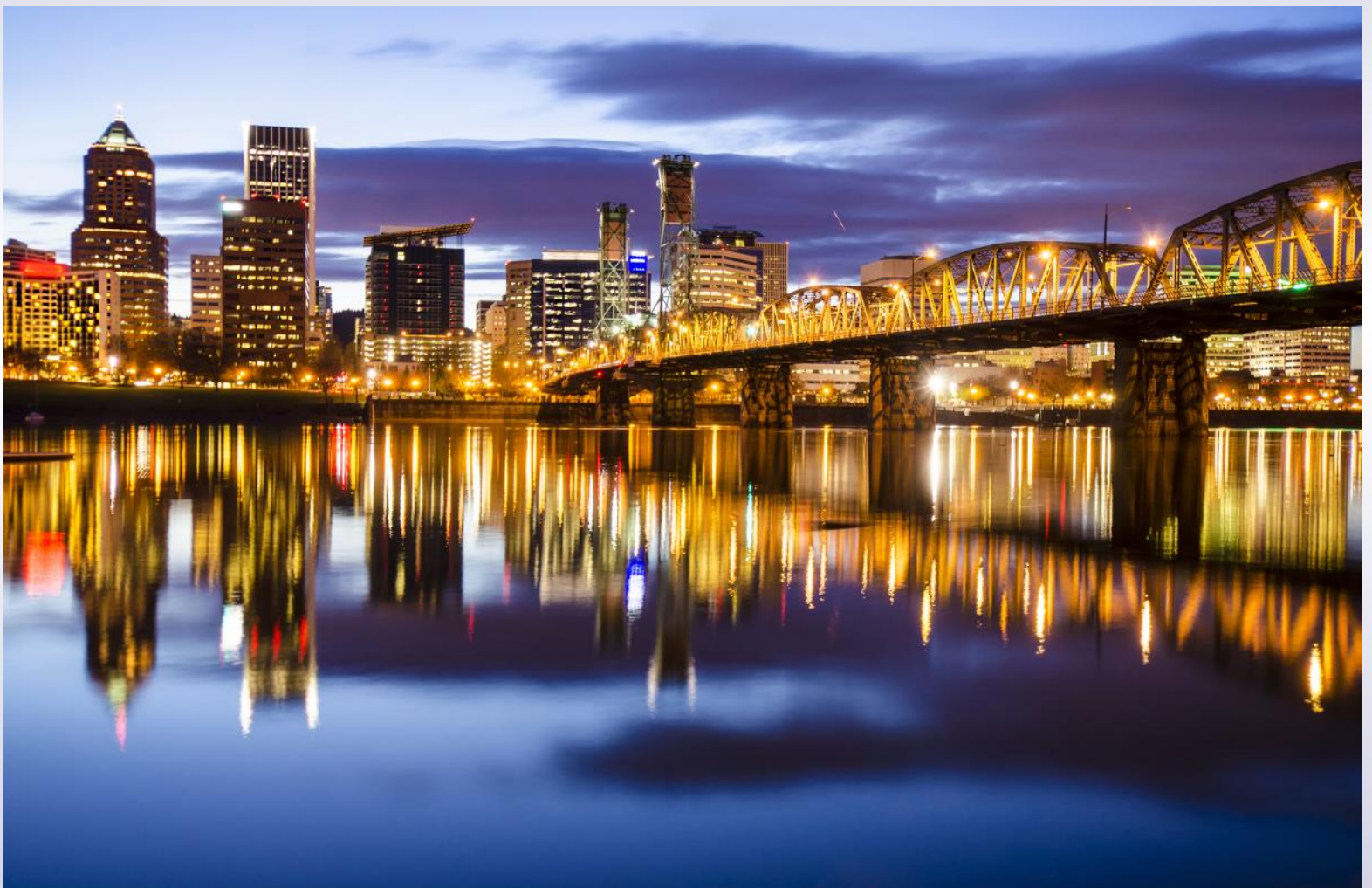


Cost Consistency and Completeness  
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Gödel's Impact on Hilbert's  
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International Training  
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# ICEAAWorld

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.

ICEAA World is a publication of the International Cost Estimating and Analysis Association. Members of the association receive copies as a benefit of membership. Subscriptions for non-members are available on a yearly basis for \$30.00 per year.

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# Letter from the Editor

*Joe Wagner, ICEAA World Editor*

As we near the end of 2016, this e-version of your magazine provides a wrap-up to the promised “year of the workshop” for cost professional development. The first two workshops were hosted by our Canadian chapter in Ottawa (February), and the International ICEAA office in Atlanta (June).

