2016: Issue #2

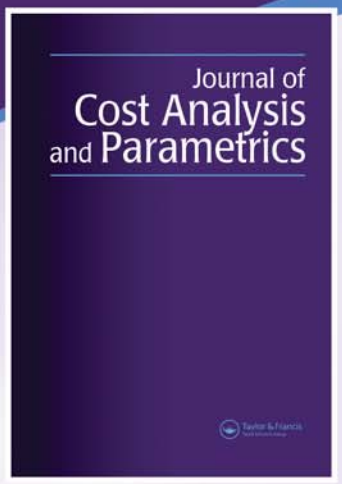
ICEAA World

The magazine for the International Cost Estimating & Analysis Association

Looking Back at the 2016 Professional Development & Training Workshop

ICEAA International Cost Estimating and Analysis Association

Taylor & Francis
Taylor & Francis Group



CALL FOR PAPERS

Journal of Cost Analysis and Parametrics

The ***Journal of Cost Analysis and Parametrics*** is the official publication of the International Cost Estimating and Analysis Association. It is a scholarly journal featuring peer-reviewed articles that provide the latest developments in cost estimating, cost analysis, and cost management. Its objective is to improve the theory and practice of cost estimating, analysis, management, and research results among cost-analysis educators and practitioners around the world.

The journal seeks to publish research that is interesting, intellectually rigorous, and advances the body of knowledge of cost analysis and parametrics. Papers involving a variety of topics, settings, and research methods are solicited. Manuscripts related to a broad range of application areas for any sector of the economy including manufacturing, financial services, construction, retail, defense, and not-for-profit are desired. New theories, topical areas, and research methods are encouraged. Areas of interest include, but are not limited to:

- Cost model development and validation
- Decision analysis
- Risk and uncertainty
- Simulation
- Trade studies
- Learning curves
- Productivity assessment
- Earned value management
- Design to cost
- Lifecycle costing
- Statistical techniques for analyzing data
- Data visualization

SUBMISSIONS

Submissions will be evaluated based on their: (1) readability; (2) relevance; and (3) reliability. All papers accepted for publication in the Journal must have a high level of readability. Poor readability can impede the ability of a reviewer to evaluate the contribution of a paper and may lead to rejection. It is necessary to ensure the paper can be readily understood by individuals involved in the area discussed in the paper. References should not impede the flow of the paper and unnecessary obscure jargon should not be used. If applicable, details of the statistical methodology should be in an appendix rather than in the body of the paper if they are not central to the focus of the manuscript.

The second criterion is relevance. A paper is relevant if it has the potential to influence cost estimating, analysis, or management. A paper that appeals to a broad spectrum of readers or is unique or innovative has a better possibility of influencing practice and theory development and therefore, is more relevant than a paper without these features.

The third criterion is reliability. The paper is reliable if the conclusions of the paper can be reasonably inferred from the arguments. Reliability is easier to assess when a paper is statistical or involves empirical research with which the reviewer is familiar. Authors can improve the probability of acceptance of a paper by including a section on the limitations of the research techniques.

Authors are advised to consult previous issues of ***JCAP***—and its predecessor journals—for suitable topics to submit for consideration. For questions from potential authors please contact:

Ricardo Valerdi, Editor-in-Chief
(rvalerdi@arizona.edu).

www.tandfonline.com/UCAP

ICEAA
International Cost Estimating & Analysis Association
8221 Old Courthouse Road, Suite 106
Vienna, VA 22182
703.938.5090
iceaa@iceaaonline.org
www.iceaaonline.org

ICEAA World
The Magazine for the International Cost Estimating & Analysis Association

Table of Contents

The International Cost Estimating and Analysis Association is a 501(c)(6) international non-profit organization dedicated to advancing, encouraging, promoting and enhancing the profession of cost estimating and analysis, through the use of parametrics and other data-driven techniques.

Letter from the Editor

Joe Wagner, ICEAA World Editor

Upcoming Events

2016 ICEAA & ISBSG IT Confidence Conference
100 N. Sepulveda Boulevard
El Segundo, California
September 7, 2016
https://itconfidence2016.wordpress.com

2016 ICEAA International Training Symposium
Bristol (UK) Marriott Hotel City Centre
October 17-20, 2016
www.iceaaonline.com/bristol2016

2016 Integrated Program Management Workshop
Bethesda North Marriott Hotel & Conference Center
Bethesda, Maryland
October 31 - November 3, 2016
www.ipmconference.org

2017 ICEAA Professional Development & Training Workshop
Portland Marriott Downtown Waterfront
Portland, Oregon
June 6-9, 2017

2018 ICEAA Professional Development & Training Workshop
Renaissance Phoenix Downtown Hotel
Phoenix, Arizona
June 12-15, 2018

Summer brings anticipation of a slowdown in the pace of life, perhaps a relaxing vacation, and more time spent outdoors. In the annual cycle of *ICEAA World* magazine, it also means a reflective look back at the 2016 ICEAA Professional Development and Training Workshop in Buckhead-Atlanta, Georgia. The reviews were fabulous from you, the attendees, and that validated the work of the entire Association management and leadership team, including International President **Paul Marston,** Executive Director **Megan Jones**, and the Workshop Chair **Mike Thompson**.

If you recall the cover of our spring 2016 issue, we flagged this as *The Year of the Workshop*. In addition to the annual event in June, the Canadian chapter hosted a workshop in Ottawa in February, there will be an International event in Bristol, UK in October-November, and the annual Integrated Program Management (IPM) workshop will take place in Bethesda, MD in November. This is not to even mention regional and chapter efforts such as the joint workshop coming in September cohosted by Region 7 Director **Kurt Brunner** and his chapter in the Los Angeles area, with the International Software Benchmarking Standards Group (ISBSG). This free one day workshop will focus on software benchmarking and estimating.

Do your best to attend one of these remaining 2016 opportunities. Benefits include earning credits towards your ICEAA recertification, improvement in your professional standing, and the simple enjoyment of sharing the company of fellow professionals in stimulating settings. Information and registration will be available at the ICEAA website. And of course, plan to see us in Portland in 2017.

The wheel of time is always turning, and in this issue we remember professional colleagues **Tom Masters** and **Jim Otte**, who both passed away earlier this year. Reading through their life experiences and hearing the comments of those who have known them confirms a long-held opinion that collectively ICEAA members are quite a group of professionals who have contributed much to the world in which we work and live.

Speaking of contributions to our professional world, profiles on the winners of the 2016 ICEAA awards for professional achievement are included in this issue, and reading through them reinforces that notion of the quality things our members do in their professional lives. They don't just get up and go to work each day. Their time is used to wonderful effect to improve their lives and the lives of the people and institutions around them.

ICEAA regional and chapter leaders are strongly encouraged to provide write-ups to *ICEAA World* on the activities and accomplishments of their ICEAA members. It should be part of your job to educate and inform the membership concerning your part of the ICEAA world.

Business Office Update

Megan Jones, ICEAA Executive Director

Boy howdy, that Workshop in Atlanta went by faster than a dog shot through a barn!* This year was my third Professional Development & Training Workshop with ICEAA, and I dare say it was my favorite yet. Workshop Week remains the highlight of my work year: getting to spend time with the faces that go with all those email addresses I type so often, hearing all the feedback on how the event is going, and all the quick chats that can plant the seeds for the next new great idea. I hope everyone enjoys the special Workshop section in this issue as much as I did putting it together and I look forward to seeing everyone and more next year in Portland.

Thanks to our photographer, **Jessica McGowan**, who captured the energy of the event so well, and to **Madison Burger** for her service with a smile at the registration desk. Thanks more to the Workshop Planning Committee who volunteered their time to making the event such a collaborative success. There are so many moving pieces to putting on an event like this and the team did a fantastic job of keeping everything and everyone in line and chugging along like a well-oiled machine. But thanks most to **Sharon Burger** and **Joe Wagner** for their support, hard work, and incredible can-do spirits that make our events, and everything else ICEAA, possible.

And just when I thought I had a moment's peace to get all of my ducks in a row, the Year of the Workshop marches on. I hope everyone is getting plenty of R&R this summer, because ICEAA has a very busy fall planned.

First up: the **Annual All-Member Meeting**. Last year, we tried out a new format that turned out to be a great way to get as many members as possible to tune in to the annual update on the state of the association and what's in store for the future. Mark your calendars for Friday, **September 23** at noon eastern for this hour-long webcast. While we expect the turnout to be too high to have live interaction, we will be collecting your agenda topic suggestions and questions online up to a week before to customize the discussion your interests.

A few weeks later, we'll be hopping over the pond for the 2016 **International Training Symposium**, ICEAA's first overseas workshop since the merger so long ago. We're putting on this three-day workshop with partners in costing from around the world: the Society for Cost Analysis and Forecasting (SCAF), the Association of Cost Engineers (ACostE), the Association for Project Management (APM), the Dutch Association for Cost Engineering (DACE), the International Focus Point Users Group (IFPUG), Nesma, an independent international organization focused on software metrics and software measurement, and the Space Systems Cost Analysis Group (SSCAG). All of this will happen in the city of Bristol in the United Kingdom, about 2 hours from London, **October 17-20.** More details on this event are in this issue as well as on the ICEAA site.

About a week after that, we're back in the DC area at the **28th Annual International Integrated Program Management Workshop, October 31-November 2**, in Bethesda, Maryland. ICEAA has been collaborating on this event with the College of Performance Management (CPM) and the National Defense Industrial Association (NDIA) since…well, based on some of the photos from Atlanta, since some of you were in diapers. This is a great opportunity for those in the DC area whose budges may not allow extensive travel to hear the latest on EVM, performance management, contract management, scheduling, and Agile integration.

And while all that's going on, ICEAA members have some homework to do. Send in your topics and questions for the All Member Meeting by **September 16.** The process for electing the 2017-2019 International Board of Directors is getting started, and anyone interested in running for a seat on the board needs to get their applications in by **November 15.** Want to present a paper in Portland? Abstract summaries are due **December 1**.

Exhausted yet? Soak up those rays and lazy days while the getting's good. You'll be hearing a lot from ICEAA this fall!

**Full disclosure: I Googled that expression. This Jersey Girl has no idea what it means. However, the rest of the (probably too many) metaphors in this piece I did know.*

President's Address

Paul Marston, ICEAA International President

As the ICEAA President, one of the questions I'm most frequently asked is, "why should anyone join ICEAA?" My usual answer is that it's difficult to say why you should be a member, but I can tell you exactly why I've been a member for 30 years.

The story on why I joined the National Estimating Society (NES), a predecessor organization of SCEA and then ICEAA, may be similar to yours. I was a brand new second lieutenant in the US Air Force when I was assigned as a cost analysis officer at Wright Patterson AFB. As I was leaving the orientation meeting with my boss, Lt Col Christiansen, he says, "oh, one more thing: you really ought to join a professional organization." I was new to the field, and frankly didn't even understand what a cost analysis officer really did, let alone know of any relevant professional organizations, so I asked if he had any suggestions. He said, "why don't you check out NES."

> *"I'm sure my involvement in ICEAA did as much, if not more, to develop my professional skills as any of my real jobs."*

So the short answer of why I joined in the first place is because my boss suggested I do it. Looking back on that moment in 1986, I'm always amazed that a throwaway comment would have such a profound impact on my career. I guess that's the way life works sometimes.

In my early days as a member, my only involvement in ICEAA was to attend local chapter luncheon meetings. We all know the format, a 20-minute presentation on some aspect of cost analysis and a delicious meal of some type. As I write this, I truly can't remember a single presentation from those days. What I do remember, and will never forget, are all of the people I met at those luncheons – some who became life-long friends. Those relationships and many others made through ICEAA have been key to my career, many of whom served as early mentors when I had a question about methodology or modeling or data gathering. Their answers opened my eyes to what cost analysis and defense acquisition were all about.

