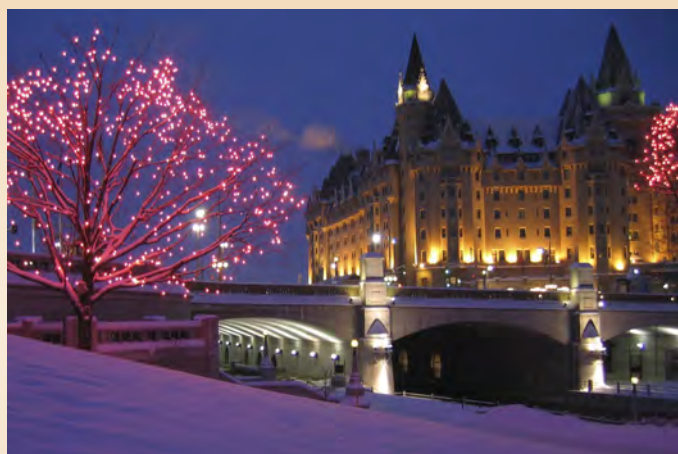


**8 Book Review:**  
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Development & Training  
Workshop Preview**

# ICEAAWorld

The magazine for the International Cost Estimating & Analysis Association



*February 2016: Ottawa, Canada*



*June 2016: Atlanta, Georgia*



*October 2016: Bristol, United Kingdom*



*November 2016: Washington, DC*

**2016: The Year of the Workshop**

# Probability Methods for Cost Uncertainty Analysis

*A Systems Engineering Perspective, Second Edition*

**Paul R. Garvey**

The MITRE Corporation

**Stephen A. Book**

**Raymond P. Covert**

Covarus LLC, Palm Beach Gardens, Florida, USA



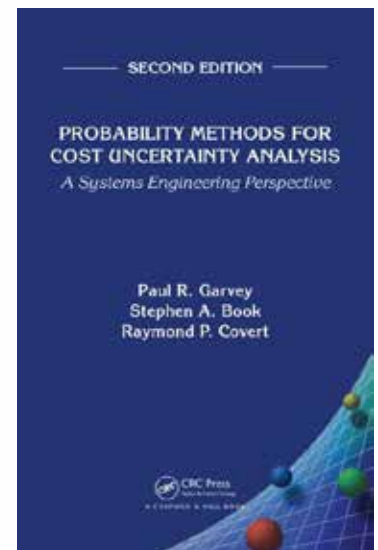
This book presents analytical methods for modeling and measuring uncertainty in the cost of engineering systems. This includes the treatment of correlation between the cost of system elements, how to present the analysis to decision-makers, and the use of bivariate probability distributions to capture joint interactions between a system's cost and schedule. Analytical techniques from probability theory are stressed, along with the Monte Carlo simulation method. Numerous examples and case discussions illustrate the practical application of theoretical concepts.

## KEY FEATURES

- Presents recently developed methods for cost uncertainty analysis, including the general error regression method (GERM) and enhanced scenario-based method (eSBM)
- Shows how to incorporate the effect of correlation on measures of cost risk
- Explains how to present and interpret cost as a probability distribution
- Provides recommended practices and lessons when performing cost uncertainty analyses
- Includes many examples that highlight the application of mathematical concepts to real-world systems engineering and cost risk analysis problems
- Contains a set of theoretical and applied exercises at the end of each chapter

## SELECTED CONTENTS

THEORY AND FOUNDATIONS: Uncertainty and the Role of Probability in Cost Analysis. Concepts of Probability Theory. Distributions and the Theory of Expectation. Special Distributions for Cost Uncertainty Analysis. Functions of Random Variables and Their Application to Cost Uncertainty Analysis. System Cost Uncertainty Analysis. Modeling Cost and Schedule Uncertainties: An Application of Joint Probability Theory. PRACTICAL CONSIDERATIONS AND APPLICATIONS: Building Statistical Cost Estimating Models. Mathematics of Cost Improvement Curves. Enhanced Scenario Based Method. Cost Uncertainty Analysis Practice Points. Collected Works of Dr. Stephen A. Book. Appendices. Index.



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The Magazine for the International Cost Estimating & Analysis Association

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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.

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# Letter from the Editor

*Joe Wagner, ICEAA World Editor*

Each year with the spring edition of *ICEAA World*, we always seem to be focused on the upcoming ICEAA Professional Development and Training Workshop. And why not? It is one of the major benefits the Association brings to the membership. The entire Association management and leadership team, beginning with International President **Paul Marston**, Executive Director **Megan Jones**, and the Workshop Chair **Mike Thompson**, spend an enormous amount of time and effort in the year-round planning to provide you with an incomparable professional development experience in June of each year. This year's event in the Atlanta suburb of Buckhead will be no exception. Inside this issue you will find not only the "whats", "hows" and "whens" for Workshop registration, paper submissions, presentations, exhibits, and awards, but we have also included information on the Buckhead and Atlanta area to enhance your Workshop experience. Let me say, for those who have not been there, that Buckhead is not your ordinary collection of suburban office buildings and parking lots that you often see annexed at the edge of a major city. Before becoming an appendage of Atlanta, Buckhead was an independent and very affluent city. It has history to see, shopping to experience, and dining to enjoy that is unique unto itself.

Despite being in the heart of Georgia in June, your professional development opportunities come with an international flavor this year, as we have a second

ICEAA event planned for the fall. In addition to Buckhead, we will be co-sponsoring a three day workshop in Bristol, UK in October. The overall structure will be the same as in June, with both paper and training tracks, and the opportunity to sit for the ICEAA certification exam. See the SCAF column by Dale Shermon for some more detail. If you also made it to the Canadian ICEAA workshop in Ottawa back in February, you have the opportunity to pull off a professional development trifecta this year.

Speaking of professional development, and linking back to an article in the fall 2015 issue of *ICEAA World* dealing with recertification, we are always in need of professional articles to publish here. If you gave a paper at a Workshop, or plan to give one this year, keep in mind that you are very welcome to submit a version of appropriate length for publication in our magazine. Not only Workshop papers are welcome, but any project or professional work you have undertaken, and are willing to share with the membership in a narrative form, is welcome. Any articles we publish not only help to educate the professional community, but will help with your own recertification by earning points towards the five year total of 30 you will need to recertify.

Also, my thanks once again to all of our functional area and regional/chapter contributors. It is your commitment and effort three times a year that builds this magazine, one article at a time, for all the membership to enjoy.



## Upcoming Events

### **SCAF Workshop -2016 Cost Estimating Challenge**

The BAWA Centre, Filton, Bristol  
April 19, 2016  
[www.scaf.org.uk](http://www.scaf.org.uk)

### **ICEAA 2016 Professional Development and Training Workshop**

Grand Hyatt Buckhead, Atlanta  
June 7 – 10, 2016  
[www.iceaaonline.com/atlanta2016](http://www.iceaaonline.com/atlanta2016)

### **ICEAA 2016 International Training Symposium**

Bristol (UK) Marriott Hotel City Centre  
October 17-20, 2016  
[www.iceaaonline.com/bristol2016](http://www.iceaaonline.com/bristol2016)

### **2016 Integrated Program Management Workshop**

Bethesda North Marriott Hotel & Conference Center, Bethesda, MD  
October 31 - November 3, 2016

### **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

# President's Address

*Paul Marston, ICEAA International President*



As the following pages of this issue of *ICEAA World* demonstrate, your association has been hard at work preparing for our 2016 Professional Development & Training Workshop. Thanks to everyone who has given their time to help get us all ready for ICEAA's main event: **Mike Thompson** and the entire Workshop Planning committee, best paper judge and track chair volunteers, training instructors and paper presenters, and of course, the gang in the International Business Office: **Sharon Burger, Joe Wagner, and Megan Jones** for putting all the pieces together.

Believe it or not, ICEAA has been hard at work on non-Workshop efforts too. One of the first committees formed when our new board of directors took office over the summer was the International Awards Review Committee. Chaired by **Dave Stem**, the committee was tasked with reviewing the current ICEAA Annual Awards program with an eye for streamlining nomination criteria, removing redundancies, and standardizing the naming convention. The group was then asked to make recommendations to add new awards and otherwise adapt the international awards program so that it could be an effective template for awards programs at the chapter level. The results of all of the International Awards Review Committee's work will be in full effect for the 2016 awards process, and is described in detail in the Workshop section of this issue.

Another new committee that has been making real momentum is the Chapter Development Committee, chaired by **Bill Barfield**. The committee held its first Chapter Presidents' Towncall back in January, and the theme of what is on all of our Chapter Presidents' minds quickly became apparent: communication. Our volunteer leaders are universally looking for ways to share ideas on how to reach out to members and demonstrate just how important ICEAA membership is to those who aren't already members. With the help of the International Office, the Chapter Development Committee is setting new

practices and working to open those lines of communication to allow all of our leaders to benefit from each other's experience.

That spirit of communication is alive and well as we prepare for the 2016 International Training Symposium, October 17-20, in Bristol, UK. We are working closely with groups from around the world to put on this three-day event, including 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)**, **Nesma**, an independent international organization focused on software metrics and software measurement, and the **Space Systems Cost Analysis Group (SSCAG)**. The team organizing the International Training Symposium, led by **Jason Dechoretz**, is hard at work collecting abstracts and arranging the logistics for the event.

ICEAA's outreach efforts have also extended beyond our network of volunteer leadership and our partner organizations to our Senior Government Advisory Panel, a group of top officials in the costing divisions from the US Navy, Air Force, Army, Federal Aviation Administration and the UK Ministry of Defence, which met for the second time shortly before the spring ICEAA board meeting. We continue to be encouraged by the panel members' level of enthusiasm about ICEAA's efforts to better support our government members and government constituent organizations.