Mid-October saw a gathering of international cost professionals at the Marriott City Centre hotel in Bristol, United Kingdom. ICEAA joined with seven other international professional organizations to provide the world-wide cost community with a three-day workshop in the west of England. The event was attended by over a hundred cost pros from 11 different countries. **Dale Shermon** of QinetiQ in the UK provides a narrative in this issue.


Finally, at the end of October, the 28<sup>th</sup> annual International Integrated Program Management (IPM) Workshop was held at the Bethesda, Maryland Marriott. This long-running workshop brings cost professionals specializing in program earned value management (EVM) together with the leading experts in the field. A hot topic this year was the application of EVM to the Agile method of software development. Varying opinions were guaranteed, since EVM traditionally calls for extensive planning, pricing, and scheduling of projects, while the nature of Agile development advocates a more freewheeling flexibility of content and schedule as the program matures. Have you ever been to Portland, Oregon? Well, despite my 50 years of traveling around in military, government, and contract service, to date I’ve not visited the “City of Roses”. So, I am really anticipating our next ICEAA International Professional Development and Training Workshop, being held at the Portland Marriott Downtown Waterfront hotel this coming June. We are already in the process of gathering the people, papers, and training materials that will make this another valuable experience for all cost professionals. Attendee registration is open now.

We are planning a new section for *ICEAA World* starting in 2017. Most newspapers and magazines give their readers the opportunity to respond to what they see in the publication through a “Letters to the Editor” or comments column. We want to do the same thing, and give you the opportunity to provide opinions, comments, and criticisms that we will

publish to the membership. So please send your thoughts and impressions on the contents of this issue of *ICEAA World* to me at [jwagner@iceaaonline.org](mailto:jwagner@iceaaonline.org), and we’ll put them in the spring 2017 issue.

For now, please enjoy the usual high quality lineup of articles and features in this fall issue. And, as always, we again thank the contributing authors who make each issue of this magazine such a great value for ICEAA cost professionals. If you would like to join them, we welcome all professional articles for consideration. If you are preparing a pitch for a workshop or chapter luncheon, think about also sending it in to *ICEAA World* as a print article. You will reach many more cost professionals through this publication for the same amount of preparatory work.

I hope you have a very enjoyable and fulfilling holiday season upcoming, and my best wishes to all ICEAA members for the coming year.

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Journal of  
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Editor in Chief: **Ricardo Valerdi, Ph.D.** *University of Arizona*

The *Journal of Cost Analysis and Parametrics* is ICEAA’s scholarly journal featuring peer reviewed articles designed to improve the theory and practice of cost estimating, analysis, management, and research results among cost analysis educators and practitioners around the world.

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For questions on how to submit your paper or article, please contact Joseph Wagner at [jwagner@iceaaonline.org](mailto:jwagner@iceaaonline.org)

# President's Address

*Paul Marston, ICEAA President*



As we approach the end of 2016 and the end of my term as ICEAA President, it seems a good time to reflect on what your board and committees have accomplished. Not as a premature victory lap, but as recognition of what can be achieved by dedicated people when they volunteer their time, best efforts, and sheer determination to make a difference in our profession. This may sound like a litany of praise for unsung heroes because it is. I've got the mic and I'm going to sing.

At the time ICEAA was formed, we faced a critical financial challenge. Our annual revenues were at a five-year low and our expenses were at an all-time point. We simply weren't on a sustainable path. The obvious answer was to bring things back into balance, but the challenge was to do so in a way that didn't compromise on the services and value that we've always provided to our membership. In a remarkable team effort by **Mike Thompson** (2013-2015 Treasurer), **Bob Hunt** (2015-2017 Treasurer), **Joe Wagner** (past Treasurer and International Business Office financial guru), and **Megan Jones** (ICEAA Executive Director), we assessed our situation and set a careful path forward. Yes, we had some very successful workshops that brought us a great deal of revenue, but the real story is one of being conservative without over reacting. Today, we are financially stable and gaining strength again.

Perhaps not something that will grab headlines, ICEAA inherited a fair amount of organizational baggage with its birth at the merger of SCEA and ISPA. In the best of faith to the legacy organizations, ICEAA's leadership was determined to find and build on the best traditions of each association. I think we succeeded. The downside was that we woke up to a mishmash of inefficient, less than ideal, and sometimes contradictory business practices. Leading the charge on untangling those contradictions was again **Megan Jones**, **Joe Wagner**, and **Sharon Burger** in the ICEAA Office. One by one they have improved our processes for certification and recertification, the membership database, the web site, how we communicate with chapters, how we communicate with members, and too many other things to list. Thanks to our behind the scenes team, I think the day-to-day services to our members has markedly improved.