After I got my cost estimating feet on the ground, ICEAA became key to learning my craft. I remember distinctly when my friend and colleague, **Joan Blair**, suggested that we prepare for the certification exam. I'm sure I didn't know what I was signing up for, but jumped right in. In those days, there was no CEBoK or even CostProf; we studied a variety of stand-alone training briefs, some cost guides, Air Force regulations, and some ICEAA papers. Not sure how, but I actually passed. More importantly, I learned a lot more about the real mechanics of being a cost analyst. It also got me to my first conference held at the Sheraton Premiere in Tysons Corner.

What I really remember about that first conference was the instant realization that a greater "cost community" existed. Cost analysis wasn't just a peculiar creation of Wright Patterson. Meeting people from all over DoD, NASA, intel, industry, and academia, and listening to their papers on very sophisticated topics fundamentally changed my perception of my career choice. All of a sudden, there seemed to be endless possibilities.

A little later I became involved in my local ICEAA chapter's leadership. First as treasurer, then as Vice President and finally as Chapter President. Each of these positions taught me leadership and management skills – how to work with people, how to organize, how to get things done, and how to lead a meeting.

continued

I'm sure my involvement in ICEAA did as much, if not more, to develop my professional skills as any of my real jobs. I'll share a little secret: every volunteer organization needs help, and for as much as you give, you'll gain much, much more in the long run.

As a chapter president, I was able to attend the ICEAA national board meetings. Again, my horizons expanded. I met many of the top people in our field – **Lee Baseman, BJ White-Olson, Steve Book, Rich Hartley, Neil Albert, Dan Nussbaum**, to name a few. I'm not sure if they considered themselves among my mentors, but I can assure you that I most certainly did.

From unlikely member to International President

Why did you join ICEAA? Or NES? Or ISPA? Or SCEA? Maybe you were lured to the annual conference by the nice location. Maybe you thrive on the opportunity to present your latest research on a cutting edge topic to an audience of your peers. Maybe the arrival of this periodical helps keep you connected to our greater cost community. Maybe the quality of research and analysis in our Journal stimulates your mind. There are as many reasons as we have members, so we will be starting a new feature in *ICEAA World* where we will tell the story of why you became (and stayed) a member for everyone to enjoy.

To volunteer your story, contact **Joe Wagner** in the ICEAA Business Office.

Secretary's Perspective

Greg Kiviat, ICEAA Secretary

As a longtime "industry" ICEAA member I have been encouraged by the increasing opportunities to work closely with our government customers to develop, build and maintain best value products. ICEAA provides a strong foundation for this activity with its International Workshops, chapter meetings and publications.

Building on that foundation, government cost leaders have sponsored several ongoing Cost IPTs (Integrated Product Teams) with industry partners to "Exploit opportunity to engage and find potential for substantive mutual areas for improvement" and to achieve better value across all phases of the product life cycle.

Cost IPTs that have been established now include subspecialties in Space, Aviation and Operations & Support to achieve on-time, on-budget, best value solutions. The IPT's goals are well aligned with ICEAA's constitution "To enhance the understanding and appreciation of using data-driven estimating and analysis techniques throughout allied fields and the general population."

Typically, the IPT events consist of a "general" government briefing session followed by "one-on-one" meetings between the government and specific company (OEM) teams. Often an informal social event will be scheduled to provide further opportunity to better know your counterparts.

Participation in ICEAA events has been an important catalyst that leads to other forums and communications across the broader cost community. Further, personal relationships formed at these events often result in the trust needed to make process and technical improvements for both OEMs and the government customer.

In summary, while ICEAA meetings provide excellent training and exchange of ideas through formal training and papers, opportunities for personal interactions often lead to a better understanding between suppliers and customers.

Certification Corner

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

Professional Cost Estimator/Analyst (PCEA®) – Recognizing "Apprentice-Level" Competency

This June the Board of Directors approved a motion to clarify the eligibility and testing requirements for PCEA certification. Moving forward, Part I of the Certified Cost Estimator/Analyst (CCEA®) exam will be referred to as the PCEA examination. More importantly, anyone with a Bachelor's degree (or qualifying work experience) and more than two years of professional cost estimating experience is eligible to apply, sit for and achieve PCEA certification with a score of 70% or better on the exam. This action rectifies past policy that precluded applicants with more than five years of experience from receiving the PCEA designation. Those who have passed the PCEA examination since the Board of Directors approved this change in June will be contacted by the International Business Office and will have their certification status updated appropriately.

ICEAA encourages its members to master competencies beyond the apprentice-level designation and attain our hallmark certification, the CCEA®. However, those who wish to remain at the apprentice level can retake the PCEA examination once their three-year PCEA designation expires. Alternatively, three years from passing the PCEA exam provides ample time to deepen or refresh one's skills sufficiently to pass the remaining CCEA examination and receive the renewable CCEA designation. We intentionally designed–and test results indicate–the CCEA exam to favor those with five or more years of practical work experience.

Parametric Methods Specialty Certification

We were also able to "beta test" the multiple choice questions for the Parametric Methods specialty examination at the Professional Development & Training Workshop in June. This professional certification requires applicants to have a current CCEA, submit a work product in parametric methods, and pass the CCEA-P examination. The CCEA-P exam will consist of 75 multiple choice questions, including approximately 15 questions that are derived from one to three work problems. We expect to solicit and accept applicants for the CCEA-P specialty certification by the end of calendar 2016.

WANTED

CCEA® and Specialty Exam Questions

For enhancing the portfolio of questions in ICEAA exams, study guides and training materials

1. Topic Category
Parametric Estimating:

2. Topic
CER

3. Question
1. 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:

4. Five multiple choice answers

a. $ 1,193.57
b. $ 1,193,565.00
c. $ 1,797.10
d. $ 1,797,100.00
e. $ 208,850.00

5. Answer: **B**

6. Solution:
y = 31.765 * 33 + 145.32 = 1,193.57 but must convert from $K; value is 1,193.57 * $1000 = $1,193,565

7. Reference
CEBoK Module 3

REWARD: RECERTIFICATION POINTS

Contact the ICEAA Office or Director of Certification for details

Society for Cost Analysis & Forecasting:
Costing News from the UK

by Dale Shermon, SCAF Chairman

Since the last SCAF update we have held the SCAF summer banquet and our 3rd award ceremony. On July 7th, the SCAF awards event was well attended, with a good crowd that socialized and chatted long after the dinner. This well-attended event we held at the Bailbrook House Hotel, in Bath, for the second year. Twenty six members and partners attended the event which included dinner and the presentation of the SCAF awards for the year September 2014 to September 2015. Congratulations to all the award winners and those who received commendations:

- **Charles Symons**: Best Newsletter Article
  - ♦ Commendations to **Brian Tanner**
- **Michael Christie**: Best Quality Presentation
  - ♦ Commendations to **Andy Nolan/Olympia Vlad** and **Howard Startin**
- **Andy Nolan**: Best Technical Paper
- **Andy Nolan**: Members Award
- Commendation to **Susanna Mason**
- **Dave Exelby**: P G Pugh Award for innovation
  - ♦ Commendation to **Bob Mill** and **Linda Newnes**
- **Max Murray-Brooks**: SCAF Service Award

Please keep offering us those presentations and newsletter articles!

On May 19th, I met with **Paul Marston**, president of the International Cost Estimating and Analysis Association (ICEAA) together with **Neil Morell** our SCAF secretary. We met in the Marriott City Centre, Bristol to discuss arrangements for the International Training Symposium in October; at this point everything seems to be in hand. We walked around the conference facilities, discussed the event with the hotel liaison and had a conference call with ICEAA Executive Director **Megan Jones** and **Jason Dechoretz** of MCR in the afternoon to discuss our findings . More details on the content, schedule, and plans for the first ICEAA event in the UK are provided later in this magazine.

Paul and Neil surveying a conference room

On June 1st, I had a meeting with the single source regulatory office (SSRO) regarding their support to the November SCAF workshop, it was a very fruitful meeting and they are happy to provide a speaker. They welcomed the opportunity to talk to the cost community and we look forward to the informative presentation.

Also in June we had a good SCAF workshop near Preston, at Ribby Hall. Thanks to all the speakers for a good day.

The future programme for this year is shaping nicely with the International Training Symposium in Bristol on October 18 to 20; followed by a SCAF workshop in Bristol on November 15th. Enjoy the rest of the summer and put these dates in your diary now.

Certification Congratulations

ICEAA Certification has continued to thrive during the first half of 2016! 69 exams were administered between January and June and as always, our appreciation goes out to those listed below who volunteered their time to administer the exams. If you are CCEA® certified and would like to proctor an exam in your area or at our next Professional Development and Training Workshop in Portland, Oregon, please contact the ICEAA International Business office.

The following individuals are those who proctored exams between January and June 2016:

Ben Costley
Diane Dressel
Daniel Garcia
Matt Henchey
Don Kimminau
François Levesque
Rick Osseck
Tim Salvage
Aneesh Talwar
Dave Torgerson
Trevor VanAtta
Stephanie Warnes
Janet Wentworth

CCEA® Achievers:

Miguel Aceves,
Tecolote Research, Inc.

Andrew Beattie,
UK Ministry of Defense

Andrew Bundock,
UK Ministry of Defense

Billy Carson, NASA

Gary Collier,
UK Ministry of Defense

Matthew Hiam,
The Boeing Company

Elizabeth Hodson, AFIT

Rob Houghton,
Houghton Associates, Inc.

Jeremy Heusner,
Booz Allen Hamilton

Jeffrey Johnson,
Booz Allen Hamilton

Brian Kadish,
Kalman & Co, Inc.

Daniel Lambert, USAF

Huan Li, AFIT

Adrian Martin,
UK Ministry of Defense

Patrick McCarthy,
Booz Allen Hamilton

Shayla Celestine Miller,
Optimal Solutions

Tommie Troy Miller,
Tecolote Research, Inc.

Kyle Mosier, Wyle

Stephanie Warnes,
Computer Sciences Corporation

Matthew Whitfield,
UK Ministry of Defense

PCEA® Achievers:

Robert Biedenharn,
Booz Allen Hamilton

Justin Davis,
Abaco Systems

Elizabeth Goode,
Richter & Company

Christopher Jimenez, AFIT

Allison Koseki,
The Boeing Company

Scott Kozlak, AFIT

Anh Phuong Nguyen,
Navy Engineering Logistics Office

Nicholas Reynolds, AFCAA

The following are those who have recertified between January and June 2016

Elisa Blagoev
Bradley Boehmke
Steven Cedotal
Neil Chakrabarti
Michael Clay
Christopher Cunningham
Diane Dressel
Mel Etheridge
Les Flugum
Leon Halstead
David Harris
Herb Hayes
Mohamed Hendy Amin
Nayeema Hog
Stacy Houck
Andrew Hutchinson
Timothy Jamison
David LaChance
Laura Lucas
Omar Mahmoud
Kenneth Marshall
David Mattingly
David McConnell
Tim McMains
Charles McNitt
Michael Metcalf
Ralph Mitchell
Jeffrey Moore
Glenn Myers
Phu Phuong Thi Nguyen
Daniel Nussbaum
Joseph Rohner
Carolyn Smith
Barbara Stone-Towns
Thomas Wilke
William Barfield*
**October 2015*

PCEA® Achievers/CCEA® Eligible:

James Arthur, UK Ministry of Defense

Colin Dickie, KPMG-Canada

Brian Fitzpatrick, AFIT

Christopher Heffernon, UK Ministry of Defense

Candice Honious, AFIT

William Li, KPMG-Canada

Joshua Michelson, KPMG-Canada

Danielle Mrla, AFIT

Patrick Myers, Booz Allen Hamilton

Anthony Huertas, AFIT

Jessica Roberts, UK Ministry of Defense

Joshua Wei, The Boeing Company

Ian Weng, KPMG-Canada

John White, UK Ministry of Defense

Robert Wolfe, AFIT

Technology Showcase

Webinar Series

ICEAA

Archives of ICEAA's Technology Showcase Webinars are online!