One of the suggestions to come out of those meetings will be taking shape during the Workshop in Atlanta. We're in the process of brainstorming the details for the first meeting of the Cost Community Round Table, a forum where leaders representing government, industry, and academic cost groups can gather to discuss and implement cooperative initiatives that benefit the entire cost community. In the coming weeks, keep an eye out for more information and an open invitation to participate.







# Business Office Update

*Megan Jones, ICEAA Executive Director*

**H**appy Workshop Season, ICEAA Members! It's that time of year again when the International Business Office is buzzing with energy getting ready for the Professional Development & Training Workshop. Registrants are registering, volunteers are volunteering, and schedules are scheduling. With the help of **Joe Wagner** and **Joe Hamaker**, **Mike Thompson** and I put together a special 2016 Workshop section of this issue that's sure to answer all of your questions and get everyone psyched for Atlanta!

In non-Workshop news, I was honored with an invitation to serve on a panel at the National Contract Management Association (NCMA)'s Government Contract Management Symposium back in December. Executive Directors and Presidents from other associations meeting the needs of government employees and the companies who serve them, including the Association for Proposal Management Professionals (APMP) and National Contract Management Association (NCMA), were tasked with discussing *How to Utilize Associations for Mission Success*. While my fellow panelists and I had prepared our responses separately, we all came around to the same conclusion that the Chapter Development Committee reached: communication. Communicating the value of association membership to our current and potential members, the importance spending time and money investing in professional development, and the benefit of meeting with and creating a community among your colleagues. It was an exciting experience for me and it got ICEAA on the minds of about 800 attendees that may not all have known it; a few people approached me afterward and asked for my card and said they had

been doing or were planning to get into cost estimating and wanted to find out more.

I also had the pleasure of leaving our nation's capital to spend a few days in Canada's at the 2<sup>nd</sup> Annual ICEAA Canada Workshop in Ottawa this February. This year's event surpassed the already high bar set last year: even more attendees (in a thankfully bigger venue), higher profile speakers, and delighted attendees. Another job well done by **Erin Barkel**, **Peter Weltman**, **Alan Mayer** and the whole ICEAA Canada team.



*Mission Accomplished: a token of appreciation from the ICEAA Canada Chapter*

## ICEAA would like to add you to our professional network on LinkedIn!

If you haven't done so already, we encourage all of you to join the ICEAA discussion on LinkedIn. With the enthusiastic help of the chair of **Christina Snyder**, our new Marketing & Communications committee, we're working to spark more dialogue, highlight more achievements, and serve as a means to keep the cost community in touch across the globe.

Search for "ICEAA" on LinkedIn to get in on the conversation.



*Association Executives Panel*

*That's me!*

# Certification Corner

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



## Professional Cost Estimator/Analyst (PCEA®) – Recognizing Foundational Competency

Since its inception in 2009 the PCEA designation has been intended to recognize the competencies of “apprentice” practitioners (i.e., those having between 2- and 5-years of experience) and encourage their continued professional development toward our primary professional designation, the Certified Cost Estimator/Analyst (CCEA)®. (In fact, only recently have we started to refer to Part I of the CCEA examination as the PCEA exam.) Current policy precludes applicants with more than five years of experience from receiving the PCEA designation; they receive a letter congratulating them on passing Part I of the CCEA examination, but are not listed as having a PCEA.

ICEAA is committed to defining, refining and upholding standards against which practitioner competencies can be measured and acknowledged by both industry and government. Consequently the Board of Directors is investigating options to recognize better those individuals with more than five years of experience who pass Part I of the CCEA examination. However before any action takes place, we must investigate fully any

unintended consequences that might occur, including any effects on the 700+ practitioners who have already attained the CCEA designation, as well as impacts on certification standards sought by international practitioners.

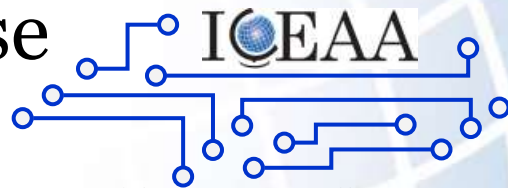
## Software Cost Estimation Training and Certification Program

ICEAA, Nesma (an independent international organization focused on software metrics and software measurement), and the International Function Point Users Group (IFPUG), are undertaking the development of a training and certification program for Software Cost Estimation. A working group chaired by Professor **Ricardo Valerdi** of the University of Arizona and comprised of experts from industry, government, and academia has been assembled to identify the “boundaries” or testable topics that would be included in a world-class training and certification program designed to benefit commercial and governmental organizations worldwide. The steering committee of **Brian Glauser** (ICEAA), **Eric van der Vliet** (Nesma), and **Mauricio Aguiar** (IFPUG) provides the strategic agenda and oversees progress, with support from **Peter Andrejev** (ICEAA Director of Certification) and **Peter Braxton** (ICEAA Vice President of Professional Development).



## Technology Showcase

Webinar Series



Archives of ICEAA’s Technology Showcase Webinars are online!

Watch previous webinars now at

[www.iceaaonline.com/techshowcase](http://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](mailto:megan@iceaaonline.org)

# Certification Congratulations

ICEAA Certification had an exceptional year in 2015! With the help of those acknowledged below and others listed in previous issues of ICEAA World, we were able to administer a total of 175 certification exams to those interested in pursuing this important professional distinction. This would not have been possible without our valued CCEA's who volunteered their time to proctor the Certification Examination. If you are CCEA® certified and would like to proctor an exam in your area in exchange for points toward recertification, please contact the ICEAA International Business office.

If you are not yet CCEA certified, what are you waiting for? We would like to see your name listed below and celebrated

on our website as a cost professional who has made the investment to stand out in the cost field by achieving certification! Check out the ICEAA website for a list of upcoming exam dates and locations. There are currently 10 to choose from and more will be added throughout the year. Don't see a location near you? Please call the ICEAA International Business office and we will go to work to get one scheduled!

The following individuals are those who volunteered their time to proctor the certification exam between September and December 2015: **Shannon Adams, Walter Bednarski, Dwayne Clarke, Vrenti Ghergari, Scott Hardy, Matt Langevin, Leigh Mariotti, Nicole Sullivan and David Torgerson.**

## CCEA® Achievers:

**Aziz Abidi**, Citizenship and Immigration Canada

**Dana Beaumont**,  
Department of National Defence Canada

**Christina Galletta**, KSJ

**Dustin Hilton**,  
Galorath Federal

**Chen Hu**, Department of National Defence Canada

**Kamal Jayarathna**,  
Department of National Defence Canada

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Department of National Defence Canada

**Adam Landrey**,  
Booz Allen Hamilton

**François Levesque**,  
Citizenship and Immigration Canada

**Ashley Little**,  
Cask, LLC

**Brooks Minnick**,  
US Navy

**Jérôme Montpetit**,  
Department of National Defence Canada



The following are those who have recertified between September and December 2015

Guenever Aldrich	Richard Hartley	Michael Mahoney	Steve Sheamer
Richard Aldrich	William Haseltine	Richard Osseck	Christopher Svehlak
William S. Barfield	Mark Hodgins	Kevin Rathbun	Bryn Turner
Richard Beavers	James Linick	Kevin Schutt	Jeffrey Wiviott
Mostain Dara Billah			

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Booz Allen Hamilton

**Nancy Anderson,**  
Department of National  
Defence Canada

**Richard Attwell,**  
Department of National  
Defence Canada

**Leah Bross,**  
Booz Allen Hamilton

**Kelsey French,**  
Cask, LLC

**Jason Heyes,**  
Department of National  
Defence Canada

**Justin Howick,**  
The Boeing Company

**Ryan Johnson,**  
The Boeing Company

**Benjamin Truskin,** Wyle

**Wenting (Stephanie)  
Zhou,**  
The Boeing Company

### **PCEA® Achievers:**

**Anthony Linn,**  
Booz Allen Hamilton

**Tzveta Ouzounova,** Treasury  
Board of Canada Secretariat

**Derrick Pockiak,** Canadian  
Federal Public Service

## **RETAINING YOUR CCEA® CERTIFICATION IS SIMPLE**

CCEA® holders are required to accumulate at least 30 recertification points  
across three areas of involvement during a five- year period

### **PROFESSIONAL WORK EXPERIENCE**

**EARN UP TO 15  
POINTS FOR:**  
EMPLOYMENT IN A  
COST-RELATED  
PROFESSION  
SERVING IN A  
COST ANALYSIS ROLE  
CREATING  
COST ANALYSIS  
PRODUCTS

### **PARTICIPATION AND CONTRIBUTION**

**EARN UP TO 15  
POINTS FOR:**  
MEMBERSHIP IN COST  
ORGANIZATIONS  
SERVING IN A  
LEADERSHIP POSITION  
RECEIVING AN  
AWARD, CITATION,  
COMMENDATION

### **LEARNING AND SHARING**

**EARN UP TO 15  
POINTS FOR:**  
PARTICIPATING IN  
COST-RELATED  
COURSES, SEMINARS,  
WORKSHOPS, ETC.  
TEACHING,  
PUBLISHING,  
PRESENTING ON  
COST TOPICS

visit [www.iceaaonline.com/certification-matters](http://www.iceaaonline.com/certification-matters) for more information

# Money Changes Hands... ...A Good Book Changes Minds

*Book review by Col David Peeler*

Focusing on cost estimating and estimating relationships, this issue's book selection is one with a split between qualitative information and quantitative CER development, *i.e. equations!* While this book doesn't have blanket applicability to the daily jobs of all cost estimators/analysts, it does have interesting insights into material mixes and manufacturing processes, which should satisfy that innate intellectual inquisitiveness of most of us "quants."

## **MILITARY AIRFRAME COSTS: THE EFFECTS OF ADVANCED MATERIALS AND MANUFACTURING PROCESSES**

**OBAID YOUNOSSI, ET.AL.**

RAND: Santa Monica, CA; 2001.