Again, it may not make the front page of the Times, yet it was abundantly obvious to the board that our constitution and bylaws had some issues. I asked **Tim Anderson** to assemble a committee to take on the problem. He and the team methodically reviewed the documents, identified the problems, and made detailed recommendations to the board for correction. Nearly every recommendation was adopted and a handful with minor modifications. Truly an example of the selfless dedication of ICEAA members to their profession and community.

For all of you paying attention last summer, you would have noticed that our Annual ICEAA Awards had changed a little bit. At my request, **David Stem** assembled a committee to review our awards program and make recommendations on how we might refine the nominating and selection process, harmonize all our various awards (a combination of legacy SCEA and ISPA awards), and enhance the prestige of all the awards. Dave and his team did a remarkably thorough job. Their recommendations were adopted by the board in total. In fact, the new program was implemented with the results announced at the Atlanta Workshop to universal praise.

Without exaggerating, at least two years of painstaking work by **Peter Andrejev** and his certification committee has come to fruition with our new Parametric Estimator certification. I won't go into too much detail because it's described at length in another article, suffice to say that the team expended too many volunteer hours to fully capture. This monumental task is perhaps the best example of what achievements our amazingly dedicated volunteers are capable of. I don't think it's an exaggeration to say that in our long history, these efforts are why we exist and why we are thriving.

Which brings us to unfinished business. There is no doubt that ICEAA continues to face challenges. We always have. Yet I am more than confident that the next board and the next leadership team will meet them all. Our real strength is and always will be the selfless dedication our membership to step up and do the hard work necessary to preserve and build our profession and our community.



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- [www.iceaaonline.com/techshowcase](http://www.iceaaonline.com/techshowcase)



# Business Office Update

*Megan Jones, ICEAA Executive Director*

Since our last issue, we held the Annual All-Member Meeting for the second time as an hour-long webcast. **Paul Marston** did a great job of updating everyone on the state of the association and answering the pre-submitted questions. Even more members tuned in than they did in 2015, so it looks like we're on to something here. If you're one of those people who plans a year in advance, you should be able to look forward to the 2017 broadcast in late September.

**Dale Shermmon** has penned a comprehensive overview of the International Training Symposium that we held in Bristol, England in late October, so I won't put out any spoilers here, but I will say it was a jolly good success. I've said in these columns before how much I enjoy our workshops, and this one had the added bonus of getting to meet some of our members from other countries that can't always make it to our events stateside.

I want to thank everyone on the International Training Symposium planning committee for all of their hard work in putting it all together: **Jason Dechoretz, Hank Apgar, Peter Braxton, Brian Glauser, Andy Prince, Dale Shermmon,** and **Sherry Stukes**; all of the track chairs and speakers; and everyone who contributed in ways big and small.

A special thanks to **Andy Langridge** and **Kay Lilywhite** from the PRICE Systems office in the UK for their home-field support - we couldn't have pulled it off without you guys.

Six days after my flight back from Heathrow we were back in Bethesda for the 2016 Integrated Program Management Workshop. This 28th annual IPMW iteration was another success, with over 350 attendees joining us for training sessions, workshops, and of course the ICEAA-sponsored Cost Estimating Track. My thanks and compliments go out to our co-hosts, the **College of Performance Management (CPM)** and the **National Defense Industrial Association (NDIA)** for their collaborative spirit and hard work in another job well done.

Have you sent us your abstract for the 2017 Workshop in Portland yet? What are you waiting for? Summaries are due **December 1!** With the nice long Thanksgiving weekend coming up, be sure to carve out some time to get your abstract up on [www.iceaaonline.com/callforpapers17](http://www.iceaaonline.com/callforpapers17)



*And I drove on the wrong side of the road.  
The extra insurance was fortunately unnecessary.*

And just when it sounds like the Year of the Workshop is over, I've got to head to Portland to take one more stroll around the meeting rooms and exhibit hall before we all arrive in June....then it's off to scope out locations for 2019...then it's done, right? Right?

Wrong. Our lease is up at the International Business Office and we're moving. We don't have our new location chosen yet, but will be announcing in the next issue. Keep an eye out for an announcement of our new address and phone number in early 2017!