Watch previous webinars now at

www.iceaaonline.com/techshowcase

ICEAA's Technology Showcase Webinar Series is designed to bring the latest in cost estimating and cost analysis technology straight to our members' offices. These webinars connect the companies innovating the products, methods, and theories at the forefront of the profession with the members who want to know more about them.

Contact Megan Jones to schedule your webinar: megan@iceaaonline.org

A Weapons Acquisition Case Study: Cost Overruns and Schedule Slips

Randal D. Bowen and Col David L. Peeler, Jr.

This story is true. Certain details – names, dates, descriptions, and dollar values – have been omitted to "stump the audience" and protect the guilty. The trials and tribulations of an acquisition program cost overrun are explored for persistent lessons and future applications. This saga includes materiel difficulties, workforce issues, congressional interest, funding and schedule perturbations. The purpose is to educate, as the persistence of fundamental acquisition problems and the insignificance of acquisition reforms are framed for discussion and/or contemplation.

There have been countless acquisition case studies written. As our fathers would have said, "more than you can shake a stick at." This paper takes a slightly different tack in examining one particular acquisition effort. As opposed to dissecting what went wrong and how issues could have been avoided, this paper presents the reader with a thumbnail sketch of the scenario with some pertinent data. The reader is then "quizzed" on some possible scenarios to determine the correct option. The story is true and only names, dates and specific dollar values are excluded. At the end, "all will be revealed" (to quote Agatha Christie) and closing comments will be provided.

As the story opens, it seems that terrorist attacks had occurred, and American citizens were being held hostage overseas. The President was very concerned about the situation and about the state of national security in general. These concerns led him to believe a rapid long-range strike capability for the nation was crucial. The President lobbied Congress and an emergency appropriation was pushed through with bi-partisan support and the bill was quickly signed by the President. It should be noted that some minority members of Congress grumbled about the cost and the vote was somewhat close in the House of Representatives, the bill passing with an eleven vote margin.

The acquisition approach used had aspects that are common with many. Work was awarded to as many viable sources in as many Congressional districts as possible, to broaden the positive economic impact. Broad impressions were of a sluggish economy, and the hope was that the major new defense work would prove to be an economic stimulus. Additionally, the system used an advanced design with exotic materials, seeking to advance the state of the art, introduce new technology, and leapfrog potential adversaries in fielded capability. So far, so good…

Problems, however, quickly developed. The advanced materials so crucial to the system design were much harder to procure, manufacture, and assemble than the designers had envisioned. Also, the necessary skilled labor force was very difficult to obtain, retain, and keep qualified to work with the advanced materials. As a result, schedules began to slip. In view of the problems, the Secretary was forced to inform the President that the contracts would likely overrun. In reality, the contracts were nearly at stop work status due to lack of program funding.

As a result of the problems, program cost estimates were revised, with a resulting 30% increase. The Secretary requested an emergency supplemental appropriation in order to complete the program. Congress however,

Randal Bowen is a retired Air Force civilian with over 30 years' experience in cost estimating and financial management gained in numerous staff and program office assignments. Mr. Bowen was most recently the FM Technical Director at the Air Force Life Cycle Management Center. Previously, Mr. Bowen also served as the Director of Cost and Economics at the AFLCMC and the former Aeronautical Systems Center.

Colonel Peeler serves as Deputy Director, Financial Management and Comptroller for the Air Force Life Cycle Management Center. He is a certified cost estimator/analyst and an Air Force certified acquisition professional in both financial and program management. He is a member of both the American Society of Military Comptrollers and the International Cost Estimating and Analysis Association.

refused to fully fund the request and only appropriated 85% of the increased cost estimate. The grumbling heard initially about the cost of the program now increased greatly, with some congressional membership becoming publicly very vocal in their opposition to the program.

Time passed and work continued, but the initial problems that surfaced in dealing with the advanced materials never really went away, persisting to frustrate the program throughout. Program cost estimates were revised again, and program cost increased by an additional 22%. This time, Congress agreed to fund even less of the cost increase and only appropriated 55% of the requested increased amount. A great furor erupted when Congress discovered the increased amount did not fully fund the program. As a result of the increased cost and budget concerns, the initially planned production was cut in half.

As our saga continues, Congress was very unhappy when it learned that the revised cost estimates now only funded half of the original planned quantity. Costs had now increased 58% over the original program estimates. To fully fund the originally planned production quantity would have required an additional 55% increase in program funding (in addition to the previous increases). The total projected system cost was now 245% of the original program baseline; and this weapon system was now the largest item in the defense acquisition budget. The system and the increased cost were so controversial that there were actually demonstrations at the contractors' facilities.

The problems with the program ultimately led to the special project stage that is sometimes referred to as the search for the guilty. The Secretary informed Congress that it would be impossible to field the system without added funding. The furor over increased program costs now became an uproar. The bipartisan support the program enjoyed initially had now evaporated. Congressional hearings began, focusing on the increased program costs and schedule delays. A result of the hearings, the Service Secretary was required to submit a report on cost growth – perhaps a selective acquisition report (SAR)? The Secretary subsequently submitted the required report, citing the difficulties with the advanced materials and labor problems – skill mix and general availability – as the main drivers for the cost growth. As a result of the report and the program issues, the President requested the Secretary's resignation.

Now for the rest of the story… Congress eventually fully funded the system, but only after much partisan debate. The cost of the system was used for political purposes during Congressional elections, with the minority party saying they were really against the system all along and that it really hadn't been required.

The system was eventually fully fielded, but high operating cost continued to be a sore spot. However, the system performed well in later conflicts. The user was very happy with the performance and adversaries held it in awe.

So, what weapon system could be the subject of this sordid tale? Calvin Coolidge and the Lexington class carriers? Franklin Roosevelt and the B-29 bomber? Dwight Eisenhower and the Minuteman missile? John F. Kennedy and the Polaris submarine? Jimmy Carter/Ronald Reagan and the B-1 bomber? George H. W. Bush and the B-2 bomber? Bill Clinton/George W. Bush and the Joint Strike Fighter? Or, could we be referring to something else entirely? Can you choose wisely?

In words that Paul Harvey made famous, "…**and now, for the rest of the story**.

If this was an actual test, the correct answer would be "none of the above;" …something else entirely. While many modern weapon systems and defense acquisitions have certainly had their problems, this scenario goes back much further in history. This scenario and case study is actually based on the first six ships of the United States Navy, primarily during the administrations of Presidents George Washington and John Adams.

To provide a few more of the actual details, the impetus behind the acquisition was the practice of the Barbary pirates to capture American shipping and hold the crews for ransom. This was a major issue at the time, since the burgeoning American economy was heavily dependent on

continued

overseas shipping and commerce. (After all the West was still a mercantile economy, at the time.) Due to unrest between England and France, the resulting British blockade of French ports, trade via the Mediterranean – within, throughout, and beyond – became crucial. The activities of the Barbary pirates severely threatened this trade and President Washington became convinced the new nation needed a naval force to help protect the shipping on which the economy was so dependent.

The War Department (there was no Navy Department at the time) turned to noted naval architect Joshua Humphries of Philadelphia to design the six new ships. Mr. Humphries was a brilliant designer and in some ways ahead of his time. Knowing that the new nation would never be able to build a fleet of sufficient size to compete with the European powers, Humphries designed the ships to be able to operate independently. These goals required a design with overwhelming firepower for their size, but also great speed. If these performance goals were attained, this meant the new American ships would be able to not only overpower any adversary of equivalent size, but also be able to outrun the larger ships of the line that had the capability to blow them out of the water.

To accomplish these performance goals, Humphries designed a unique bracing system and made heavy use of American Southern Live Oak as wood integral to his construction design. Live oak is an unusually strong and dense wood; this unique construction helped the ships carry a heavier armament load than European ships of equivalent size.

While the use of the live oak helped provide outstanding capability, it also brought many unforeseen issues and was the cause of many of the cost and schedule problems during construction. Because it is such a strong and dense wood, live oak tended to quickly dull the saws and blunt the axes used to cut the trees, finish and shape the wood. The wood was so difficult to work with that many experienced ships carpenters gave up and refused to perform further work. Live oak only grows in the swampy coastal regions of the American South, which caused additional problems. On average, only one tree in fifty was large enough to provide wood of the necessary dimensions for construction. This search for the prize trees involved lengthy forays deep into Southern coastal swamps. Once found and cut, transportation of these sizable trees out of the dense swamps was another difficulty. Many workers became severely ill with malaria from the mosquitos prevalent in the swamps and were too sick to work. Because of the severe conditions, it was difficult to recruit replacement workers. Many of the laborers that recovered from the malaria left and refused to return.

Eventually, the problems were overcome and the ships, including the *USS Constitution* (Old Ironsides due to the tough live oak planking) went on to perform well during the undeclared war with France and the War of 1812 with Great Britain. In fact, one testament to the robustness of the design and materials used was the *USS Constitution* becoming the oldest ships of the line in the U.S. Navy – 219 years old and currently in dry dock undergoing a scheduled three-year program of restoration.

The point of this article is to show that problems with defense acquisitions are not new. From the nation's earliest days, with its very first major defense acquisition program, acquisition strategies were: political; creative; contentious; used as electoral fodder; broke along party lines; and suffered both cost overruns and schedule slips due to most of the same problems and risk categories we experience today. The difficulties of estimating the costs of advanced designs and exotic materials are rooted in the experiences of our earliest American cost estimators/ analysts. One might say these problems are foundational to the country and weapons procurement. Estimating a system that advances the state of the art was just as difficult in the 1790s when dealing with Southern Live Oak, as it is today when dealing with cosmic software configurations, advanced composite and radar absorbing materials.

This paper is based on Mr. Ian Toll's book, Six Frigates: The Epic History of the Founding of the U.S. Navy. The six frigates comprising the major defense acquisition program considered above are the *USS Chesapeake*, the *USS Constitution*, the *USS President*, the *USS United States*, the *USS Congress*, and the *USS Constellation*.

Money Changes Hands…
…A Good Book Changes Minds

Book review by Col David Peeler

Six Frigates:

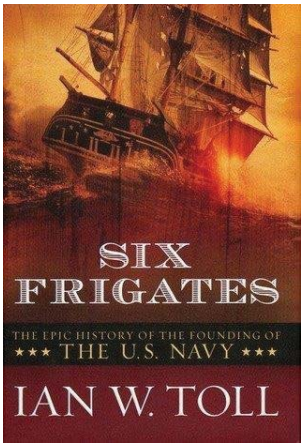
The Epic History of the Founding of the U.S. Navy

Ian W. Toll

W.W. Norton & Company:
New York, N.Y.; 2006.

Take a step with me, if you will, back into history. American history and the beginning of the U.S. Navy. Often reading non-cost focused books is very entertaining when we apply our cost estimator/analyst lenses. The book reviewed here does not contain CERs or quantitative risk analyses, but has plenty of material to ponder with regard to a cost estimators sense of occupation vis-à-vis historical weapons acquisition and employment.

In 15 chapters, almost evenly divided into 3 parts, Ian Toll tells the story of the first six frigates procured by the United States Navy. Part One, *To Provide and Maintain*, opens with the state of naval activity just before and after the American Revolution. The narrative turns to the impact of the Barbary Pirates on mercantile shipping and U.S. trade. The capture of American ships and crews caused quite a stir within the young nation. Politicians vacillated between support of ransom payments, tribute, and taking the fight to the petty piratical potentates of North Africa. The heart of Part One focuses on the acquisition strategy and procurement/ building of the frigates. It is interesting here to read with a mental comparison between current acquisition practices and decisions and those applied in the 18th and early 19th Century. This part of the book concludes with an account of the initial sailings and exploits of the first two frigates – the *USS United States* and *USS Constellation*.