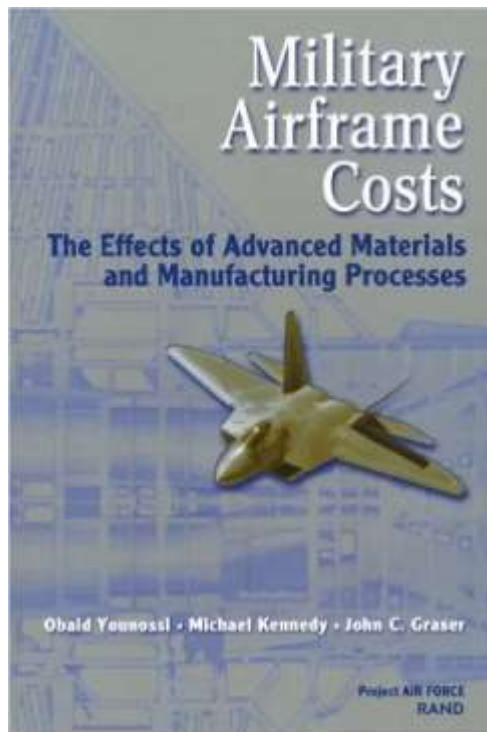
## Book Review

Split almost evenly between the qualitative and quantitative aspects of the subject material, Military Airframe Costs reviews the material properties important in airframe applications and then undertakes the explanation and development of associated cost estimating relationships (CERs). The book is organized in six chapters and several appendices. The arrangement is conducive to both learning and immediate use. For the novice, materials and processes are described and explained in the early chapters; for the practitioner, the second half of the book digs into the data and methodology for CER creation. A reader can easily focus in, based on experience and expertise.

Chapter one provides a brief introduction, including the background and purpose for the study, as well as its relationship to a couple of proceeding studies tangentially related to airframe costs.

In chapter two, the authors provide a contextual background regarding the material characteristics of composites. Space is devoted to defining the material properties and discussing the advantages of composite material. Also mentioned is the design and tooling requirements associated with composites. The authors also acknowledge life cycle cost impacts, pointing out that better does not necessarily mean cheaper; and that the nature of dual design can drive additional costs. The chapter winds-down with a short section on nondestructive inspection methods.

The manufacturing techniques associated with composites composes chapter three. After expounding upon composite manufacturing, the authors then turn to a brief analysis of metals commonly used in airframe production. Hand layup and automated processes are explained in relation to composites. Conventional metal fabrication and high-speed/-performance machining are clarified, as well as some insight into other manufacturing



methods.

Following materials and methods, chapter four shifts to airframe cost information. Discussion of a previous airframe cost study and the data for this one are presented. The layout is along the usual nonrecurring and recurring categories. Comparisons are made to earlier study results, learning curves, material costs and a fly to buy ratio.

Application of the survey results to CERs is the subject of chapter five. This chapter presents the statistical analysis of recurring costs, as they relate to recent fighter airframes. The authors also elucidate some “stylized facts” or a description of

some of the data. The statistical results, with case specific context, conclude this chapter.

The CER results are applied in chapter six. The application is accompanied by a comparison to the aforementioned previous airframe study. Additionally, situational analysis is provided in the form of optimistic and pessimistic cost projections, noting that the former is somewhat reliant on the return to increased levels of fighter production, while the latter is implicit in continued low procurement rates. The chapter ends with some speculation regarding stealth requirements; and recognition that, based on studies, Lean and acquisition reform gains will be negligible.

The five appendices provide some good reference material. They offer the reader definitions, WBSs, diagrams, CERs, and an outline of the previously mentioned, related RAND studies.

The book is a well-organized text for both those estimators interested in learning more about composite use in airframe design and those practitioners working in composite material environments. The reader can pick and choose the chapters with no loss of context, based on the knowledge they bring to the subject of composite airframe material design. Further, the text is available free of charge at the RAND website.



*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 test, financial, and program management. He is a member of both the American Society of Military Comptrollers and the International Cost Estimating and Analysis Association.*

## ICEAA 2016 International Training Symposium

**October 17-20, 2016 • Bristol, UK**

*Presented in partnership with:*



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Submit your abstract by April 27 for consideration. Details and upload form online at:

**[www.iceaaonline.com/bristol2016](http://www.iceaaonline.com/bristol2016)**





# Ask an Analyst

*Edited by*

*Joseph W. Hamaker PhD, CPP®, CCEA®*

**Andy Prince** of the NASA Marshall Space Flight Center Engineering Cost Office submitted the following question:

**Q:**

We are developing cost-to-cost relationships for estimating system level costs like Project Management and Systems Engineering based on the sum of the subsystem costs and we are considering multi-variable relationships using indicator variables (yes/no variables) multiplied times the sum of the subsystem cost. Here is an example result for a Systems Engineering CER

Systems Engineering Cost (\$Millions) =  $-753.5 - 19060^*$

**ClassA** +  $2609^* \text{Industry}$  +  $0.1202 * (\sum \text{Subsystem Cost})$

$^* \text{Earth} + 0.09375 * (\sum \text{Subsystem Cost}) * \text{ClassA}$

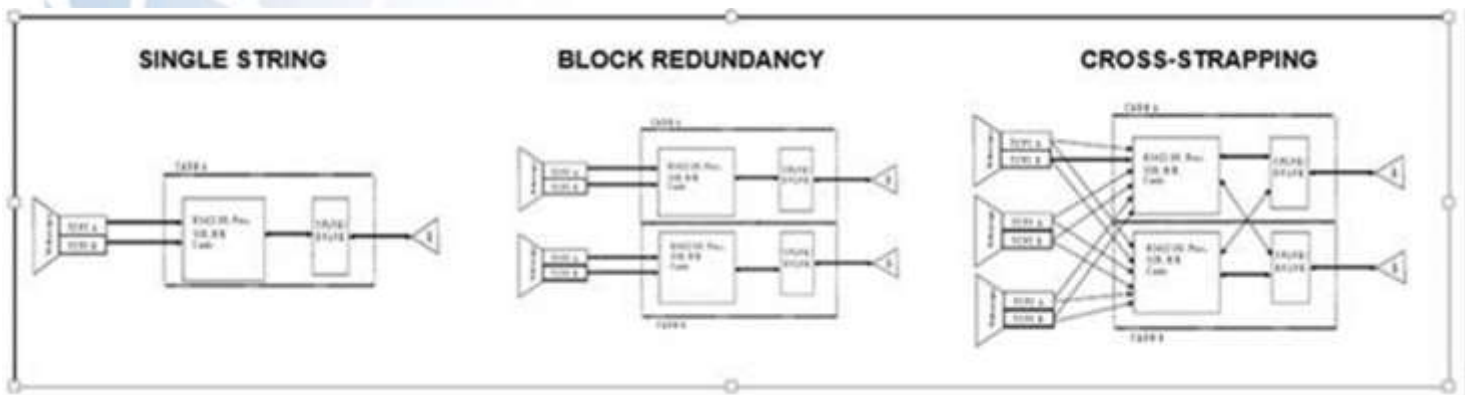
- **ClassA** is an indicator variable indicating Class A mission (Yes = 1, No = 0) (vs. Class B or lower class missions)
- **Industry** is an indicator variable indicating that the Lead Organization is Industry (vs. government or academia)
- **Earth** is an indicator variable indicating that the mission destination is Earth/Venus (vs. Mercury or the outer planets)
- **$\sum \text{Subsystem Cost}$**  is the sum of the subsystem cost

We are getting some good statistics with this approach. So my question is this: is this a valid approach or are we just fooling the least squares regression analysis?

Answers provided by Dr. **Christian Smart** of the Missile Defense Agency, **Don MacKenzie** of MacKenzie Consulting Inc., **Jan Sterbutzel** of Burgess Consulting, and myself.

First, Mission Class as a variable can be a little misleading sometimes. Lots of missions want to claim that they are something less than the most expensive class but the proof is "under the hood". So instead of class one might look to

see the reliability requirements of the mission and the variable could be an indicator variable (also called a dummy variable) on whether significant block redundancy or cross strapping was used versus just single string).



Another under the hood indicator of mission class is EEE parts certification. There are two levels of certification for electrical, electronic, and electromechanical (EEE) parts for space and military programs: Class B is for parts used in tactical military systems and low criticality space systems. The certification must be achieved within one year of qualification. Class S is for strategic military systems and high-criticality space systems. So that distinction could be an indicator variable. Or alternately, using Mission Class itself as an indicator variable is acceptable if the estimator looks under the hood first to make sure the characteristics of the mission are consistent with what is being claimed.

Typically with Ordinary Least Squares (OLS) calculation we are looking at a limited range. Is the range of data relatively small? If the data spans a wide range of costs, we really have to consider multiplicative CERs. In the CER above, does it make sense for there to be a \$19 million savings for a Class A mission, regardless of the scope of the project? If your data set ranges from \$800 million to \$1 billion, for example, that might make sense. But if the range is larger we should look at that savings as a percentage or in a power equation.

With indicator variables one still has to be careful to reason through the results. A cost estimating relationship with more than several drivers and indicator variables might get great statistics, but otherwise be a coincidence of overfitting and multicollinearity. You should break the dataset into the strata that your indicator variables define, and think about whether the results make sense in that context.

In this case, at the intersections of the categories, we have:

- 1. Class A mission, with industry as lead, with a target of Earth**
- 2. Class A mission, with industry as lead, with target of Venus**
- 3. Class A mission, government lead, target Earth**
- 4. Class A mission, government lead, target Venus**
- 5. Not class A mission, industry lead, target Earth**
- 6. Not class A mission, industry lead, target Venus**

Do the slopes still make sense? Should having an industry lead always be expected to add \$2609 to


system engineering? Those are the kinds of questions to ask.

Also, the CER has Class A missions twice as an input variable. This seems dubious. This directly injects multicollinearity, which could lead to unstable solutions. We should take out a few data points, or change some of the data (particularly the smallest and largest data points), and re-run the regression to see if the coefficients change dramatically. We should also calculate the Variance Inflation Factors, which can tell us if we have a high degree of multicollinearity.

