – 21. This was an exciting time to engage with other members from across the world and attend seminars across a variety of topics from Risk Analysis, Parametrics, Earned Value, etc. There were over 130 different seminars. Our NW Chapter Education Chair, **Stacy Dean**, taught the Data Analysis class. Attending the conference provided a great learning opportunity to all participants; CCEA®-certified members received continuing education credits for the seminars they attended. Our

Chapter had strong representation at the Boeing booth in the exhibit hall.

Fundraising:

We have some more opportunities for volunteers to help with fundraising with the NW Chapter of ICEAA at Mariners games. This is a time where volunteers can network, enjoy a Mariners game

Date	Day	Opponent	Volunteer Start Time	Game Start Time
23-Aug	Friday	Angels	4:00 PM	7:10 PM
24-Aug	Saturday	Angels	3:00 PM	6:10 PM
25-Aug	Sunday	Angels	10:00 AM	1:10 PM
26-Aug	Monday	Rangers	4:00 PM	7:10 PM
27-Aug	Tuesday	Rangers	4:00 PM	7:10 PM
28-Aug	Wednesday	Rangers	9:30 PM	12:40 PM

and have fun! Please take a minute and look at the schedule above and volunteer directly to **Shawn Mahoney** at shawn.p.mahoney2@boeing.com

We will also be hosting a Silent Auction at our year end event in December 2013, and we are accepting new items or services that anyone would like to donate for the event. Please contact Cheryl.r.wilson@boeing.com if you are interested in donating to the silent auction.

Education

The results from the spring certification exam are in! Please join in congratulating our new CCEA® holders: **Kendall Craven, Susan Read, and Liana Trescott!!!** Obtaining certification requires a great deal of preparation and hard work. The designation distinguishes excellence in the mastery of knowledge in the field of Cost Estimating. With less than 800 individuals holding this distinction nationally, it is quite an accomplishment! Kudos to you all for your hard work! ■



Greater Alabama Chapter News

By **Stephanie N. Lewis, Chapter President**

2013 ICEAA Workshop Award Winners

The Greater Alabama Chapter is proud to claim two winners from the 2013 ICEAA Workshop in New Orleans, both of whom work for the Missile Defense Agency in Huntsville.

Ms. Robyn Kane received the award for Annual Achievement in Management. Having worked with her personally, I wholeheartedly agree with the description of Ms. Kane given by her nominator: “Robyn is an elegant example of what a manager should be: a mentor, a role model, a champion, and a compassionate person.” We are very proud to have Ms. Kane as a member of our chapter, and we heartily congratulate her on this well-deserved award.



Robyn Kane

Dr. Christian Smart’s paper entitled “Robust Default Correlation for Cost Risk Analysis” received the Best Paper Award in the Risk Track 2 category. Dr. Smart has received Best Paper in the Risk Track and/or Best Conference Paper at five of the last six SCEA/

ISPA Joint Conferences. He is an outstanding member of the cost community and of our chapter. We applaud him for his groundbreaking work and are pleased that he continues to receive national recognition for it.

On July 22nd, the Greater Alabama Chapter hosted Dr. Smart as he presented his award-winning paper as part of the ICEAA 2013 Workshop Best Paper Webinar Series. More than 20 local ICEAA members and guests attended the presentation in person at the SAIC building in Huntsville.

The chapter was also well represented at the 2013 workshop by several other attendees and speakers, including **James Linick** who presented two papers at the workshop: “Large O&S Contract Construction and Analysis,” and “Aircraft Operation — Cost Model Improvement Tasker.”

Chapter Activities and Events

On May 21st, the Greater Alabama Chapter hosted our 4th Annual Members Social Reception and Donation Drive. This year’s charity was the Huntsville Community Free Clinic. The attendees enjoyed delicious food and excellent fellowship. They were also extremely generous toward the Free Clinic, donating a carload of items desperately needed by the charity.

The chapter has several upcoming events in the planning stages, including monthly educational luncheons beginning in September, and an all-day cost workshop planned for October 9th. This workshop will be a joint effort with ICEAA, the Missile Defense Agency, and NASA and will feature speakers from each of those organizations as well as other leaders in the local cost community.



(Top and bottom) Photos from the 4th Annual Members Social Reception and Donation Drive.