Part Two, *To the Shores of Tripoli*, opens with the presidential election of 1800. [A contentious election, notable as the only one in U.S. history where the incumbent president was defeated by the incumbent vice president.] The new administration was committed to frugality in government and thus faced an interesting challenge regarding the continuation of the acquisition of the planned six frigates. A political debate continued to rage concerning the options of paying ransoms and tribute or building a standing navy. The balance of Part Two goes into the operational exploits of the six frigates in the campaigns against the Barbary Pirates.

Although dubbed *England Again*, Part Three opens with the anticlimactic end of the Barbary Wars and the signing of a treaty with Tripoli. The tale then turns to the contentious encounters between ships of the U.S. fleet and that of the British Royal Navy. Also covered are the devastating impacts and implications of the Jeffersonian embargo of foreign ports in 1807, while failing to call for a declaration of war. The remainder of Part Three chronicles the experiences of the six frigates during the War of 1812.

Six Frigates is a very interesting historical read, focusing on the country's first major acquisition and the application of the procured power. While the book is history, it contains myriad lessons for contemporary acquisition strategies. For this reader, the book started-off as a bit of a tough read. The syntax was initially cumbersome; nothing errant about it, just not comfortable to this reader; but after a couple of chapters, the needed mental adjustments occurred and it got much easier. However, the text is dense, with lots of information packed into this epic. For those costers that enjoy colonial American history, this is a great opportunity to combine that history and a retrospective cost analysis of one of the United States' first major systems acquisitions.

Colonel Peeler serves as Deputy Director, Financial Management and Comptroller for the Air Force Life Cycle Management Center. He is a certified cost estimator/analyst and an Air Force certified acquisition professional in both financial and program management. He is a member of both the American Society of Military Comptrollers and the International Cost Estimating and Analysis Association.

Book Review

Ask an Analyst

Edited by
Joseph W. Hamaker PhD, CPP®,CCEA-P®

An anonymous reader submitted the following question:

Q: Many space cost models distinguish between earth orbital and planetary missions, with planetary missions being more costly. It seems to me that a lot of the equipment and software on board a spacecraft really doesn't know where it is operating. What are some reasons why planetary missions should cost more?

Ron Larson and I jointly took a crack at answering this question:

There are technical requirements associated with planetary missions that are pretty easy to hypothesize as possible differential cost drivers. Some reasons why planetary spacecraft might cost more than earth orbital spacecraft "pound for pound" (and not in order of influence) are:

1. Requirement for more energetic launch vehicles/upper stages/on board propulsion (including propulsive and/or aero-braking).
2. Mass constraints on the spacecraft drive developers to use lighter weight/more expensive materials and perform more engineering analysis to keep mass down.
3. Short launch window demands higher availability.
4. Landers and/or probes (if used) incur the extra complication of separation, approach, braking, entry and landing.
5. Planetary missions have to meet the requirements for planetary protection to prevent biological contamination of both the destination planetary system (e.g. use of clean rooms, sterilization, etc.).
6. Higher communications power requirement (or/and larger antennas on spacecraft and/or ground).
7. Signal transmission time requires additional autonomy and greater software complexity.
8. Engineering cost associated with additional radiation-hardening of electronics.
9. Less solar flux for outer planetary solar array mission drives electrical system cost or drives the mission to use radioactive thermal generators (RTGs).
10. For those using RTGs, RTG direct expense and indirect expense of environmental impact mediation.
11. Additional solar flux of inner planetary missions drives thermal control cost.
12. Longer design lives (at least partly due to cruise time) drives development cost.
13. More likely to have international participation (benefits of "free" participation often outweighed by complications of international partners).

continued

My own QuickCost 5.0 modeled "Destination" with an indicator variable (aka "dummy variable" or 0,1) and the two choices were "Earth Orbital" vs "Planetary" where planetary missions were defined as those missions to other planets or the moon and into deep space, as distinguished from earth-orbiting satellites. QuickCost 5.0 yielded a 15% cost increase for missions that were planetary as opposed to earth orbital. However, QuickCost 6.0 which used a different database, did not find a statistically significant difference for planetary missions (i.e. the variable did not pass the t-test).

What about the various earth orbits—is there a reason to think there are cost distinctions associated with these orbits? (list from Wikipedia):

- ★ Low Earth orbit (LEO): altitudes up to 2,000 km (0–1,240 miles).
- ★ Medium Earth orbit (MEO: altitudes from 2,000 km (1,240 miles) to just below geosynchronous orbit at 35,786 kilometers (22,236 mi).
- ★ Both Geosynchronous orbit (GSO) and Geostationary orbit (GEO): altitude of 42,164 km (26,199 mi).
- ★ High Earth orbit: Geocentric orbits above the altitude of geosynchronous orbit 35,786 km (22,240 miles)

Low altitude orbits are protected by the earth's magnetic field, but higher earth orbits experience significant radiation environments which should drive electronics cost and optical equipment cost. However, in our experience it has been difficult to develop any cost estimating relationship parameter that models the cost effects of higher earth orbits.

To get back to one of the reader's specific questions, the hardware and software on a planetary mission may be quite different from that used on an earth orbital mission. For example, a horizon sensor that works for Earth may not be the choice for the Moon or another planet.

In conclusion, it seems to us that there are some significant reasons that planetary missions tend to be more expensive than earth orbital missions. Teasing the difference out of the historical cost data of space missions is not always straightforward.

Training Corner

Kevin Cincotta,
Outside Training Director

What is outside training?

With so much emphasis on the recent workshop in Atlanta, it's important to also take a step back and look at the more complete picture when it comes to training. Specifically, *outside* training. What is it? Why is it important? And how can you get involved?

Simply put, outside training refers to all ICEAA-sponsored training that occurs outside of the annual professional development and training workshop. This could include training at the *organizational* level (such as the Technomics Training Institute [TTI]), the *chapter* level (such as the ICEAA Canada Chapter's sponsored training), or even training at other conferences and symposia where ICEAA is involved. As Outside Training Director, I coordinate this training—matching trainers to trainees, topics offered to topics of interest, and training venues to hubs of demand. It is a lot like professional matchmaking, except it doesn't pay as well. But it's immensely more fun.

Outside training is important because ICEAA's role in your professional development as a cost analyst does not start and end at the annual workshop. Learning is a lifelong pursuit, and ideally is topical to your projects at hand. For example, suppose that you're working on a project involving the cost estimating implications of cloud computing and could benefit from formal training in that area. My view is that you should not have to wait up to one year for the next annual workshop, and then hope that cloud computing is on the agenda. Ideally, you'd place a phone call, email, text message, tweet, SnapChat, or carrier pigeon message to me, so that we could hook you up with the training you need, when you need it.

Conversely, suppose that you have a new and innovative technique, topic, or lesson learned to share in a training context. The cost community wants to hear about your idea now, without making you wait for the next workshop! Here again, you should contact me to ensure that you get the platform and spotlight that you and your idea deserve. Many analysts have even used outside training venues as "tune-ups" or "dry runs," enhancing interest and polishing their presentation skills before the actual workshop. And I promise, if you say the words, "thanks for the batting practice!" on your way out of an outside training event, I won't be offended. Much glory has been attained playing slow-pitch softball.

Anyway, back to outside training of interest this period. Technomics is starting its 4th season of TTI this summer. This free, monthly training session teaches material from the Cost Estimating Book of Knowledge (CEBoK), guiding attendees through a new module each month. The sessions will be taught by cost estimating professionals, and will help prepare individuals for the Professional Cost Estimator/Analyst (PCEA) and Certified Cost Estimator/Analyst (CCEA) exams. The TTI topics span a variety of topics, including cost estimation, cost analysis, analytical methods, specialized costing, and management applications. Sessions are held the second Tuesday of every month at the Technomics Headquarters in Crystal City, Virginia. The first session, Cost Estimation Basics, will be held August 9th. If you are interested in attending a TTI session, please contact **Derreck Ross** at dross@technomics.net. Long-time, avid fans of TTI know that a WWE Wrestling-style championship is on the line…who will win Season 4? Since you can't tune in to find out, you may have to attend the sessions and see for yourself!

As mentioned previously, ICEAA Canada is also sponsoring training, which will commence in the fall. You can read more about this, and chapter-level training generally, in the chapter updates included elsewhere in this issue.

Why not follow Technomics' lead and start your own outside training program? Or maybe you already have one, and would simply like for it to be publicized and recognized in this column? Or maybe you have a question, comment, or wish to pontificate about existential dread. You probably just want to know *What's Causin All This*? Whatever your subject, I take all comments! Send them my way, to kevin.cincotta@icfi.com, and you just might find them in the next Training Corner.

2016 Workshop Review

By Megan Jones

Another ICEAA Professional Development & Training Workshop is on the books and our 2016 event built ever higher on the successes of our previous conferences. Cost professionals from government, industry, and academia flocked to the ATL for 3 1/2 days of training and professional papers, June 7-10 at the Grand Hyatt in Buckhead. This year's special workshop section should bring back fond memories for our 375 attendees; and for those who missed out on Atlanta, check out what you can look forward to when you join us in Portland next year!

The workshop kicked off Tuesday morning with the Best Paper Awards presentation. 2016 Best Paper Co-Chair **Stacy Dean** presented the award for the best overall paper of the 75 presented during the week as well as the winners of the awards for the best papers in each of the six subject-based categories. The winners are listed in this issue and their full papers and presentations

Stacy Dean presents the 2016 ICEAA Best Paper Awards

are available on the ICEAA website for download.

After the Best Paper Awards Tuesday morning, we were joined by a panel of top representatives from the cost divisions of major government agencies for a round table discussion on the direction, trends, and challenges of cost estimating and analysis within government agencies now and into the future. **Tim Anderson** moderated the discussion between **John Fitch** from the Naval Center for Cost Analysis, **Katrina**

Government Cost Leaders Panel

Timothy P. Anderson

John S. Fitch

Katrina Hall

C. Grant McVicker, III

Dr. Christian B. Smart

continued

2016 Workshop Review

Wednesday morning keynote speaker Col Darby McNulty

Hall of the Federal Aviation Administration, **Grant McVicker** from the United States Air Force and **Dr. Christian Smart** from the Missile Defense Agency.

The welcome reception in the exhibit hall Tuesday night was a great opportunity to meet with our sponsors and exhibitors, as well as a chance to get to know fellow attendees in a fun and relaxed environment.

Wednesday morning started off with the presentation of the ICEAA Association Awards, which featured several new awards for 2016. ICEAA International Vice President **Mike Thompson** emceed the awards presentation, which featured comments from the winners' nominators or colleagues, giving us a look into what made these exceptional individuals so worthy of this year's plaques. Those nominators have provided a summary of their winners' achievements in the following pages.

Following the Association Awards, Wednesday morning's keynote speaker, Col. **Darby McNulty**, Project Manager for the Integrated Personnel and Pay System-Army (IPPS-A) gave us a unique insight into the Army's integration and deployment of a combined human resources/payroll system. Col McNulty got rave reviews from attendees for his direct, pragmatic, and candid approach to such a complex acquisition. The only complaint we got were that the attendees wanted more time to ask him questions!

Mike Thompson introduces the 2016 ICEAA Association Awards

After a long second day of training sessions and paper presentations, attendees and exhibitors met again Wednesday evening for another opportunity to discuss and digest the day's

continued

2016 Workshop Review

2016 Workshop Committee

Workshop Co-Chairs:
Mike Thompson
Rich Harwin

Training Co-Chairs:
Remmie Arnold
Peter Braxton

Program Co-Chairs:
Nathan Honsowetz
Christina Snyder

Best Paper Co-Chairs:
Stacy Dean
Andrew Drennon

presentations. While the structured content of the workshop got the highest marks in three years on our attendee survey, comment after comment praised the less obvious value inherent in the networking events. "The networking opportunities are unbeatable," and "the workshop is a great place to network with fellow cost analysts and really meet some of the important people in the field, especially for younger analysts. Since we work in a small, niche profession it is important to attain the training, and keep track of emerging issues and topics, and meet peers who you will be working with for your entire career!"