The use of the same input variable twice also leads us to think that a large number of different combinations have been attempted, and this one is the one that happens to have the best fit. Our concern would be that this could be a fluke. If we try all the different combinations possible we are bound to get one with a great fit just by chance, so this could be a form of overfitting.

We should also do 5-fold cross validation. Take out 20% of the data set and fit the model on the remaining 80%. Then assess the fit on the 20%. Repeat this either deterministically or using Monte Carlo to select the hold-out data points. That will help assess the stability.

Some statisticians argue that for every equation form considered, a degree of freedom is lost. Some even argue that you should pre-determine the independent variables and the equation form ahead of time and not consider different options by seeing what best fits the data. That seems extreme, but it makes the point that there is a fine line between fitting a model to data and over-fitting it. I think there is a balance to be struck between under-fitting and over-fitting the available data. To address this issue, many split the data into training, testing, and validation sets.

OLS is inappropriate for most cost estimating relationships because the errors are almost certainly proportional to the estimate. For space hardware, the cost percent errors are distributed much like lognormal -- as well as many independent variables such as weight and power. This all leads to log-transformed OLS, Minimum Unbiased Percentage Error (MUPE), Zero Percentage Bias, Minimum Percentage Error (ZMPE) and as preferred best fit methods. Even when the Independent Variables are not lognormally distributed, such as in Non-Recurring cost vs. % new design and % unique, these methods work well. 



# Training Corner

**Kevin Cincotta,**  
**Chapter & Organization Training Coordinator**

## Training Goes Global in Ottawa

One of the great joys in any professional's life is seeing a smaller-scale activity in which they are involved picking up momentum. First going regional, then going national, and finally going global.

As Chapter, Organizational, and International Training Coordinator, it's been a pleasure to watch cost estimating and analysis training steadily increase its footprint. A great example of this occurred at the recent ICEAA Canada Workshop, which occurred February 22-23, in Ottawa, Ontario. Cost Estimating Body of Knowledge (CEBoK)-related training topics included Cost Estimating Basics, Software Cost Estimating, and Earned Value Management. The event provided significant non-CEBoK training as well, including a walk-through of the GAO Cost Estimating and Assessment Guide. Featured speakers included ICEAA Best Paper Award Winner **Andy Prince** of NASA, **Bill Matthews** of the Office of the Comptroller General of Canada, and journalist **Murray Brewster**.

The event featured impressive talks from two prominent US-based CEOs: PRICE Systems' **Anthony DeMarco** and Technomics' **Rick Collins**. While neither talk was technically part of a training track, both had significant training implications. Anthony spoke about the convergence and co-evolution of cost estimating and predictive analytics, including tools and techniques that apply to both disciplines. Rick highlighted several characteristics of high-performing cost analysis organizations, focusing on characteristics of the high-performing people who make up such an organization.

Another major theme of the event was standard tools, techniques, and processes that can be developed or leveraged across organizations. Prominent tools, techniques and processes included the aforementioned GAO Guide, PRICE Systems' predictive analytics suite of tools, and ICF International's Business Case Analysis (BCA) Wizard approach.

Of course, training continues to expand its footprint in other ways as well. The United Kingdom Ministry of Defence has recently

acquired cost estimating training, and specialized curricula in areas such as Parametrics and Software Cost Estimating are well underway. Given the themes of Anthony's talk, could a Predictive Analytics curriculum be far behind?

Does your organization have an organic training capability that you'd like to highlight? Perhaps you are interested in standing up your own training or certification preparation program. Perhaps there is another organization, chapter, region, nation, planet, or solar system that you feel could benefit from cost analysis training. Perhaps you'd like to comment on, or correct, something in this article. Or perhaps you want to ask me the proverbial question: *What's Causin' All This??* Feel free to send your cards, letters, texts, and carrier pigeon-based notes to [kevin.cincotta@icfi.com](mailto:kevin.cincotta@icfi.com), and they just might appear in the next Training Corner!



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# 2016 Professional Development & Training Workshop

June 7-10, 2016 Atlanta, Georgia



## Sponsor the year's premiere cost estimating and cost analysis workshop

Sponsoring ICEAA's 2016 Professional Development & Training Workshop provides a unique opportunity to position your company as an active player in advancing the profession of cost estimating and analysis. The ICEAA 2016 Workshop exhibit hall will be open for over 30 hours, with 8 hours on the Workshop schedule dedicated for attendees to visit our exhibitors. The limited number of available booths allows for a focused, consultative environment in which you can meet with current and future clients. Tuesday and Wednesday's receptions as well as food buffets and beverage breaks will be served in the exhibit hall among the booths, providing ample time to develop leads. The exhibit hall is centrally located to the breakout session rooms and mere feet from the general session ballroom.

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Exhibitors:



Details and information at [www.iceaaonline.com/atlanta2016](http://www.iceaaonline.com/atlanta2016)



# 2016 Professional Development & Training Workshop

June 7-10, 2016 Atlanta, Georgia

## Workshop Overview

By Mike Thompson & Megan Jones

Can you feel it? The days are getting longer, the sun is shining brighter, and the 2016 ICEAA Professional Development & Training Workshop is right around the corner. June 7-10 may be steaming in HOTlanta, but with the schedule as jam packed with so many invaluable presentations, you won't need to worry about beating the heat!

### Continual Improvement

The alterations we made to the Workshop schedule for 2015 were a resounding success, so we'll be repeating most of them for 2016. Papers will be scheduled all day Tuesday and Wednesday, with the final papers of the Workshop concluding on Thursday afternoon. Meanwhile, training will begin on Tuesday afternoon, run all day Wednesday and Thursday, and then Friday will consist of CEBOK-based training sessions all morning, with opportunities for attendees to review specific topics, break out into study groups, and leave the workshop with a thorough understanding of what it takes to earn their CCEA.

What will be new for 2016 is an extension of the exhibit hall hours. When the old schedule encouraged attendees to stagger their arrival on Tuesday, it made perfect sense to unveil the

exhibit hall during Tuesday night's opening reception. Since attendees will be at the Hyatt bright and early on Tuesday morning this year, our sponsors and exhibitors will be there to greet you with coffee and breakfast first thing and will be around and available to talk about the latest innovations and opportunities in the cost estimating world through Thursday afternoon.

The response to our call for papers blew away last year's already high water mark in quantity, but more awesomely, in quality. Nathan Honsowetz and Christina Snyder, our program co-chairs, did an outstanding job of identifying the 78 abstracts that will result in the finest papers program we've seen yet. There's no better complaint for us to hear than when attendees say there are more presentations they want to see than there is time to see them, so be sure to check out the abstract summaries online ahead of time to best navigate the schedule.

### 78 Papers in Eight Tracks:

Acquisition	Parametrics
Business Case Analysis	Risk & Uncertainty
Methods & Models	Software & IT
Management, EVM & Scheduling	Software Sizing

### 40 Training Sessions in Four Tracks:

Cost Estimating Basic  
Cost Estimating Advanced  
Parametrics  
Integration

# 2016 Professional Development & Training Workshop

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Once again, we allowed the abstracts submitted to determine the tracks in which the presentations will be organized. The hottest topics for 2016 quickly rose to the top, giving us eight tracks that are truly reflective of the current trends in the costing world.

## Best of the Best

Of all the changes we made for 2015, none were as well received as the decision to feature the year's best paper as a general session for all attendees to enjoy. The Best Paper Awards will be presented as part of the opening general session on Tuesday morning, and then the Best Paper Overall will be presented as a general session on Thursday before lunch.

Competition is sure to be stiff with abstracts from several previous Best Paper Overall winners having been accepted: 2015 winner Andy Prince, 2014 winner Dr. Christian Smart, 2013 winner Dr. Shu-Ping Hu, and 2012 co-winner Kammy Mann.

## Keynotes of Distinction

We have invited a panel of top representatives from the cost divisions of all the major Department of Defense branches to join us Tuesday morning after the Best Paper Awards for a round table discussion on the direction, trends, and challenges of cost estimating and analysis within government agencies in 2016 and beyond.

Wednesday morning will start with the presentation of the ICEAA Association Awards, which have been newly refreshed for 2016. Wednesday morning's keynote speaker, Col. Darby McNulty, has served as the Project Manager for the Integrated Personnel and Pay System-Army (IPPS-A) since May 2014. He is responsible for the Army's integration and deployment of the largest



Col. Darby McNulty

implementation of PeopleSoft ever, which will join together Human Resources and Military Pay into an Enterprise Resource Planning (ERP) system. The Army will employ a hybrid solution using ERP software and Agile development to deliver integrated personnel and pay capabilities.

During Thursday Morning's general session, Dr. Dan Nussbam and Greg Mislick will provide an update on the all-distance learning Master's Degree and/or Certificate Program in Cost Estimating and Analysis (MCEA) offered at the Naval Postgraduate School (NPS). Entering its sixth year, the MCEA program has proven to be a success for both the students who take the program and the DoD Services and other US Government Executive Agencies in which the students work. Expert cost estimates are key underpinnings for critical government processes dependent on credible and reasonable cost estimates, from budgeting to cost-benefit and financial analyses.

*continued*





# 2016 Professional Development & Training Workshop

June 7-10, 2016 Atlanta, Georgia

## Recognizing Outstanding Contributions

Shortly after the new International Board of Directors was inaugurated in July, ICEAA President Paul Marston established a committee to scrutinize the existing slate of ICEAA Awards for any areas that could use improvement. The committee, chaired by Dave Stem, worked busily over the holidays to prepare their recommendations which have since been approved by the board for their debut at the 2016 Workshop.