## Upcoming Events

**Abstract Summaries for the 2017 Professional Development & Training Workshop due December 1!**

[www.iceaaonline.com/callforpapers17](http://www.iceaaonline.com/callforpapers17)

**Region 7/SoCal Winter Training Workshop**

Fort MacArthur, CA

December 14, 2016

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

**2017 ICEAA Professional Development & Training Workshop**

Portland Marriott Downtown

Waterfront,

Portland, Oregon

June 7 - 9, 2017

**2017 Integrated Program Management Workshop,**

Bethesda North Marriott Hotel

& Conference Center

Bethesda, Maryland

October 31 - November 1, 2017

**2018 ICEAA Professional Development & Training Workshop**

Renaissance Phoenix Downtown

Phoenix, Arizona

June 12 - 15, 2018



# Certification Corner

*Peter Andrejev, CCEA<sup>®</sup>, PMP<sup>®</sup>  
ICEAA Director of Certification*



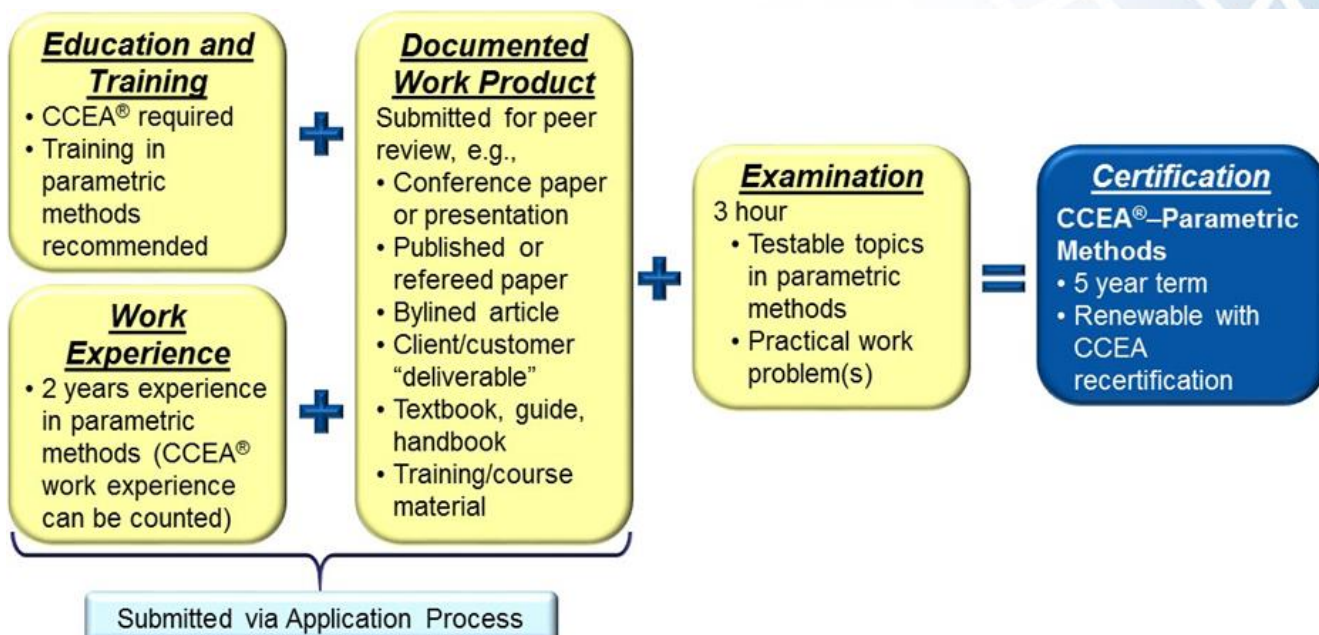
As most of you already know, ICEAA offers two certification designations: our hallmark certification, the Certified Cost Estimator/Analyst (CCEA<sup>®</sup>), and our apprentice-level designation, the Professional Cost Estimator/Analyst (PCEA<sup>®</sup>). Starting January 1, 2017, ICEAA will accept applications for a third certification, a specialty designation offered to CCEAs who demonstrate exceptional competency in Parametric Methods.

The CCEA-P certification requires that applicants possess a current CCEA, submit an original work product for peer review, and achieve a grade of 70% or greater on the three-hour CCEA-P examination that has just been beta-tested and finalized. The CCEA-P examination consists of 75 multiple choice questions including several work problems that require candidates to derive the correct answers from real-world data sets.