We were back at it bright and early Thursday Morning, starting the day with an update from Dr. **Dan Nussbam** and **Greg Mislick** on the all-distance learning Master's Degree and/or Certificate Program in Cost Estimating and Analysis offered at the Naval Postgraduate School and how the program is shaping the way the government does cost estimates.

Greg Mislick (L) and Dan Nussbaum (R) outline the Naval Postgraduate School's Cost Estimating and Analysis program

ICEAA Workshops have a storied history of memorable events: the microburst storm that updated the brick siding on our host hotel in St. Louis in 2009; the veritable solar eclipse when we were in San Diego during 2010's "June Gloom;" and the 2011 forest fires that blanketed the city of Albuquerque in smoke.

We have enjoyed a few eventless years of quiet. Until Thursday morning, that is, when a local cab driver decided to "crash" the Workshop! Fortunately nobody was hurt, and the incident definitely caused a buzz among the attendees that was stronger than that morning's coffee!

Sign Disobeyed

The last big event of the week was the Best Paper Overall presentation on Thursday right before lunch. Of all the changes we made to the schedule in 2015, none were as well received as the decision to feature the year's best paper as a general session for all to enjoy. Gone are the days of fighting for a seat in the breakout room to see the best paper or the authors of those sessions scheduled concurrently with it speaking to an empty room. If you don't already know who won Best Paper this year, now's your last chance to guess before turning the page!

Best Paper Overall

And the winner is...**Andy Prince!**

After having been named the Best Paper in the Parametrics category, *The Dangers of Parametrics - or- How We Use Cost Models to Fool Ourselves and Mislead Our Customers* was selected from the other category winners as the year's best.

Andy's presentation explored the tendency that estimators have to trust their models and subjective judgments when performing cost estimates, rather than relying on the data to guide us.

Our thanks go out to all of the authors of this year's papers. By volunteering their time and expertise, they are not only providing an invaluable service to ICEAA members and Workshop attendees, but are sharpening the cutting edge of innovation in cost estimating and analysis techniques.

Thanks also to all of the best paper judges for taking the time out of their busy schedules to read and rate this year's papers. The job of choosing the best papers from all of the exceptional papers received this year was no easy task. The judges are broken out into teams, one for each of the six tracks, and rate the papers based on technical content, creativity, usefulness in the field, and overall quality and style. The paper with the highest score is named the best in that track. All of the judges from all tracks then reviewed the best papers in each track to determine the overall winner.

Andy Prince presents the 2016 Best Paper Overall in the Grand Ballroom

2016 Best Paper Judges

Guenever Aldrich
Richard Aldrich
Tim Anderson
Nathalene Armstrong
William Barfield
Walter Bednarski
Geoff Bernsten
Blake Boswell
Paul Breon
Douglas Brown
Michael Brozyna
Savita Choudhry
Kevin Cincotta
Chris Dalton
Tom Dauber
Charlie Dobbs
Eric Druker
Tom DuPre
Howard M. Eichenbaum
Emile Ettedgui
Buddy Everage
Bob Fairbairn
Cynthia Foster
Dan Galorath
James Glenn
Steve Green
David Harris
Tom Harwick
Jairus M. Hihn
David Holm
Bob Hunt
Arthur Kaczynski
Jukka Kayhko
William Laing
Tae Lee
Jim Linick
Ken Marshall
Arlene Minkiewicz
J.D. Ottenbreit
David Peeler
Paolo Ponzio
Tom Sanders
Steve Sheamer
Dale Shermon
Barbara Stone-Towns
Bill Taylor
Robyn Wiley

Best Paper Category Winners

Acquisition & Business Case Analysis Category

3D Printing in the DoD; Employing a Business Case Analysis

(left to right) **Robert Appleton, Nicole Santos, Richard Shea**

Risk & Uncertainty Category

Introducing RIFT to Protect Your Uncertain Schedule

Nicholas DeTore *(photographed)*, **Peter Frederic**

Methods & Models Category

Beyond Anderlohr: An Alternate Approach To Estimating Production Breaks

Brent Johnstone

Management, EVM & Scheduling Category

Putting Schedule Quality Checks to the Test

Eric M. Lofgren

Software Sizing & IT Category

Process-Related Effort and Schedule Estimating Relationships for Software Cost Estimating

Corinne Wallshein *(photographed)*, **Nicholas Lanham, Wilson Rosa**

Download all of the 2016 Papers and Presentations at www.iceaaonline.org/atl16papers

Association Awards

ICEAA thanks everyone who nominated one or more of their colleagues for a 2016 Association Award. The stories shared gave us unique glimpses into what makes our members the best of the best in the cost professions. As you read the summaries of their achievements below, give thought to the dedicated and inspiring members you interact with regularly and consider submitting a nomination for 2017. Information and deadlines will be posted on the ICEAA website once available.

Junior Analyst of the Year: **Derreck Ross**

Derreck Ross, Lead Analyst for Technomics, Inc., was awarded the Junior Analyst of the Year Award, which highlights the accomplishments of an individual with 5 or less years of experience.

Derreck completed a BS in Applied Computational Math Sciences / Economics from University of Washington and a MS in Applied Mathematics from the University of Washington. After graduation, Derreck worked at Kepler Research for nine months, and has been employed at Technomics since April 2014.

Junior Analyst of the Year Award Winner Derreck Ross (R) with Technomics CEO Rick Collins (L)

For this award, Derreck was recognized for providing outstanding cost analysis and tool development support to various Navy clients. For Virginia Class Submarine (PMS 450), he developed a centralized database of earned value data, and created the Performance Metrics Model and Study. This model streamlined earned value and program analysis, providing consistent, replicable and defendable results even when used by new analysts.

He also championed the Joint Service Contracts Database, used by Naval Center for Cost Analysis, Marine Corps PEO Land Systems, and Air Force Cost Analysis Agency. Derreck created an automated and open access VBA tool that prepopulated contracts and improved data entry productivity. He improved the front-end tool interface and documented VBA code and data transfer processes. Derreck assumed day-to-day responsibility for this high visibility "production" program, not only successfully executing nearly half a million dollars in contract value, but infusing the effort with his characteristic innovation and enthusiasm. His work was recognized with a Technomics Technical Excellence Award.

Derreck also improved the client products on Independent Government Cost Estimate (IGCE) and DoD Healthcare Management System Modernization (DHMSM) Life Cycle Cost Estimate efforts. He served as administrator to Technomics Training Institute (TTI) which prepares analysts to take ICEAA exams, while completing the course of study himself. In this effort, he develops the class schedule, identifies and assigns instructors for each module, manages invitations, supports homework completion and review, and records student participation. By performing this function, he is contributing to the future of the cost analysis profession by supporting the career development of certified cost analysts.

Derreck's unique combination of cost analysis and computer software development skills have led him to develop innovative tools and solutions for clients, streamlining and automating tasks and

significantly reducing their time to complete. He communicates effectively with clients and coworkers, moving easily between cost analysis and programming and creating improvements in both functional areas. Derreck has made contributions to the field well beyond his years of experience.
-Sandra Enser, Nominator

Educators of the Year:
Dan Nussbaum & Greg Mislick

Dr. **Daniel A. Nussbaum** and Lt. Col. **Gregory K. Mislick**, USMC (Ret) received the 2016 ICEAA Educator of the Year Award at the 2016 Annual ICEAA Conference. Nussbaum and Mislick are co-Program Managers for the Masters of Cost Estimating and Analysis (MCEA) program at the Naval Postgraduate School in Monterey, CA.

In 2010, this team responded to a call from NAVSEA to fill a cost analysis education and training gap that had bedeviled the military services for many years. With the sponsorship of both the Navy and the Air Force, they started at ground zero, and built up a non-resident curriculum at the Naval Postgraduate School, with some early support by the Air Force Institute of Technology, leading to a master's degree in cost estimation and analysis. The result of their efforts is a two-year program encompassing sixteen courses, including three Acquisition and Financial Management courses and two Systems Engineering courses, with the remaining courses being centered on Operations Research and Cost Estimation topics, as well as a Capstone Project. This program has been HUGE for the cost estimating community, and has, so far, awarded master's degrees and certificates in cost estimation and analysis to 94 members of our community, many of whom are here today, forming the basis of a cadre of real technical experts in the cost estimating business. Shortly after the program was created, the MCEA team won the prestigious "Cost Analysis and Management Sciences Community Award," from the Assistant Secretary of the Navy for Financial Management and Comptroller to "the organization within DoD doing the most to support the cost community..."

Educator Analyst of the Year Award Winners Dan Nussbaum (L) and Greg Mislick (R)

Dan and Greg not only developed the MCEA curriculum, but also teach several of the courses in both resident and non-resident (distance learning/VTC) modes. They both also teach a cost estimating course that is open to the entire campus. The open cost estimating course is routinely one of the highest attended courses on campus, with over 250 students taking it annually from such varied curriculums as Financial Management, Defense Systems Analysis, Space Systems Operations, Information Systems and Technology, and Systems Engineering. Dan and Greg are recognized as unique and highly sought-after resources on the NPS campus for all cost estimation matters. In addition, they both serve as guest lecturers for various curriculums on campus, introducing the subject of cost estimation.

In addition, they have co-authored an outstanding textbook entitled "Cost Estimation: Methods and Tools," published in 2015, filling another important gap in the cost community. This ground breaking textbook is designed as a primer for those new to the cost field, and is also an excellent resource for more experienced cost estimators. Topics include cost estimating terminology; the DoD and non-DoD acquisition processes; data sources and data normalization; statistics for cost estimators; regression analysis (single variable, multi-variable and non-linear); learning curves; production breaks; step-down functions; analogy estimating; wrap rates; cost factors; software cost estimating; cost benefit analyses; and risk and uncertainty, including Monte Carlo simulation. The textbook is well

continued

written, and fills a previously uncovered niche. This textbook represents a very significant contribution to the field of cost estimating and analysis.

Greg Mislick has been the Chair for Cost Analysis in the Operations Research Department since 2006, and Dan Nussbaum is the Program Manager for the Energy curriculum at NPS, routinely advising a number of energy cost thesis topics for the DoD.

-Tim Anderson, nominator

Technical Achievement of the Year:

Adam James

Mr. James has nearly three years of experience in cost analysis, estimation, research, and statistical methods in support of the development and production of Department of Defense Acquisition Programs, focusing on ground vehicle and submarine systems for the United States Army and Navy.

Adam joined Technomics in 2013, where he has had immediate and profound impacts on all of his projects including the Army Wheeled and Tracked Vehicle (WTV) Program, the Navy's *Ohio* Replacement (OR) and *Virginia* Class Submarine (VCS) Programs, and the Royal Canadian Joint Support Ship (JSS) Program. In addition to

Technical Achievement of the Year Award Winner Adam James (R) with Technomics CEO Rick Collins (L)

providing meaningful program analysis, he was the lead author and statistician for the NCCA CER Development Handbook, an interactive training guide for cost analysts to step them through the process of developing a cost estimating relationship (CER).

The CER Development Handbook is a NCCA publication to facilitate CER development by developing standard approaches to analyze data, identify cost drivers, generate and validate CERs, characterize uncertainty, and document CERs. Mr. James quickly became the leading statistical scholar on this project. His desire to remain true as a statistical purist led him to spend extensive effort to document the correct way to use complex statistical methods for cost. For each statistical method introduced in the guide, Adam walks through a description of the method, the model form, an application of the methodology, and an example of its use. He then goes on to describe approaches to validate the CER. All the language in the CER guide is both dense and relatable for all cost engineers, not a small feat considering the complexity of the statistical analysis described in the guide. The CER Development Handbook covers advanced techniques not found in routine literature. Mr. James very eloquently and thoughtfully conveys the most complex methodologies to create a valuable reference guide for all cost analysts, on a par with the best textbooks.