Do you know of an outstanding ICEAA member who has made a difference in the profession? An individual or team whose work is leaping beyond the forefront? An emerging superstar with a blindingly bright future, or a pillar of the cost community whose years of dedication have strengthened everyone around him or her? These people are ideal candidates for the ICEAA Association Awards.

Review the full award descriptions and nominate your candidate online by Friday April 15:

The awards committee, chaired by Joe Hamaker, will review all nominations against the award criteria and the winners will be announced at the **Workshop during Thursday morning's general session.**

## Are We Having Fun Yet?

What lifts the Workshop experience head and shoulders above tuning into a webinar or downloading a PowerPoint is the human **interaction**. As last year's Best Paper Winner Andy Prince said in his feedback survey, "if you want to be the best, you have to hang out with the best. If you want to be a leader in the field, you have to hang out with the other leaders in the field. This is **your one big opportunity to do that.**" The Workshop schedule provides generous time cushions between sessions not just to help you stay on top of the emails and calls that keep coming in, but for instructors and attendees to address specific questions offline, or otherwise take advantage of the benefits of being with your colleagues in person.

The real chances to get to know one another, however, will be at Tuesday and Wednesday **night's receptions**. After a long day of intense training, dense data, challenging concepts, and powerful presentations, the receptions will provide a fun and casual environment for you to continue **the day's conversations**. Past attendees will recognize the level of familiarity amongst many of the participants which speaks to the sense of community and openness to share knowledge and collaborate with others. Cost estimating is a small world, and this is a great opportunity to interact with other people who are passionate about costing and related practices.



## 2016 ICEAA Workshop Committee

Workshop Co-Chairs:

Mike Thompson

Rich Harwin

Program Co-Chairs:

Nathan Honsowetz

Christina Snyder

Training Co-Chairs:

Remmie Arnold

Peter Braxton

Best Paper Co-Chairs:

Stacy Dean

Andrew Drennon

# 2016 Professional Development & Training Workshop

June 7-10, 2016 Atlanta, Georgia



## ASSOCIATION AWARDS

By Joe Hamaker

ICEAA provides many benefits to its members including education, handbooks, standards, certification, chapter workshops, an online library, the annual international workshop and many, many others. One of the more important endeavors of the Association is that of recognizing outstanding individual contributions to improve cost estimating and analysis in government and industry and to acknowledge those who enhance the professional competence and achievements of our members. ICEAA does this with its Annual Awards. Each year we follow a process which begins with you, as a member of the Association, nominating individuals that you believe have made outstanding contributions to our community of practice. The Award Committee, which I chair, will review all nominations against the award criteria and make selections. But none of that can happen until you make nominations. The nomination process is now open through Friday, April 15.

So I ask you, as a valued ICEAA member to consider those with whom you have worked and take the time to nominate one or more of your fellows for any of the awards for which you believe they should be considered. Remember the April 15 deadline and please get those nominations in.

The Association Service Award recognizes individuals (or a team) who have shown unparalleled dedication to ICEAA and ICEAA Chapters, having made significant and sustained volunteer contributions that have made a positive impact on the association and our members for a number of years.

The Educator of the Year Award is intended for individuals (or a team) who have made outstanding education and training contributions over the past year by advancing the skills and knowledge of cost estimating and analysis through teaching, writing, editing and/or publishing educational materials used to further the professional development of current and future cost professionals.

The Technical Achievement of the Year Award recognizes the individual who has made outstanding contributions to the profession in the past year through significant achievement in technical work and/or by playing an instrumental part in the development of technical products.

The Management Achievement of the Year Award is to acknowledge the outstanding management contributions an individual has accomplished over the year. These contributions can range from creating a productive and encouraging work environment for staff or colleagues, to developing and maintaining standards of

proficiency and performance, to overall effective project management competence.

The new Team Achievement of the Year Award recognizes a team effort in the past year that had a significant impact on the relevant mission or influenced a crucial decision through the use of cost analysis.

The second new award for 2016 is the Junior Analyst of the Year Award, which is to highlight the accomplishments of an individual with 5 or less years of experience. This person will have utilized principles from CEBok in their work throughout the year while their **professionalism and dedication to ICEAA's principles** forecasted a bright future in the community.

And finally, the Frank Freiman Lifetime Achievement Award honors an individual making lifetime outstanding accomplishments in cost estimating and/or parametric analysis. It is presented to a person who has demonstrated exceptional dedication and made an outstanding contribution (theoretical or applied aspects) to the cost estimating and analysis community during his or her **lifetime. This individual's skills have been honed over** years of effort, and their passion will leave an indelible legacy for years to come. The award is named after the creator of the first successful commercial parametric cost estimating model and an early advocate of one of ICEAA's parent organizations, the International Society of Parametric Analysts (ISPA).



Read the detailed criteria and submit your nomination at  
[www.iceaaonline.com/awards](http://www.iceaaonline.com/awards)



# 2016 Professional Development & Training Workshop

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## Beyond the Workshop

By Joe Wagner

You'll be busy at the Workshop for about 8 hours a day. What to do after Tuesday and Wednesday night's receptions...or that entire free night on Thursday?

Atlanta's got you covered.

### Gliding Through History

The Swan House, completed in 1928 for the Edward and Emily Inman family, is the architectural centerpiece of the 33 acre site of the Atlanta History Center in the community of Buckhead, Georgia. The Center is located only about six blocks from the Grand Hyatt Buckhead, our ICEAA Workshop location.

At the time of the Swan House construction, Buckhead was an exclusive suburb of Atlanta, and along with many other fine homes, it now includes the official residence of the Governor of the State of Georgia. Only a few years after Swan House's completion, in 1931, Edward Inman died. Emily continued to live in the house until 1965, and the following year it was acquired by the Atlanta Historical Society. Because the house had no other private residents, and quickly became a museum, many of the original furnishings and décor are still



The Swan House

there, allowing visitors a unique first hand impression of the architecture, opulence, and lifestyle of mid-20<sup>th</sup> century Atlanta. For film buffs, you will be interested in seeing the portions of the house in which interior scenes from the movie *The Hunger Games* were shot.

Along with Swan House and several other historic structures on the property, including a restaurant located in the old coach house, the Center grounds contain the Atlanta History Center museum. This award winning professional museum is extremely well done, and contains many major exhibits that **tell the story of Atlanta's history, particularly its** role in the Civil War, as well as an extensive display of artifacts and memorabilia from the 1996 Olympic Games held in Atlanta. There are also other temporary exhibits on various subjects connected to Atlanta and the general area that rotate through the museum. Some of those available in June of this year are *Shaping Traditions: Folk Arts in a Changing South*, which traces Southern folk culture through antique and contemporary artifacts such as handcrafted pottery, woodwork, basketry, weaving, quilting, metalwork, and the sounds of oral and musical creations. Also presented is *Down the Fairway with Bobby Jones*, a display focused on the man considered the most important golfer in the history of the game. The award-winning exhibition includes photographs and personal artifacts that follow Jones' life, his record tournament wins, his family life, his determination to create the Masters Tournament at Augusta National Golf Club, and his life-long dedication to the game.



# 2016 Professional Development & Training Workshop

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## Shopping and Dining in Buckhead

Shopping and eating are always priorities as extra-curricular activities wherever ICEAA holds its Workshops, and the Buckhead area is unparalleled when it comes to meeting those needs. Within six blocks of the Grand Hyatt Buckhead are an almost unlimited set of options for both. Keep in mind that Buckhead was originally an independent town, not just an Atlanta suburb. Founded in 1832, it began as a vacation spot for wealthy Atlantans, with large estates and farms. After World War I, a building boom brought construction of many large mansions and fine homes, including the Swan House and the **Governor's Mansion**. A drive around the area provides a survey of impressive architecture.

The core district of Buckhead is known as Buckhead Village, and contains the older original downtown area. It centers at the intersection of Peachtree Road and Paces Ferry Road. Now about that shopping and eating.



### Lenox Square

Buckhead's two premiere shopping malls are conveniently located just across the street from each other, only a few blocks east from the Workshop's Grand Hyatt Hotel on Peachtree Road. Lenox Square has been an Atlanta landmark since 1959. Home to 250 specialty retailers, anchored by **Bloomingdale's**, **Neiman Marcus** and **Macy's**, it is huge, so wear your walking shoes. It offers both fine dining establishments and casual restaurants as well as a food court. Lenox Square is located at the

intersection of Peachtree Road and Lenox Road.

Just across Peachtree from Lenox Square is Phipps Plaza, comprising more than 100 stores including Saks Fifth Avenue, Nordstrom, Belk, Tiffany & Co. and Gucci. This shopping center features a 14-screen AMC movie theatre and a LEGOLAND Discovery Center. And like Lenox Square, Phipps has full-service restaurants and eateries where you may grab a quick bite and get right back to shopping.



### The Shops at Buckhead

This development includes over thirty high end shops, including Dior, Hermes, Moncler, and Helmut Lang. There also is no shortage of fine dining at The Shops, with the Fado Irish Pub, Le Bilboquet, The Gypsy Kitchen, Dolce, and Southern Gentleman among some dozen eating options.

Speaking of restaurant options, one of the leading food websites lists 291 restaurants just in Buckhead alone, excluding neighboring areas of Atlanta. Well-known places beyond those already mentioned in the shopping areas include the Atlanta Fish Market on **Pharr Road**, **Bone's Steakhouse** on **Piedmont**, and **Aria**, on East Paces Ferry Road, among the dozens within a few blocks of the Grand Hyatt. And if you have not completely exceeded your caloric intake limits in Buckhead...

*continued*



# 2016 Professional Development & Training Workshop

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## Poncey Highland - the Foodie Place

After analyzing the travel patterns of more than 40 million people that used their platform in 2015, *Airbnb* found that Atlanta's Poncey-Highland area ranked No. 12 of the top trending neighborhoods in the entire world at the beginning of 2016. What does this neighborhood of Atlanta have going for it to produce such popularity with the traveling public? Let us start by saying it is not the Jimmy Carter Presidential Library and Museum, which is also located in Poncey. Those attending the 2016 ICEAA Professional Development & Training Workshop will have the opportunity to find out, and here is a hint and preview to get you started. This neighborhood on the east side of Atlanta, centered near the intersection of Ponce De Leon Avenue and Northeast Highland Avenue, is a gastronomic center of gravity famous throughout the foodie world.