(Top and bottom) Photos from Dr. Smart’s webinar

Southern California Chapter News

By Kurt Brunner, Chapter President, and Quentin Redman, Chapter Vice President

After our very successful Spring ICEAA Southern California workshop that was sponsored by The Boeing Company on 27 February 2013 in El Segundo, California, the ICEAA Southern California Chapter Board of Directors took a short break to enjoy the International conference in June in New Orleans. Now the organization has shifted into high gear in planning our fall workshop that will be held at Lockheed Martin on Wednesday, 18 September 2013 in El Segundo. The exciting agenda for this event is as follows:

- **Ralph Smith**; Lockheed Martin Fellow; *“Overview of the Lockheed Martin Advanced Development Program - Affordability Design Tool (ADP-ADT) Features & Estimating Methods”*
- **David T. Hulett**; Ph.D., President, Hulett& Associates, LLC; *“Integrated Cost-Schedule Risk Analysis”*
- **Jenny Tang**; Deputy Comptroller, Space and Missile System Center (SMC); *“Cost Perspectives at SMC”*
- **Alf Smith**; General Manager, Tecolote Research Inc.; *“Joint Cost Schedule Risk and Uncertainty Handbook”*
- **Christian Smart**, Ph.D.; Chief, Cost Estimating Division, Missile Defense Agency; *“Bayesian Parametrics: Estimating with Limited Data”*
- **Joe Lavender**; President, Lavender Consulting; *“Should-Cost Expert System Simulations for New Programs”*

Usually we have 80 to 100 attendees from across the nation (and also from overseas) that participate in our no cost, day-

long events. These forums have consistently drawn a huge cross section of the cost analysis and parametric community while presenting the latest concepts and techniques, and have produced energetic dialogues and great interest in the topics discussed. The Fall workshop plans to continue this tradition!

Our winter workshop (70 degrees plus in Southern California) will be held on 18 December 2013 at Northrup Grumman Corporation in El Segundo. Galorath in El Segundo will host the spring workshop in March. More details will follow. Start your planning now!

At the conclusion of our ICEAA Southern California workshops, and as an incentive to stay until the last presentation is complete, a membership drawing is held. Our Membership Chair, **Steve Sterk**, is always on hand with a selection of great gifts for the drawing. If you have questions about your membership status or would like information about membership in general, contact Steve Sterk at steve.a.sterk@nasa.gov (661) 276-2377, or the ICEAA office at iceaa@iceaaonline.org or (703) 938-5090.

Workshop agendas are e-mailed to all ICEAA members and previous workshop attendees by the ICEAA



Kurt Brunner



Quentin Redman



Workshop Attendees – 27 February 2013 – The Boeing Company, El Segundo (Previously published)

Southern California Chapter News

office, and they contain registration information, a location map, and driving instructions. The agenda is also posted on the ICEAA Southern California web site at: <https://www.iceaaonline.org/chapters/california-southern/index.cfm?eventID=178>. As always, our workshops are free. We will also have frequent lunchtime seminars at The Aerospace Corporation in El Segundo.

If you would like a copy of these or previous workshop briefings please go to the ICEAA web site located at: <https://www.iceaaonline.org/chapters/california-southern/index.cfm?eventID=178> under the Southern California Chapter Documents. All available presentations are loaded on the web site immediately following the meeting. If you have any questions about the presentations please feel free to contact the ICEAA Southern California Board of Directors or the ICEAA office (iceaa@iceaaonline.org).

Please consider hosting a workshop or presenting at a workshop! It will be a rewarding experience. If you are interested in hosting a workshop or making a presentation at a workshop, please contact Kurt Brunner at kurt.r.brunner@saic.com or Quentin Redman at quentin.redman@pricesystems.com.

Our workshop focus is always to “Advance, encourage, promote and enhance the profession of cost estimating and analysis through the use of parametrics and other data-driven techniques for use by the membership as well as the general public”. The Southern California Chapter of ICEAA will continue to offer workshops that include a notable and diverse group of extraordinary speakers, training sessions, cutting edge topics, and knowledgeable attendees that are fully entertained and engaged.

Our ICEAA Southern California Chapter Board of Directors consists of:

President	Kurt Brunner
Vice-President	Quentin Redman
Secretary	Evelyn Davalos
Treasurer	Chris Hutchings

Board Members

Tom Bosmans

David Graham (Program Director)

Doug Howarth

Suzanne Lucas

Carlos Zerpa

We would like to thank the board for their tireless teamwork in making these workshops a great success, as well as all the members and participants for their support over the years. We look forward to seeing you at the next workshop! ■

Calling All Authors!

Publish your work in the *Journal of Cost Analysis and Parametrics* (JCAP)!

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Submit your project or research paper, new or old, for possible acceptance and inclusion in JCAP. Starting in May 2013, manuscripts can be submitted online for consideration. See

<https://www.iceaaonline.org/publications/journal.cfm> for more information and publication guidelines.



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