Adam's thoughtful and effective analytical techniques, aligned with his ability to rapidly develop very useful tools to increase efficiency of analysis, have enabled innovative breakthroughs in analysis while providing efficiencies and thus cost savings to the clients of the cost community. He is truly an impressive representative of our cost community.

-Anna Irvine, Nominator

Management Achievement of the Year:

Vrenti Ghergari

Vrenti Ghergari is manager of the Procedures team, Costing Services directorate, Department of National Defence (DND) in Ottawa, Canada. He is a Certified

Management Achievement of the Year Award Winner Vrenti Ghergari

2016 Association Award Winners

Professional Accountant (CPA), Certified Cost Estimator/Analyst (CCEA), and a founding member and Secretary of the ICEAA Canada Chapter.

Vrenti's exceptional management skills and drive to bring the Cost Estimating Body of Knowledge (CEBoK) and ICEAA to the Canadian costing community speak to his qualifications for this award.

In 2012, the Canadian F-35 Next Generation Fighter Capability (NGFC) required a major reorganization of its Life Cycle Cost (LCC) structure. The accounting firm KPMG was hired to develop this structure, and Vrenti became the government cost lead for the project. He became a strong LCC advocate, championing its improved costing insight and training others on its implementation. For his effort, Vrenti was awarded the Deputy Minister's Certificate of Appreciation for "exceptional contribution to the preparation and approval of the 2012 Annual Update to Parliament."

As a junior cost analyst, despite the pressures and workload associated with the NGFC project, Vrenti made my professional growth and participation in the LCC estimate a priority. He involved me from the beginning with increasing responsibilities, and this trust drove my desire to improve my skills and produce quality work. He encouraged me to make suggestions, and fostered a team environment where others were comfortable coming to him with new ideas. He was also quick to credit his staff with team successes. For example, Vrenti nominated me for the Assistant Deputy Minister's Certificate of Recognition for the advancement of cost modelling.

Vrenti was promoted to section head within the directorate's newly created Procedures team in 2014. As section head, Vrenti sought out available training to professionalize both his staff and Canada's public service costing community. After investigation, he requested the procurement of ICEAA's CEBoK curriculum, and participated in the first Canadian CEBoK pilot training program. Vrenti, myself and one other analyst successfully obtained our CCEA certifications through this pilot program in January of 2015.

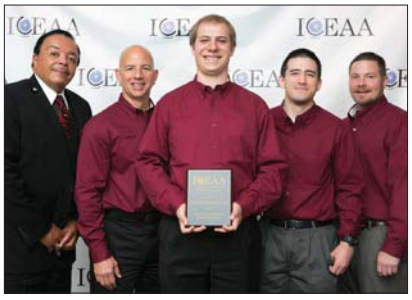
While advancing the ICEAA professional training program, Vrenti also made sure to deliver costing tools that would improve processes within the DND Costing Services directorate. His team developed a Cost Model template and User Guide (2014), Cost Plan and Cost Report templates (2015), Cost Risk Framework (2015), Costing Toolbox (2015) and a Generic Cost Breakdown Structure (CBS) Framework (2016).

Vrenti has also worked to professionalize the costing community across the Government of Canada. Together with the Parliamentary Budget Office and the Treasury Board Secretariat of Canada, who were also interested in ICEAA and CEBoK, Vrenti helped to stand up Canada's ICEAA chapter in 2015. Vrenti encouraged his staff and other cost analysts within DND and other departments to complete CEBoK training through mentoring sessions, where he brought in subject matter experts to discuss how costing principles taught within CEBoK could be applied across Canadian entities. These mentoring sessions helped an additional 12 analysts successfully obtain their PCEA and CCEA certifications in November 2015.

Vrenti's exceptional management skills, demonstrated professional achievements, and his tremendous contributions to the professional development of the Canadian government's costing community have earned him the ICEAA 2017 award for Management Achievement of the Year.
-Shannon Adams, Nominator

Team Achievement of the Year:
PRICE Systems Cost Research Team

In May 2015, PRICE Systems teamed with Lehigh University's Enterprise Systems Center for a summer project to build a cost



Team Achievement of the Year Award Winners from left to right: Quentin Redman (nominator), Anthony DeMarco, Gurney Thompson, Grady Noll and Joe Bauer

continued

estimating model for additive manufacturing, also known as 3D printing. PRICE researchers and a team of Lehigh seniors and graduate students set out to investigate cost drivers, collect cost and technical data, derive CERs, and develop an approach for including 3D printed parts within a larger parametric estimate. After working with our industry partners ProtoCAM, Imperial 3D, and Picatinny Arsenal, we created a cost model that is set to debut publicly in summer 2016.

The research began with a literature review, creation of an initial model structure, and experimentation in the Lehigh University Additive Manufacturing Laboratory (LUAML). The team designed experiments to identify the major cost drivers such as weight, dimensions, part shape/intricacy, material type, printer, etc. Based on this research, a structure was developed for a cost estimating model.

During the first phase of research, we developed a relationship with ProtoCAM, an additive manufacturing prototyping company specializing in the stereolithography manufacturing process. We were able to discuss our approach with their additive manufacturing experts and collect historical data, resulting in 467 data points across 4 printer models being collected. The data was successfully analyzed and a build time estimation equation was developed that was consistently more accurate than both ProtoCAM's in-house methods and the estimates provided by software accompanied with the printer.

The team presented the model to the Army additive manufacturing experts at Picatinny Arsenal. We toured their state-of-the-art facility for Metal 3D printing and 11 data points were collected on the Direct Metal Laser Sintering (DMLS) process. Based on discussions and data collection, we validated our model structure and extended the use of the model to cover various types of metals.

In phase 2 of the project, we collected an additional 224 data points (691 total), enabling us to further refine the build time estimation model. A relationship was developed with Imperial 3D, who are experienced in both plastic and metal additive manufacturing. Imperial 3D experts provided further model validation, enabled the study of post-processing activities and helped to develop a more complete model that addresses the entire production process of additively manufactured parts.

The success of the project can be attributed to the teamwork between the varied groups involved, spanning academia, government and industry partners focused on both cost estimation and 3D printing. Additionally, the relationship led to the hire of multiple Lehigh students to the PRICE Cost Research team, who are currently involved in our next collaborative Lehigh University research project on composite manufacturing, currently underway.

-Quentin Redman, nominator

Frank Freiman
Lifetime Achievement Award
Shu-Ping Hu

Frank Freiman Lifetime Achievement Award Winner Shu-Ping Hu (L) with nominator Alfred Smith (R)

Dr. Shu-Ping Hu, the Chief Statistician at Tecolote, provides expert guidance and support on all aspects of cost and schedule statistical analysis. She is one of our industry's top researchers in our profession. She has shared her knowledge by contributing over 30 insightful professional papers, presentations and journal articles published by organizations like ICEAA, SCEA, ISPA, SSCAG, AIAA, MORS and DoDCAS. Along the way, she has been recognized with eight track and conference-level best paper

awards. Dr. Hu has presented papers to the ICEAA (formerly SCEA) annual workshop for 15 consecutive years.

Dr. Hu's achievements in advancing the theories that support cost estimating methods include: implementing Laurie-Goldberg correlated random variables, developing the MUPE method, introducing the PING factor, and this year, introducing PRESS for non-linear CERs to the cost analysis community. Her precise and concise descriptions for every aspect of cost analysis is captured in many publications (and the ACEIT Help text), reaching thousands of analysts seeking facts without any marketing spin.

The focus of Shu-Ping's work has been the development and refinement of data-driven statistical understanding of cost and schedule data with an emphasis on regression methodologies. Her papers have brought clarity to critically important, commonly misused/misunderstood concepts such as: R^2, Cost Improvement Curve (learning) analysis, and the use of dummy variables. Specific examples of innovation include: "Prediction Intervals for Nonlinear Equations" and "Generalized Degrees of Freedom" which were analytical breakthroughs.

Dr. Hu's research into the mathematical basis for analytical estimating methods routinely results in new, exciting, and quickly adopted terms and methods. Three examples are the "PING Factor" (alternative to the Goldberg factor to correct log-linear CER bias), "MUPE" (powerful and unique adaptation of traditional IRLS) and "Generalized Degrees of Freedom" (improves precision of prediction interval estimation). She developed ACEIT RI$K and introduced unique features like "log t" distribution, flexible point estimate interpretation and the Laurie-Goldberg method to correlate random variables.

Dr. Hu is the principal creator of CO$TAT's statistical analysis algorithms and reports. She designed CO$TAT to be rigorously accurate and completely focused on the statistical analysis methods used within our community to analyze cost/schedule data and their drivers. She has made critical contributions to the advancement of Joint Cost Schedule (JCL) mathematics for NASA, simulation free risk analysis for the Air Force, and improvements to lot-based learning curve algorithms.

Dr. Hu's remarkable career has been a passionate journey of personal and professional investment. Her relentless dedication to precision and mathematical purity have made her a champion of ICEAA's mission. She is more than a distinguished expert. Academically, her powerful papers and influence have helped shape our industry. In practice, she has delivered critical support to many important projects, and she has provided guidance to analysts throughout our community. Dr. Shu Ping has made a difference that will last. We now know Hu's on First!

-Alf Smith, nominator

2016 Association Awards Committee

Joe Hamaker
Chair

Erin Barkel

Richard Beavers

Peter Braxton

Peter Frederic

James Glenn

Jim Hayes

Greg Kiviat

Dave Morana

Andy Nicholls

Melissa Teicher

Ricardo Valerdi

Photo Credits: Jessica McGowan Photography
Madison Burger, Joe Wagner









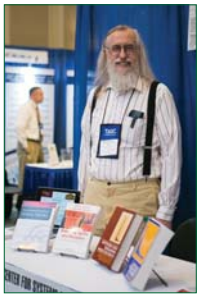


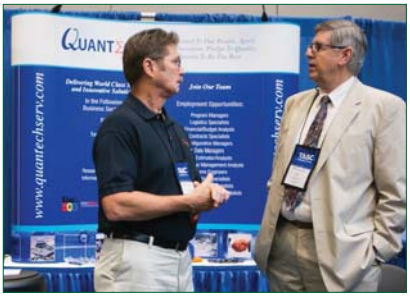






More photos online at **www.iceaaonline.com/atl16photos**





Thanks to all of our sponsors & exhibitors!

Gold Sponsor

PRICE®

Silver Sponsors

SEER® by GALORATH

Technomics
Better Decisions Faster

Exhibitors

ACEIT
Automated Cost Estimating Integrated Tools

ClearCost

cloudevm
The Focused Solution For Earned Value Professionals

HERREN

MITRE

ProjStream
Project Solutions

PT&C®

QUANTECH services, inc
{The Sum of Quality}

USC Viterbi
School of Engineering
Center for Systems and SoftwareEngineering

Contributors

MCR

TASC
An Engility Company

2017 Workshop Introduction

Rich Harwin & Stacy Dean

2017 Workshop Co-Chairs

ICEAA

Professional Development & Training Workshop

June 6-9, 2017

Portland Marriott
Downtown Waterfront
Portland, Oregon

Twirl your mustaches and put on your finest fedoras - it's time to get ready for Portland! We'll be in a hip town with an outstanding restaurant scene, killer music venues - and three and a half days of nerding out on cost estimating in a hotel basement!

With the successes from Atlanta fresh in our minds and the suggestions from attendees at the tops of our inboxes, we're already plotting a few more improvements and adjustments, brainstorming keynote speakers, and thinking up new offerings to keep things fresh and exciting.