Poncey Highland is, as described in its own website "rich in the amenities of urban living such as great restaurants, cool shops and galleries, lively sidewalk activity, and a variety of housing." A shorter but just as descriptive phrase might be "one of the hippest cutting edge food scenes in the entire country." Do you watch the many food shows on TV? The chances are that many of the guest chefs and the spotlight dishes you see there had their origin in Poncey Highland. Let's start a quick tour.

One truly unique eating place is the Ponce City Market on Ponce De Leon Avenue. This renovated Sears Roebuck & Co. building houses several dozen food outlets, as well as art galleries, shops, apartments, and offices. At the heart of the Ponce City Market is the Central Food Hall. As told on their web site, "it is fast becoming the most vibrant food hall and market in the Southeast. James Beard Award-winning chefs the likes of Anne Quatrano, Linton Hopkins, and Sean Brock join Atlanta's most



Ponce City Market

exciting young purveyors and restaurateurs to offer everything from Georgia and Carolinas-caught seafood, to classic burgers, to Korean dishes."

It fills me up just writing about it!!

And as evidence of the culinary breadth in Atlanta, even beyond Buckhead and Poncey Highland, the rest of the city offers some other standout eating opportunities as well:

A judge on the TV show *Top Chef*, Hugh Atkinson, operates *Empire State South* on Peachtree St. in downtown Atlanta.

*Top Chef* winner Richard Blais has his place, *Flipburger*, just north of Buckhead on Roswell Road, and finally,

*Top Chef* contestant Kevin Gillespie operates his restaurant *Gunshow*, on Garrett St., just east of downtown.

On second thought, maybe the shopping should wait until after the Workshop. After a few days in culinary paradise, we're all going to need new belts.



# 2016 Professional Development & Training Workshop

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## Tentative Schedule

### Tuesday, June 7

Breakfast buffet available	7:00 - 8:00
Welcome & Overview	7:45 - 8:00
Best Paper Awards	8:00 - 8:30
DoD Cost Agency Panel	8:30 - 9:30
Vol. Leadership Orientation/ Exam Overview/Papers	9:45 - 10:30
Training Welcome/Papers	11:00 - 11:45
Lunch	11:45 - 12:45
Training/Papers	12:45 - 2:30
Training/Papers	3:00 - 4:45
Welcome Reception	4:45 - 7:00

### Wednesday, June 8

Breakfast buffet available	7:00 - 8:00
Welcome, day intro	7:45 - 8:00
Association Awards	8:00 - 8:45
Col. Darby McNulty Keynote	8:45 - 9:45
Training/Papers	10:00 - 11:45
Lunch	11:45 - 1:00
Training/Papers	1:00 - 2:45
Training/Papers	3:15 - 5:00
Networking Reception	5:00 - 7:00

### Thursday, June 9

Breakfast buffet available	7:00 - 8:00
Welcome, day intro	7:45 - 8:00
Cost Estimating MBA General Session	8:00 - 9:00
Training/Papers	9:15 - 11:00
Best Paper	11:15 - 12:00
Lunch	12:00 - 1:15
Training/Papers	1:15 - 3:00
Training/Papers	3:30 - 5:15

*Free Evening - Enjoy Atlanta!*

### Friday, June 10

Continental Breakfast Available	8:00 - 9:00
Training day review, Q&A etc.	8:45 - 9:00
Training	9:00 - 10:30
Training	11:00 - 12:30
Conference Ends	12:30





# CALL FOR PAPERS

## Journal of Cost Analysis and Parametrics

**Editor-in-Chief:** Prof. Ricardo Valerdi, *University of Arizona* • **Managing Editor:** Dr. Christian Smart, *Missile Defense Agency*

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](mailto:rvalerdi@arizona.edu)).



# Society for Cost Analysis & Forecasting (SCAF): Costing News from the UK

*by Dale Shermon, SCAF Chairman*

**A**s I write this article, just before the arrival of the new year of 2016, I have the opportunity to relax and reflect on SCAF activities from 2015 and also to look ahead to plans for 2016. At the December SCAF committee meeting, we had lunch together and then socialised at the White Lion on Frenchay Common in Bristol. We had completed our work on the Society business, and it was a great opportunity to catch up with friends and discuss their plans and ideas for 2016. It has been another busy year for the SCAF committee and we closed with a great workshop in November, looking at the subject of Investment Appraisals and asking the question – What is in any given investment and how do we evaluate the value of that content? It poses somewhat a psychological quandary when I consider the investment made in taking a holiday break, and trying to decide the value of that investment.

This down time also reminds me it is important that we always take time to stop and reflect on our work as cost engineers. How did that last study turn out? Was that estimate good enough? How could I better approach those stakeholders with a quality product? Continuous personal professional development is important in all engineering disciplines, but none more so than in cost engineering. We are always dependent upon the cost and technical attributes of past projects to improve our ability for costing predictions in the future. We should all think about the projects and studies that we have completed in 2015 and consider; will I need to consider those costs again? Where and how should I store them, and what breadth of information should I retain with the costs? It might not be useful to us immediately, but the next generation of cost forecasters who come after us will benefit from this kind of foresight.

For 2016, the SCAF committee has now confirmed that we will support the ICEAA International Training Symposium in Bristol next fall, rather than holding our own SCAF conference. We were delighted with the SCAF conference this year in London at the QEII conference centre and we are confident that the Training Symposium in October 2016, spread over three days, will be equally valuable to our members. I would draw your attention to the extensive ICEAA training that will be conducted at this event, along with the opportunity to take the

ICEAA certification examination. There are too few qualified cost engineers in the cost community; this conference will be a wonderful opportunity to gain a relevant qualification.

In addition to the training tracks, there will be three days of ICEAA / SCAF presentations and a separate presentation track supported by the European Aerospace Cost Engineering (EACE), Dutch Association of Cost Engineers (DACE), Space Systems Cost Analysis Group (SSCAG) and Association of Cost Engineers (ACostE). Finally, over the three days there will be workshops providing an opportunity to hear about other tools and techniques used internationally. **Jason Dechoretz** (ICEAA), **Andrew Langridge** (ACostE) and I (SCAF) will be co-chairing the organising committee, please feel free to contact us if you have a desire to present a paper, run a workshop, or to chair a conference track.



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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

### 6. Solution:

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

### 5. Answer

B

### 7. Reference

CEBoK Module 3

## REWARD: RECERTIFICATION POINTS

Contact the ICEAA Office or Director of Certification for details

## Air Force Institute of Technology (AFIT)

*By Lt Col Brandon Lucas*

### Research Outreach

As part of the AFIT Cost Analysis degree curriculum, students immerse themselves in individual research topics of interest to the cost community via a thesis. In what has now become an annual event, the Greater Dayton ICEAA Chapter invited graduating students to present their thesis research. This year's presentation occurred on Mar 10<sup>th</sup>, with Capt **Scott Kozlak**, Capt **Chris Jimenez**, and 1Lt **Thomas Lamb** getting the opportunity to share their findings with 30 plus cost professionals from the Dayton area. The feedback from these cost practitioners is immensely valuable in furthering their research. Additionally, many thanks to Mr. **Jeremy Mitchell** (Greater Dayton Chapter President) for supporting this event.

### ICEAA Thesis Award

At the annual AFIT awards ceremony Capt **Brian Fitzpatrick** was awarded the ICEAA most outstanding cost thesis for his research titled *Determining the Optimal Work Breakdown Structure For Defense Acquisition Contracts*. The ICEAA award is presented to the author of the thesis which best qualifies both as an outstanding research effort and as a significant contribution to the development and/or application of cost analysis or cost estimating. Special thanks go to Dr. **Edward White**, Dr. **John Elshaw**, Janet **Wentworth**, and **Shawn Valentine**--their reviews, comments, and critiques greatly enhanced this research effort.





## Northwest Chapter Report

### *Recent Developments from ICEAA Northwest / Washington Chapter*

#### **Simple ways of staying in touch with your members**

*By Stacy Dean*

Workshops, speaker event, training resources, networking events, and conferences are all great ways for chapter officers to keep in touch with their existing members (and potentially add a few more). Regrettably, chapter events take time and resourcing to organize, so it can be a bit of a challenge to hold more than 4-5 events a year.

Within the Northwest chapter we decided 4 times a year was just not good enough to be able to hang out and interact with the members. To help keep in touch, we sought out some simple methods to keep in better contact on a regular basis with our members.

The first method we've employed is opening the monthly officer meetings to all members. The ICEAA international office has helped a great deal by allowing the chapter to use ICEAA's GoToMeeting account to set up virtual telecoms. The telecoms make it easy for members join in the meetings even if when they don't have time to attend in person. By attending meetings members are able to learn more about what type of activities are going on within the chapter as well as provide their input.

The second method the chapter has adopted is sending monthly reminders to expired or unaffiliated ICEAA membership within the Northwest area. The expiration reminders are a simple, helpful service that the chapter can provide. The unaffiliated reminders also help new comers to the area get in touch with the local chapter. The ICEAA office has greatly helped in this area as well, by providing ICEAA membership rosters to the NW officers for the past year.



#### **NW Chapter Officer activities!**

*By Chad Larson*

The ICEAA Northwest chapter has been busy planning for 2016. We have already started planning heavily for our March member's event at the Museum of Flight in Seattle. In addition we have outlined the schedule for our exam prep class both this spring in Renton, Washington as well as next 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 our membership and education programs in our effort to expand our service to our members.