Applicants must also submit a work product they created that demonstrates the use of parametric

methods. As the below figures indicates, work products can include: a paper or presentation given at a conference, a published or refereed paper in a professional journal, a bylined article, a textbook, guide or handbook, training/course material, or a client/customer “deliverable” that the applicant authored or contributed significantly as a co-author. The International Office and I will work individually with applicants to resolve concerns of confidentiality or the release-ability of work products.

The CCEA-P certification also marks the International Office’s commitment to streamline application processing through the use of our website. Candidates can submit their entire application on-line with only the work product possibly requiring hardcopy submission via traditional mail. However, the examination itself will continue to be paper-based as ICEAA does not (yet) have enough applicants to afford online testing.



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

*Book review by Col David Peeler*

Continuing our journey away from CER-laden titles and books with large data appendices, the selection for this review is about the fun stuff. In fact, we'll look at companion books, two titles by Robert Zubrin that provide a vision for the human race. This vision will cost billions of dollars, maybe trillions, and span at least a century. Although containing some data, with its analysis and resulting persuasive arguments, the cost estimator's intrigue likely will focus on the currently immeasurable cost of all that is proposed.

## THE CASE FOR MARS: THE PLAN TO SETTLE THE RED PLANET AND WHY WE MUST

Robert Zubrin  
with Richard Wagner  
Free Press: New York, N.Y.; 1996

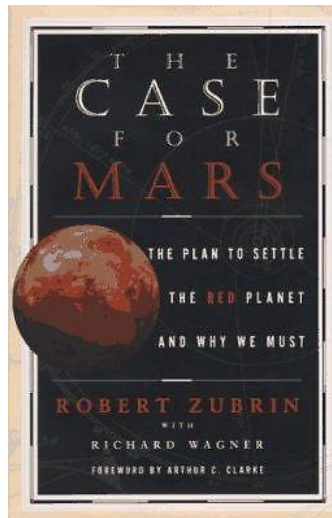
The first title of the pair is The Case for Mars. In it Zubrin tells why we as a species should aspire to colonize Mars, what benefits such a quest will likely produce, and how a symbiosis can be created between Mars and Earth. From a cost estimators' view, there is plenty of fodder for stimulated thought. Granted... a love of space and science fiction is helpful, but not required to think about all the challenges and how one would estimate all involved with establishing an initial and then thriving community on Mars.

Throughout ten chapters, Zubrin outlines the many possibilities of Mars and how we already possess the technology and/or knowhow to capitalize on the opportunity to tame a new frontier. From getting there to transforming an outpost to a civilization, one is mesmerized by the science; but as a cost estimator, the intrigue quickly turns to thinking through what this would cost – and how would such estimates be derived? What does it take to get to Mars in the first place?

Once there, what needs to be imported (on-ported) and what can be exported (off-ported)? On-ported solar panels and wind turbines can produce initial needs. Soon, such things could be manufactured on-planet. The necessary minerals are present. Where does economics/science take us then?

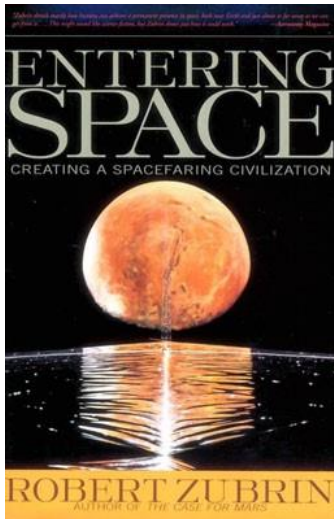
Once a foothold is gained, geothermal resources ramp-up energy potential for large generating stations. Soon enough, greenhouses will spread across vast portions of Mars' surface. Coupled with outgassing, an atmosphere will slowly develop, making Mars a place humans can inhabit and multiply to large numbers, supporting themselves via products from the host of indigenous resources. What will all this cost? How much is borne by Earth before payback begins toward a viable return on investment? A multitude of details lie-in-wait of estimation; such an effort can put into context the costs and potential profits of creating an ecosystem and an economy from Mars' basic chemical elements.