Deadlines for abstract submission, notification, best paper entry and presentation drafts will be about the same as they were for 2016, which means the abstract submission deadline will be here before you know it.

We're not just calling for papers and trainers, but anyone interested in getting more involved in the Workshop planning process. There's room at the table for anyone who would like to volunteer their time to helping us make the 2017 ICEAA Workshop the best yet. If you'd like to be a part of it, even just a small part, email the ICEAA Business Office.

Professional Papers Deadlines:

December 1, 2016: Abstract summaries and bios due

January 16, 2017: Accepted authors notified

March 30, 2017: Papers due for Best Paper Award consideration; draft presentations due for track chair review and feedback

Training Modules Deadlines:

December 13, 2016: Requests to provide training due

January 16, 2017: Selected trainers notified

February 27, 2017: Training brief abstracts, presentations and trainer bios due

ICEAA 2016 International Training Symposium

October 17-20, 2016 • Bristol, UK

Join us in the United Kingdom for the 2016 International Training Symposium featuring three days of peer-authored professional paper presentations and PCEA®/CCEA® preparation training during this unique opportunity to meet with friends and colleagues from cost communities around the globe.

- Easy access from London airports and rail stations
- International networking opportunity government, industry and consulting professionals
- Esteemed government and industry keynote speakers
- Subject matter experts providing technical workshops on the latest best practices, lessons learned, and emerging analytical trends
- Meet with our sponsoring corporations for product demos, in-depth discussions and presentations.
- Training to assist in preparation for ICEAA's CCEA and PCEA Exams
- Online access to all technical material during and after the conference

Monday, October 17

7:00 pm - 9:00 pm:
Welcome Reception

Tuesday, October 18 - Thursday, October 20

8:30 am - 10:15 am:
General Session with Keynote Speakers

10:15 am - 12:00 pm:
Technical Papers and Training Modules

12:00 pm - 1:15 pm: Lunch

1:15 pm - 5:00 pm:
Technical Papers and Training Modules

Friday, October 21

7:00 am - 2:00 pm:
PCEA/CCEA Exam*

*Register to sit for the exam by **September 6**

Presented in partnership with:

ACostE
dace cost and value
nesma
scaf Society for Cost Analysis and Forecasting
apm
International Function Point Users Group
SSCAG

Featuring:

36 Technical Papers:

Presentations will cover a wide range of cost related topics and have been categorized into six tracks:

Government Perspectives – A global view of cost estimating issues experienced by the British, Canadian, and the United States Governments.

Management – Valuable topics for decision makers such as the value of R&D and using public data to win proposals.

Models & Methods – Featuring presentations describing ways to estimate the unique areas of our industry from grey water to 3-D printing.

Risk Analysis – Topics on forecasting and uncertainty to help cost estimators determine the possible future economic state of a project and to minimize future negative unforeseen effects.

Space Systems – Presentations focused on state-of-the-art estimating techniques related to space systems.

Software – Including topics to help cost estimators analyze, plan, and control their software projects.

9 Training Modules:

For those preparing for PCEA® or CCEA® exam, these courses have been structured to enhance your studies:

Cost Estimating Techniques - An introduction to the four essential cost estimating techniques that practitioners most often use to develop credible and realistic estimates: analogy, parametric, build-up, and extrapolation from actuals.

Data Collection & Normalization - A review of CEBoK Module 4 featuring a discussion the various types, sources, collection processes, and adjustment techniques of data.

Inflation/Learning Curve - A combination of CEBoK Modules 5 and 7 intended to strengthen understanding of inflation analyses as well as the key ideas, analytical constructs, and practical application.

Data Analysis - An outline of univariate, bivariate, and multivariate data sets, with a focus on statistical analysis of univariate data sets and graphical analysis of bivariate data sets via scatter plots.

Regression/Parametric Analysis - Intended to strengthen attendees' understanding of both regression and parametric analyses, the differences between and advantages of each.

Cost/Schedule Risk Analysis - This session will delve into advanced topics in risk, including a short and entertaining refresher on the cost risk analysis instructions in CEBoK Module 9.

Probability & Statistics - A review of statistical and probability concepts relevant to cost estimation and uncertainty, including measures of central tendency and dispersion, random variables, and hypothesis testing.

Software Cost Estimating - This session will walk attendees through examples of how to approach a software cost estimate using a number of estimating relationships and ideas, the modeling tools available, and various methods of software development.

Cost/Earned Value Management - A comparison of cost management and earned value management tools, techniques, implementation, and application.

Gold Sponsors

PRICE

QinetiQ

Silver Sponsors

SEER by GALORATH

4cost
KOSTENKLARHEIT SCHAFFT GEWINN
COST CLARITY CREATES PROFIT

MCR

PALISADE

Register and book your hotel room online at:

www.iceaaonline.com/bristol2016

AFIT AND ICEAA
Cooperation in Costing and Professional Development

By Lt Col Brandon Lucas

The Air Force Institute of Technology (AFIT) and the International Cost Estimating & Analysis Association (ICEAA) share a long history of cooperation in the professional development of cost estimators/ analysts within the US Defense establishment. That cooperation and professional connection continues today, and builds upon the many changes in both organizations.

AFIT's First Class, 1919

AFIT has been around a lot longer than ICEAA or its predecessors. The *Air School of Application* was founded at Wright-Patterson AFB in 1919. It became the *Institute of Technology* in 1945, and began offering undergraduate degrees in 1954. The Graduate School of Engineering and Management within AFIT has produced over 20,000 US military, civilian, and foreign student graduates. There are currently 24 master's and 14 doctoral degree programs at AFIT, but the program of interest for this article is within the Department of Systems Engineering and Management, which offers a master's degree in Cost Analysis (GCA).

For the past dozen years or so, AFIT and the ICEAA/SCEA organizations have had an ongoing professional association at the national level. It also includes frequent interaction between AFIT and the local ICEAA chapter in Dayton, Ohio, where AFIT is located. A few pictures from a recent meeting with several presentations by members of the graduating class show how our students and Air Force cost practitioners from program offices and staff agencies interact on an ongoing basis.

Left to right: Capt Chris Jimenez, Capt Thomas Lamb, Capt Scott Kozlak

Additionally, the local Dayton ICEAA/SCEA chapter presents the ICEAA Outstanding Thesis Award for the best thesis paper of each graduating class. The 2016 award recipient was Capt Brian Fitzpatrick for his thesis entitled *Determining the Optimal Work Breakdown Structure For Defense Acquisition Contracts*. This important research should help acquisition leaders make better informed decisions regarding the appropriate WBS level required for more cost-effective EVM reporting.

The AFIT Cost Analysis graduate program began in 1982 and has over 340 graduates to date. AFIT students are challenged mentally and physically (via sleep deprivation!) to complete degree requirements as part of a rigorous 18-month program with a quantitative focus. The curriculum covers a wide variety of topics, ranging from courses in operations research and statistics, to economics and of course cost estimating. Students often collaborate with Subject Matter Experts to work on research identified by a sponsor organization (e.g., the Air Force Cost Agency, Air Force Life Cycle Management Center, Secretary of Defense CAPE, etc.), which culminates with a thesis and public defense of the research. Additionally, student research often generates some combination of professional society presentations, conference papers, or journal articles that offer further opportunities to travel and dialogue with experts in the field.

GCA cohort sizes are small, with typically 6-10 students, though it reached its 2nd largest class size at

continued

16, in 2004 (Trivia Question: What year had the largest group? The 1993 group was the largest class to date with 17 students). Lt Col Brandon Lucas, who just happens to be a member of the aforementioned 2004 class, currently serves of the director of the cost program at AFIT. The program had 12 students graduate in March of 2016 and has 15 more on-track for a March 2017 commencement. The 2018 class is due to arrive in August and will have at least 13 students studying to join the cost estimation ranks.

For years, the GCA program has been part of a multifaceted effort by the Financial Management (FM) career field to develop military and civilian personnel into the next generation of cost estimators for the USAF and DoD. Additionally, past graduates have excelled as leaders both within FM and outside the career field. For example, several current senior leaders at Wright Patterson AFB are past GCA graduates. The HQ Air Force Material Command Comptroller, Brigadier General John Pletcher, and the new Wing Commander, Colonel Bradley McDonald, are both cost program alumni.

Left to right: Capt Danielle Mrla, Ms. Candice Honious, Ms. Diane Schultz (rear), Ms. Elizabeth Hodson, Ms. Huan Li

Through continued partnering, AFIT and ICEAA will continue to educate and develop cost estimators so that they can reach their maximum potential. Given the numerous challenges presented by a dynamic security environment and upcoming acquisition reforms, current and future cost estimation personnel will have plenty of opportunities to utilize the expertise and tools both organizations offer.

ICEAA Represented at the Government Contracting Pricing Summit

The Government Contract Pricing Summit (GCPSummit) was held in San Diego, California, on June 21 – 23. One highlight of the event was a panel discussion on "Encouraging Innovation in Contract Pricing." Joining the distinguished panel comprised of Frank Anderson, Jr (BGen USAF Ret), Charlie Williams (former Director of DCMA), Darryl Scott (Vice President, Contracts and Pricing, Boeing Company), and William Roets (Director, Contract Policy Division, NASA), was our own Paul Marston (ICEAA President and President of MCR Global LLC). Among other things, Paul spoke passionately about the need for more interaction, cooperation, and cross-career development between the cost analysis and pricing fields as essential to innovation. He highly encouraged GCP members to participate in ICEAA events and our own members to participate in future GCP events. In fact, Paul was thrilled to see a number of familiar ICEAA faces in the audience.

Central Florida Chapter Report

By Jim Roberts, ICEAA Central Florida Chapter President

Following chapter elections this past spring, the ICEAA Central Florida chapter welcomes our new slate of officers and board members:

We held our most recent Central Florida Chapter meeting on April 19 at the Perkins Restaurant in Melbourne, FL. At that meeting, the Central FL Chapter installed this new slate of officers, and **Jim Roberts** (outgoing President) gave a presentation, *Methods Used in Pricing NASA Assets for Use by Commercial Programs*, which was originally presented at the 2015 ICEAA National Workshop in San Diego (where it received a Best Paper Award). Another local chapter meeting, scheduled for June 21 in Orlando, was postponed – and will be held in early August.

In other news, **Joe Ruwe** from the Central Florida Chapter attended the 2016 ICEAA Professional Development & Training Workshop in Atlanta, and **Jim Roberts** represented the Chapter at the International Board of Directors meeting in Atlanta on June 6.

ICEAA Central Florida Chapter 2016-2018 Board of Directors:

President	**Chris Hobbs** chrhobbs@mindspring.com
Vice President	**Karen Rivaud** karen.l.rivaud@nasa.gov
Secretary	**Tina McMillian** tina.mcmillian@usmc.mil
Treasurer	**Gregory Seavers** greg.seavers@usmc.mil
Past President	**Jim Roberts** james.e.roberts@nasa.gov
At Large	**Torrance Lambing** torrance.j.lambing@nasa.gov
At Large	**Joseph Ruwe** jruwe@mcri.com

Detroit Chapter Report

By David Holm, ICEAA Detroit Chapter President

The Detroit Chapter in conjunction with the US Army Tank Automotive Command (TACOM) Life Cycle Management Command's Cost and Systems Analysis office sponsored a three-day Ground Vehicle Cost Working Group Summit at TACOM on May 3 to 5th, 2016 to promote cost analysis data, policy and methodology interchange between Government and Industry. The event built upon last year's overwhelming success with an even bigger lineup of key senior Government and Industry speakers. In addition to the senior leader presentations, this year's summit offered multiple training classes and provided visitors a tour of the Tank Automotive Research Development and Engineering Center facilities.