#### **NW Chapter Facebook Page:**

*By Cheryl Wilson*

We are making an attempt to make our Facebook page an active part of our chapter team's communication with its members. If you are interested in starting one for your respective chapters, have a look and check us out, and "Like" the ICEAA NW page. We will be posting our events, estimating tidbits, pictures and the like here. For our local members, if you are interested in managing this page on behalf of ICEAA NW please get in touch with anyone on our Board. We are always looking for future ICEAA NW Board participants and this would be a great way to get involved. Hope to see you on the page!

For questions or suggestions please contact Cheryl Wilson.



#### **ICEAA Northwest Chapter 2015-2016 Board of Directors:**

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

## Central Florida Chapter Report

*By Jim Roberts, ICEAA Central Florida Chapter President*

The Central Florida ICEAA Chapter hosted recent member's meetings that included the following presenters and activities:

The November 2015 gathering consisted of a luncheon meeting in Melbourne, where the chapter hosted Mr. **Frank Flett** as our luncheon speaker. Frank's presentation was entitled *Footprints in the Sand: A Conversational Approach to Basis of Estimate*.

Saturday, December 12, 2015 saw the Central Florida chapter Christmas Party held at the Perkins Restaurant in Melbourne, which came complete with a Chinese

auction, in which prizes are won by the individual whose ticket is drawn for that item.

Our most recent chapter meeting was on January 19 in Orlando, with a presentation by Mr. **Bill Haseltine** on *Game Theory & Preventing Cost Overruns – How Tic Tac Toe, Prisoners' Dilemma, and Hannibal's Choice relate to a good IGCE*.

Our upcoming chapter meetings are planned for Tuesday, April 18 and Tuesday, June 21, although these are subject to change.

Always recognizing the difficulty of a geographically dispersed chapter, it is a point of pride that we have recently added some welcome participation by new chapter members from the Harris Corporation in Melbourne, FL. In addition, we have been in discussion with several current ICEAA members in the Tampa Bay area, seeking to find ways for them to participate in our Central FL Chapter activities. With the chapter membership stretching 150 miles from Melbourne to Tampa, we always appreciate the efforts of everyone to continue their participation and help with the chapter's contributions to ICEAA's success.



## Northern Alabama Chapter Report

*By Eric Hawkes, ICEAA Northern Alabama Chapter President*

The Northern Alabama Chapter continues to set a high standard in its outreach and chapter event planning to provide benefits to its membership.

We jump started the New Year in January by hosting a Joint NASA/MDA cost estimating training conference. **Eric Druker**, a recently appointed principal at Booz Allen Hamilton, spoke to the gathering on how big data concepts are going to transform the cost estimating profession. We also had Dr. **Christian Smart** present his ideas on linking statistical tail distributions using Copulas (a type of multivariate probability distribution) to better model Joint Cost/Schedule risk. Additionally, **Andy Price** talked about the care

necessary in the use of parametrics for estimating, and I gave a presentation on the promises as well implementation issues surrounding the use of Agile as part of software development. With over seventy-five attendees, we considered the session a resounding success.

The chapter's director of training, **Teresa Brown**, has launched our free spring training program to prepare analysts for the CCEA exam. The popularity of the ICEAA cost certification and the quality of the process has made a definite impression. We have some twenty two local analysts currently enrolled in the program, with instruction being offered by six dedicated ICEAA certified instructors.

Finally, our monthly luncheons continue to draw large crowds. In February, Andy Prince unveiled NASA's replacement to NAFCOM, a tool called Project Cost Estimating Capability (PCEC). This tool is more data-centric than model-centric, and puts the onus for the quality of the estimate on the estimator and their skills, instead of having the estimator rely on the credibility of the model. We also have several other speakers lined up to speak in the coming months, ensuring that we bring current cost estimating issues to the forefront for our members. And of course, we look forward to the international ICEAA workshop in June, where multiple Northern Alabama chapter members are looking forward to presenting a paper or engaging in the training being offered.



## Washington Capital Area Chapter Report

*By Meghan Kennedy, ICEAA Washington Capital Area Chapter President*

It's been a busy winter for the Washington Capital Area Chapter! In addition to continuing our monthly luncheon program, we tried some new things, such as a dedicated lunchtime networking event, and held our Annual Meeting with one of our largest turnouts yet. Over the coming months, we'll continue to offer our usual programming along with some new networking, social, and service events. Read below for some more details on our chapter activities.

### Monthly Presentations

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

December 16, 2015: **Networking Event**. Held at Crystal City Sports Pub, Arlington, VA.

January 20, 2016: *10 Important Financial Planning Tips While You're Still Working*. Presented by **Scott Broaddus** of Virginia Asset Management. Held at Technomics, Inc., Arlington, VA.

February 17, 2016: *Modeling Prediction Intervals Using Monte Carlo Simulation Software*. Presented by **Jay Black** of Dept. of Health and Human Services. Held at Herren Associates, Inc., Washington, DC.

### Annual Meeting

The Washington Area Chapter of ICEAA held its annual meeting for members and guests on Tuesday, February 9<sup>th</sup> at the Washington Country Club in Arlington, VA. Special thanks go to the sponsors of our event: **ACT I, Herren, MCR, TASC, Technomics, and Tecolote**. The meeting was attended by more than fifty local members of the organization and featured great food, drinks and networking for all who attended.

The evening started off with networking, followed by a report out from the newly elected Board of Directors including discussion on training, past luncheons, member communications, future networking social and philanthropy events, and the current chapter financials and



Team Achievement Award:

**VIRGINIA Class Submarine  
VIRGINIA Payload Module Independent Cost Assessment Team, NCCA**

Jake Mender, Juan Avila, Krystian Jenkins, Steve Ponchio

(Pictured left to right: Steven Ponchio, Meghan Kennedy, Krystian Jenkins, and Jake Mender)

budget. **Megan Jones** from the National ICEAA office was there to speak about the upcoming ICEAA workshops and conferences in 2016 including Canada, Atlanta and England. The keynote address was given by Ms. **Jennifer Santos**, a Professional Staff Member with the Senate Appropriations Defense Subcommittee, discussing the importance of Congress and the relationship between the Department of Defense and the Hill, relating humorous stories and personal anecdotes with her experiences. The audience engaged with Ms. Santos and a lively discussion followed. In recognition of some of our chapter members' stellar achievements in 2015, awards were presented by Chapter President Meghan Kennedy and former Chapter President Dave Stem.

In conclusion, the Washington Area ICEAA Chapter annual meeting was a success and well enjoyed by all who attended. The next annual meeting will be held in February of 2017. Washington Area members should start thinking about nominations for next year's awards!



Junior Analyst Award:  
**Derreck Ross, Technomics, Inc.**



Technical Achievement Award:  
**Adam James, Technomics, Inc.**



Leadership/Management Award:  
**Travis Winstead, Herren Associates**



## Greater Dayton Chapter Report

*By Jeremy S. Mitchell, Greater Dayton Chapter President*

### ICEAA Pets for Vets Fundraiser

It was great to see such a large turnout for the Dayton Chapter ICEAA/American Society of Military Controllers (ASMC) January 28<sup>th</sup> joint luncheon. During the luncheon, we were able to present information on this year's chapter foundation of choice, *Pets for Vets*. As costers thinking outside the box, the chapter assembled various size doggie treat bags for people to purchase and a jar to accept monetary donations, if preferred. ICEAA was able to raise \$78 during this luncheon. We are looking to have similar bags and accept monetary donations at our different ICEAA chapter outings to raise additional funds this year for this worthy charity.

*Pets for Vets* is a registered 501(c)(3) nonprofit organization which gives shelter dogs a second chance at life while giving our returning soldiers a second chance at a health and happiness. Many of our military have returned with physical and emotional injuries that have made it difficult to transition back to civilian life. Some estimates state that as many as 20% of returning military veterans suffer from Post-Traumatic Stress Disorder (PTSD). The funds we raise will go towards professional animal trainers rehabilitating the dogs and teaching them good manners to fit into the veteran's lifestyle. Training can also include desensitization to wheel chairs or crutches as well as recognizing panic or anxiety disorder behaviors. The bond that is formed between man and animal have the ability to ease the suffering of our troops when they are returning from overseas.

### Programs Overview

We were pleased to have as speaker at the January luncheon Ms. **Kathryn Sowers**, Director, Financial Management and Comptroller, Air Force Life Cycle Management Center addressing us on the topic of *Program Management and Financial Management, Similar or Different?*

Speaking to a crowd of over 100 professionals, Ms. Sowers shared her experiences both as a comptroller and then as a program manager and as a deputy Program

Executive Officer (PEO). Because of her broad acquisition experience, Ms. Sowers was able to share how closely Financial Management (FM) and Program Management (PM) need to be aligned for successful program execution. Discussing comptrollership and program management overlap in terms of critical thinking, program execution, teamwork and credibility, Ms. Sowers clearly identified the similarities in the two career fields. She talked from the FM perspective about the need for comptrollers to provide decision support to the program managers so that the program manager's decisions can be built on factual information. In conclusion, Ms. Sowers noted that as a Deputy PEO, a significant amount of her work required financial expertise and that good program managers understand the budget process and financial rules. She commented that informed decision making and insights are what drive the program to success.

At the February meeting of the Dayton Chapter of ICEAA, Ms. **Sabrina Turner** from the Air Force Cost Analysis Agency (AFCAA) presented "Air Force Total Ownership Cost (AFTOC) 101." Ms. Turner walked through why AFTOC exists, the type of data in the data base and how to access/request the information. Ms. Turner also talked about how the data is kept current through updates and remapping of existing data as lines of accounting or CAIG elements change. There is an ongoing effort to keep the database current and useful for cost estimating.

On March 10<sup>th</sup> the Air Force Institute of Technology (AFIT) had three student presenters describing their thesis work to the Dayton Chapter of ICEAA. Those presenters and their topics are:

**Capt. Chris Jimenez** - *Predicting Schedule Duration for Defense Acquisition Programs: Program Initiation to Initial Operational Capability*

**Capt. Scott Kozlak** - *Predicting Cost Growth Using Program Reviews and Milestones for DoD Aircraft*

**1Lt. Tom Lamb** - *Cost Analysis Reform: Where Do We Go From Here? A Delphi Study of Views of Leading Experts*



## Region Seven News

### Southern California and San Diego Chapters

*By Kurt Brunner, SoCal Chapter President and Region 7 Director;  
Quentin Redman, SoCal Chapter Vice-President, Christopher*



Kurt Brunner

The Southern California (SoCal) Chapter of ICEAA Region 7 conducted an extremely successful Winter Workshop at the expansive Raytheon Space and Airborne Systems (SAS) Plant in El Segundo, California on 16 December 2015, which was well attended and very highly rated by the many attendees. Among the tremendous presentations were:



Quentin Redman

- **Bruce Nunnally**, Raytheon SAS Director of Cost Estimating and Pricing; *Welcome to Raytheon SAS*
- **Paul Marston**, ICEAA International President, *Current Events at ICEAA*
- **Don Briggs**, Owner, dB Enterprises, *Leveraging Competitive Intelligence to Establish Your Price-To-Win: An Overview*
- **Dr. Robert Wright**, Raytheon SAS, *A Framework for the Creation of Robust Human-Intensive Systems*
- **Doug Howarth**, CEO, MEE Inc., *Balancing Capabilities Versus Budgets for Weapons and Platforms*
- **David Graham**, Independent Consultant, Salient Federal Solutions, *Two Complimentary EVM Cost-Risk Models – Part 3*
- **Bob Hunt**, Galorath Vice President for Services, *Estimating Agile Software*



Christopher Jerome

Another dynamite SoCal Chapter Spring 2016 Workshop just wrapped up on 9 March 2016 at the beautiful Boeing Plant in Huntington Beach, California. The agenda featured:

- **Co-Keynote Speaker: Dan Carroll**, Senior Manager, Development Program Excellence, Boeing
- **Co-Keynote Speaker: Dr. Anthony Leone**, Senior Director Boeing Defense, Space, and Security (Focus Program Business Capture); *Competitive Assessment/ Price to Win*
- **Steve Sterk**, CPP, Cost Estimation & Program Analysis Officer, NASA Armstrong Flight Research Center; *“Developing a Parametric Cost Model for X-Planes*
- **Denise Nelson and Karen Mourikas**, Design for Value Engineers, Boeing; *Using Random Forrester for Cost Estimating*
- **Dr. Wali Mondol**, Professor School of Management, National University, San Diego; *Effect of Outsourcing on Cost and Management for Manufacturing Industry*
- **John Swaren**, Solutions Consultant, PRICE Systems; *Predictive Cost Analytics and the Future of Cost Estimation*
- **Karen McRitchie**, V.P., Product Development, Galorath Incorporated and **Kathy Kha**, Consultant, Galorath Federal; *Addressing the Challenges of Systems Engineering Estimation*



December 2015 SoCal Workshop Attendees

*continued*

# ICEAA Chapter and Region Updates



March 2016 SoCal Workshop Attendees

Typically we have 80 to 100 attendees from across the nation (and also from overseas) that participate in these no cost, daylong events. These forums have consistently drawn a huge cross section of the cost analysis and parametric community while presenting the latest concepts and techniques, and have produced animated and enthusiastic dialogues and great interest in the topics discussed. We look forward to seeing you at the next workshop!

The Southern California Chapter Fall 2016 workshop promises to continue this tradition! It's scheduled for 14 September 2016 at Galorath in El Segundo, California, and many dynamic speakers are already enlisted. This promises to be another terrific event, so start planning now!

At the conclusion of our ICEAA Southern California workshops, and as an incentive to stay until the last presentation is complete, a membership drawing is held. Our Membership Chair, **Steve Sterk**, is always on hand with a selection of great gifts for the drawing – “winner must be present”. If you have questions about your membership status or would like information about

membership in general, contact Steve at [steve.a.sterk@nasa.gov](mailto:steve.a.sterk@nasa.gov) or (661) 276-2377, or the ICEAA office at [iceaa@iceaaonline.org](mailto:iceaa@iceaaonline.org) or (703) 938-5090.

SoCal workshop agendas are available to all ICEAA members, are emailed to previous workshop attendees, and they contain registration information, a location map, and driving instructions. The agenda is also posted on the ICEAA Southern California web site at: [www.iceaaonline.org/chapters/socal](http://www.iceaaonline.org/chapters/socal). As always, our workshops are free. You will find copies of prior workshops at this site as well. All available presentations are loaded on the web site following the meeting. If you have any questions about the presentations please feel free to contact the ICEAA Southern California Board of Directors or the ICEAA office ([iceaa@iceaaonline.org](mailto:iceaa@iceaaonline.org)).

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

## ICEAA Southern California Chapter Board of Directors:

January 1, 2015 - December 31, 2016

President	<b>Kurt Brunner</b>
Vice-President	<b>Quentin Redman</b>
Secretary	<b>Melissa Winter</b> (Program Co-Director)
Treasurer	<b>Chris Hutchings</b>

<b>Dara Billah</b>	<b>Tom Bosmans</b> (Program Co-Director)
<b>Rich Harwin</b>	<b>Doug Howarth</b> <b>Suzanne Lucas</b>

Our workshop focus is always to “advance, encourage, promote and enhance the profession of cost estimating and analysis through the use of parametrics and other data-driven techniques for use by the membership as well as the general public.” The Southern California and San Diego Chapters of ICEAA will continue to offer workshops that include a notable

*continued*



## ICEAA San Diego Chapter Board of Directors:

President	<b>Chris Jerome</b>
Vice-President	<b>Adam Landrey</b>
Secretary	<b>Laura Barker</b>
Treasurer	<b>Scott Hardy</b>

and diverse group of extraordinary speakers, training sessions, cutting edge topics, and knowledgeable attendees that are fully entertained and engaged.

SoCal Board of Directors elections will be held in 2016, so please consider running for a position and serving the cost community! It will be a satisfying and gratifying experience! Announcements with the details will be sent out soon. We would like to thank the current board for their tireless teamwork in making the SoCal workshops a great success, as well as all the members and participants for their support over the years. We look forward to seeing you at the next workshop!

The ICEAA Region 7 San Diego Chapter has been holding regular webinars and early evening get-togethers.



View upcoming SoCal Chapter workshop agendas or download previous workshop briefings at:  
[www.iceaaonline.com/chapters/socal](http://www.iceaaonline.com/chapters/socal)

## Canada Chapter Report

*By Vrenti Ghergari, ICEAA Canada Chapter Secretary*

On Feb 22nd - 23<sup>rd</sup> of this year, ICEAA Canada hosted its second annual cost workshop at the Westin Ottawa hotel. The workshop featured speakers from the US, UK, and Canada, including Mr. **Andy Prince** of NASA, and Mr. **Bill Andrews**, Comptroller General of Canada. The theme of this second workshop sponsored by the ICEAA Canada chapter was focused on the development of the costing function in Canada, and included some lively discussions in particular on cost risk. ICEAA Canada plans a follow-up workshop shortly which will be dedicated to the foreign exchange risk for Canada, and its effects on our cost estimates.

During the fall of 2015, ICEAA Canada also hosted a mentorship program for our analysts and also conducted a sitting for the PCEA/CCEA exam. The program was organized and led by the cost function of the Department of National Defence (DND), but was open for participation to other public service and private organizations in the Ottawa area. Following completion of the program, 11 analysts obtained either their PCEA or CCEA certification. The interest in attaining cost training and its accompanying certification is strong and growing within our Canadian professional cost staff, both government and private industry.



Clockwise from top:  
*Attendees at the ICEAA Canada  
Workshop, Andy Prince,  
Canada Chapter President  
Peter Weltman,  
SCAF Chairman Dale Shermon*



International Cost Estimating & Analysis Association

## Professional Development & Training Workshop

June 7-10, 2016 • Atlanta, Georgia

Full Name

Informal Name for Badge (e.g. Bob for Robert, Sue for Susan)

Job Title

Employer Name

Email

Phone

Address

☐ Business

☐ Home

City, State, Zip, Country

### Participation Status

- ☐ ICEAA Member      ☐ First time attendee  
☐ Speaker/Presenter      ☐ Spouse/Guest  
☐ Other:      ☐ Sponsor/Exhibitor

### Job Position Category

- ☐ Owner, President, Executive-Level Manager  
☐ Senior-level Manager      ☐ Mid-level Manager  
☐ Non-management Personnel

### Employer Information:

- ☐ US Military      Branch: \_\_\_\_\_  
☐ US Government      ☐ International Government/Military

### Rates:

- ICEAA Member      ☐ \$960  
Member & Government Employee      ☐ \$840  
Non-Member      ☐ \$1,060  
Non-member Government Employee      ☐ \$920

☐ Please include a year of ICEAA membership with my non-member registration

### Group Rates

*For companies sending 5 or more paid employees*

- Member Group Employee      ☐ \$905  
Non-Member Group Employee      ☐ \$1,005

*Email us for information on passes for guests to attend meals but not workshop sessions.*

Card Number

Exp. Date

☐ Check Enclosed Payable to:

Print Cardholder Name

ICEAA  
8221 Old Courthouse Road, Suite 106  
Vienna, VA 22182

Cardholder Signature

Cancellations received before May 1, 2016 will be issued a full refund less a \$100 processing fee. Refund requests made May 2, 2016 - May 26, 2016: 50% refund. On or after May 27, 2016: No refund. Substitutions available at any time.

For a full cancellation policy, hotel and logistic information, visit

[www.iceaaonline.com/atlanta2016](http://www.iceaaonline.com/atlanta2016)

[iceaa@iceaaonline.org](mailto:iceaa@iceaaonline.org)

703.938.5090

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