***Mike Ramsey**, Acting Director, Deputy Assistant Secretary of the Army (Cost and Economics)*

This year's Summit brought over 140 Department of Defense and industry cost estimators and finance personnel from ground vehicle original equipment manufacturers together to discuss current and proposed cost data collection policies well as get an update on new data environment and cost estimating tools being used across ground

continued

vehicle programs. Dr. **Richard Burke,** OSD Cost Assessment Program Evaluation (CAPE), Deputy Director for Cost Assessment, gave opening remarks on why cost estimates/management are important in today's budget environment, the importance of collecting good cost data and the acquisition reform agenda being discussed in Congress. Mr. **Scott Davis**, Program Executive Office Combat Support & Combat System Support, BG(P) **David Bassett,** Program Executive Office Ground Combat Systems, and Mr. **Steve Pawlow**, Senior Cost Analyst Program Executive Office Land Systems, provided Program Executive Office perspectives.

Industry finance managers from Oshkosh Defense, General Dynamics Land Systems and BAE presented their views and challenges with their respective program's cost reporting efforts. Dr. **Paul Rogers**, Tank Automotive Research Development Engineering Center Director, provided a Science & Technology perspective and Mr. **Mike Ramsey**, Acting Director, Deputy Assistant Secretary of the Army-Cost & Economics (DASA-CE) gave an update on the DASA-CE organization and Army

initiatives such as reinvigorating the Army Requirements Oversight Council process and the new Assistant Secretary of the Army Acquisition Logistics and Technology led Operational Sustainment Reviews. Feedback from both Industry and Government senior leaders in attendance was extremely positive saying that this was a very worthwhile event they would like seen done in other commodity sectors.

Jennifer Flanagan *and* ***Chris Sommers*** *check-in attendees*

David Holm*, ICEAA Detroit Chapter President*

ICEAA All-Member Virtual Meeting

September 23, 2016 12:00 noon Eastern

Join us online for our annual meeting where members can get an update on the state of the association and a forecast of initiatives for the coming years

Sign up and send us your questions and agenda topics by September 16 at:
www.iceaaonline.com/membership

Northwest Chapter Report

Recent Developments from ICEAA Northwest / Washington Chapter

NW Chapter Officer Activities

By Chad Larson

The ICEAA Northwest Chapter has been busy thus far in 2016. We have already hosted our March member's event at the Museum of Flight in Seattle, conducted one exam prep class, and outlined the schedule for our next exam prep class this fall in Everett Washington. We are also planning to expand our network through social media and have started a Facebook page and also plan to do more member outreach and networking events over this year. Throughout 2016 the northwest chapter will continue to focus on growing membership and education in our efforts to expand and serve our members. This fall will also bring a new election cycle to determine the chapter officers for 2017-2018..

Awesome Atlanta!

By Rod Olin

Last year I served as a Track Chair for the Management, EVM & Scheduling track at the Workshop in San Diego. It was such an enjoyable experience that I decided to do it again this year at the Atlanta Workshop. Once again, it was a great experience.

In a repeat of last year, **Bill Barfield** (US Department of Agriculture) was assigned as my partner. We also had the same track as last year. Encountering him at the workshop was like continuing an interrupted conversation. We worked very smoothly together, and I had another great time. Bill is kind of a fixture around ICEAA and the annual workshops. As always, he was also very supportive and easy to work with.

The speakers as always, were a veritable "Who's Who" of the analysis and estimating world. The papers for my track were sent to me, along with biographies of the speakers. As I started reading the biographies of the speakers, I was fascinated to see that they included Navy and Air Force Officers, US and Canadian Government employees, company presidents, and senior consultants. That was just in the 11 papers in my track.

This is one of the great strengths of ICEAA – the opportunity to interact with other experts in the field. People who may be trying to solve the same kinds of problems that we face, but using different approaches. It doesn't matter what level you are at – there is always something new to learn.

My advice is to get involved. Go ahead and say "Sure. Why not?" and have some fun. I plan to do it again next year in Portland!

Chapter Elections

By Stacy Dean

Over the past 1.5 years, the ICEAA NW officers have made great strides towards expanding and improving the chapter. However, with chapter elections right around the corner, it will soon be time to hand over the torch to a new team. Though bitter-sweet, the current officers are busily preparing to ensure a smooth transition and allow the new team to hit the ground running.

The Northwest chapter has 6 different positions to manage the chapter's various activities:

President: Oversee chapter operations and preside at all chapter and board of director meetings

Vice President: Acts on behalf of the president when needed and host all chapter meetings.

Secretary: Manages all chapter communication and member services

continued

ICEAA Northwest Chapter
2015-2016
Board of Directors:

President:	**Stacy Dean** stacy.m.dean@boeing.com
Vice-President:	**Rod Olin** rodney.p.olin@boeing.com
Secretary:	**Chad Larson** chad.m.larson@boeing.com
Treasurer:	**Jim Deignan** james.r.deignan@boeing.com
Education Chair:	**David Torgerson** david.k.torgerson@boeing.com
Fundraising Chair:	**Cheryl Wilson** cheryl.r.wilson@boeing.com

Treasurer: Maintains chapter funds and annual financial reports

Fundraising Director: Facilitates chapter fundraising activities

Education Director: Facilitates chapter educational and certification activities

Interested in getting involved? Why not run for a position? The chapter elections kick off this November and nominations are open to all ICEAA members. All that is required to nominate yourself is submission of your biography to the chapter Secretary (Chad Larson) by November 15th and notification of the office you are interested in running for.

For more information on any of the roles please feel free to contact the any NW Chapter officers.

Washington Capital Area Chapter Report

By Meghan Kennedy, ICEAA Washington Capital Area Chapter President

We're well into summer now and I can't believe how fast it's gone. The annual Professional Development and Training Workshop already seems like a distant memory. The Washington Capital Area chapter has remained busy with our monthly luncheon programs and a few new events, with more in the works too! Read below for more information on recent luncheons, as well as our recent successful happy hour. We've also revamped our website in the past few months. Check it out for the latest on chapter events - www.washingtoniceaa.com.

Inaugural DC Chapter Happy Hour a Success!

Over 30 people participated in the Washington Capital Area Chapter's first (at least in recent memory) networking happy hour at Highline RxR in Crystal City, VA. The event was a great opportunity to network with fellow ICEAA members while enjoying a beverage and appetizers. The next networking event is planned for September.

Monthly Presentations

The chapter continues to offer a popular monthly lunchtime speaker series. Some of our recent presentations include:

March 23, 2016: *Outlier Analysis.* Presented by **Marc Greenberg** of NASA Cost Analysis Division. Held at Tecolote Research, Inc., Arlington, VA.

April 29, 2016: *Electronics Board Cost Estimating - Ruggedization*. Presented by **Chris Brown** of PACER. Held at the Aerospace Corporation, Arlington, VA.

May 26, 2016: *Estimating the Cost of the Aegis Flight III Test Platform*. Presented by **Jeremy Goucher** of Herren Associates. Held at Herren Associates, Inc., Washington, DC.

July 27, 2016: *Training Cost Analysts, a Cohesive Pedagogical Framework for Success*. Presented by **Kammy Mann** of Herren Associates. Held at Kalman and Company, Arlington, VA.

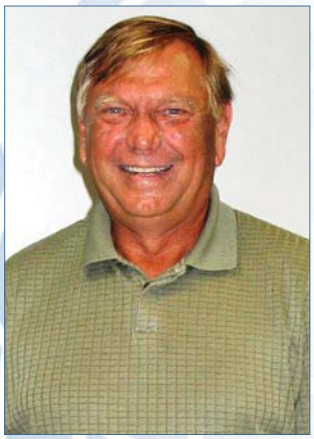
In Memoriam

Thomas F. Masters II

We regret to report the passing of Tom Masters, a founding member and officer of the International Society of Parametric Analysts (ISPA) from Rancho Palos Verdes, California. He passed away February 25, 2016.

Tom was born in Baltimore, MD in 1944, educated at the University of Maryland and Johns Hopkins University, and served in the US Navy aboard the destroyer USS Dewey in the Vietnam theater in the late 1960's. He then went to work for the National Security Agency (NSA) at Fort Meade, MD in 1977, where he developed parametric analysis methods in the Office of Programs Analysis. Tom participated in the charter conference of ISPA at its formation in April 1979, becoming a member of the original Board of Directors, serving as Education and Technical Director, as well as Vice-President of the Washington-Baltimore chapter. In 1983 he was elected President of ISPA. He was also a member of the Space Systems Cost Analysis Group (SSCAG), Society of Logistics Engineers (SOLE), and the Institute of Electrical and Electronic Engineers (IEEE). He held a lifetime membership in ISPA/ICEAA.

After leaving the NSA, Tom moved to the west coast and worked as a cost analyst at Geodynamics Corp. in Torrance, CA. Since 1990 he was an active member of the Port Royal Yacht Club in Redondo Beach, where he served as the founding Commodore.



James E. Otte

Another well-known and respected professional cost analyst recently passed away in Ohio. Jim Otte, a resident of Centreville, Ohio and Director of Training for PRICE Systems, passed away on March 23, 2016. Jim was born in Celina, Ohio, graduated from the University of Dayton, and served as a Defense Dept. analyst at the Defense Electronics Supply Center and Wright-Patterson AFB before joining PRICE Systems. He led the effort for training of PRICE customers across the world, and provided invaluable modeling and estimating support to many DoD systems. Jim was a long time member of the International Society of Parametric Analysts (ISPA), the Space Systems Cost Analysis Group (SSCAG), as well as SCEA/ICEAA.

"No one worked more tirelessly to solve a problem than he did. Anyone who asked for his help was the benefactor of his diligence, regardless of rank or location. Estimators from all corners of the USA, Asia, and Europe considered Jim their devoted resource for helping meet estimating challenges. Honorable, trusted, dedicated, resourceful, knowledgeable – these are all descriptive of Jim Otte, a man I was privileged to work beside and know for most of my professional career."

Bruce Fad, Vice President, PRICE Systems

"My lasting memory of Jim is of a very proud husband and father. He often bragged about his wife Carol, and sons Nick and Zach, and he reveled in all their accomplishments. Jim will be sorely missed by his family, many friends, and colleagues. I am sorry for his loss."

Tony Demarco, President, PRICE Systems

28th Annual International
Integrated Program Management Workshop

IPM 2016

The premier workshop on Earned Value Management

Learn from…

- Special Guest Speakers
- Professional Education Training Seminars
- Tools Tracks
- Topical Workshops
- Practice Symposia

Socialize and network at…

- Newcomers' Orientation
- Speakers-only Reception
- All-Attendee Reception

For program information…

Don Kaiser
kaiser@mycpm.org
(703)234-4116 - Fax: (703)435-4390
www.mycpm.org

Promote your organization…

Look for a sponsorship - exhibiting package in late summer 2016

For exhibiting information…

Rachel Schmidt
rachael.schmidt@mycpm.org
P: (703) 234-4147
F: (703) 435-4390
www.mycpm.org

The College of Performance Management is a PMI Registered Education Provider

OCTOBER 31 - NOVEMBER 2, 2016

BETHESDA NORTH MARRIOTT HOTEL & CONFERENCE CENTER
▸ BETHESDA MD ▸ WWW.IPMCONFERENCE.ORG

ICEAA International Business Office
8221 Old Courthouse Road, Suite 106
Vienna, VA 22182

703-938-5090
iceaa@iceaaonline.org
ww.iceaaonline.org

2017-2019 International Board of Directors

Nominations due November 15

- Develop leadership skills and network with driven individuals
- Impact the future of cost estimating and analysis
- Influence the direction of the association

We're looking for willing and qualified individuals to serve on people to serve on the 2017-2019 International Board of Directors.

All 19 positions are up for election for the upcoming term. Volunteers are encouraged to complete a nomination application online by **November 15, 2016**

For details and information, visit:

www.iceaaonline.com/leadership