With Mars and Earth being the only two locations in the solar system capable of supporting human civilizations, activity between Earth and Mars can foster further expansion. Zubrin moves past Mars in the second book, Entering Space. This second work picks up where the previous one



Book Review





leaves off. A contemporary exploration age on a new frontier opens humanity to a reconceived space race. The activities of which create global civilization on Earth, as well as Mars. These activities catalyze expansion, invention, and entrepreneurship – the essence of doing business in orbit. Mars as the new world; a world in reach of the asteroid belt; and a good pedestal for points beyond makes Mars the first step in creating a spacefaring civilization of humans. The science is compelling and the details riveting; but this reader kept trying to construct the methodologies for estimating the multitude of efforts required to make all this a future

## ENTERING SPACE: CREATING A SPACEFARING CIVILIZATION

Robert Zubrin  
Robert P. Tarcher/Putnam:  
New York, N.Y.; 1999

reality. Where does cost turn to profit? What's the margin? When's the payback? How much is doable from unrecouped government expenditure? ...? ...?

If you're not a fan of space, these reads might not be your bailiwick; but from an estimating challenge perspective, one of monumental proportions, understanding the requirement and calculating the cost of getting to and terraforming a planet – the ultimate megaproject – is quite the thought provoking read. Not sure what the WBS on this would look like, but certainly it would be massive, looping, and splintered with much attention to the multiple critical paths. These are two excellent reads; highly recommended for anyone interested in the future of space travel, or cost estimators that enjoy a complex technical, as well as the largest of scope, estimating challenge. Are you ready for some science non-fiction? 🌌

*Colonel Peeler is Deputy Director, Financial Management & Comptroller for the Air Force Life Cycle Management Center. He is currently deployed, serving as the Director of Staff for the 379th Air Expeditionary Wing, in support of Operations INHERENT RESOLVE and FREEDOM'S SENTINEL. Colonel Peeler is a graduate of the Air Force Institute of Technology, a certified cost estimator/analyst, and a certified acquisition professional in both financial and program management. Among other affiliations, he is a member of the ASMC & ICEAA.*

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

# What ICEAA Membership Means to Me

*Ellie Bassett, Region 1 Director*

*Kicked off by ICEAA International President Paul Marston in our Summer 2016 issue, ICEAA World will be featuring a new testimonial from a long-time member each issue where we get to hear what made them want to become a member, what got them heavily involved in ICEAA, and what keeps them coming back.*

I've been a member of ICEAA since 1998. My story as to why I decided to join, SCEA at the time, was mostly due to my boss encouraging me to do so. I joined thinking it was what the boss wanted and felt that would make for a better relationship with my employer. Naturally, we all want our employers to like us so they offer us better opportunities in our careers.

What I quickly discovered was that ICEAA offered me so much more. Math geeks, automated tools, spreadsheets! Being a member put me in touch with my counterparts around the industry, giving me the opportunity to learn what they were dealing with and their issues and resolutions for problems in their corner of the field.

Attending chapter and national events brought a reality to this feeling of community. I got to meet these math geeks from around the country (and the world!) and had the chance to discuss those very automated tools and spreadsheets we were all so passionate about. But it wasn't just fellow cost aficionados that came into my ICEAA circle. I have met local celebrities, politicians, and some very important people in the top echelons of the DoD and within our various industries. The many speakers that presented at our events opened my mind to so many different aspects of cost analysis.

All these experiences made my job more personally rewarding and compelled me to head to work every day looking forward to discovering my next challenge.

Before long, I was more than just a member. I served as the treasurer, officer at large, and eventually president of the New England Chapter. From there, I moved on to serve two terms on the International Board as the Region Director for the greater New England area, as well as various committees.



*Long-time ICEAA Member  
Ellie Bassett*



*Former Massachusetts Senator  
Scott Brown addresses a 2011  
SCEA New England  
Chapter Meeting*



*Dr. Jamie Morin, current Director  
of Cost Assessment and Program  
Evaluation (then Acting Under  
Secretary of the Air Force)  
addresses SCEA in 2012*

Now that my last term as Director is coming to an end, why do I stay? Simply, I don't want my work to be just a job, I want to bring value to my position and I want to enjoy my job. Through ICEAA I have access to all the latest news and trends in my industry. And I have a network across the country and internationally of other cost geeks that I know well and whom I can contact anytime with questions, suggestions. ICEAA has become a part of me.

It amazed me when I realized I already knew what I didn't think I knew. When I moved on from my previous employer to where I am today, I accepted a cost position with a heavy emphasis on earned value, something I was involved with prior to this position. Although my employer has their own guidance and rules for the practice of earned value, knowing the other side of the coin, i.e. the Government's requirements, provides me the customer perspective. Numerous times I've referenced earned value presentations from ICEAA events to guide me in my analysis of variances and such.

Throughout my ICEAA experience, I've been asked on multiple occasions, usually by the newcomers, why should they join ICEAA. What is the benefit to membership? My response has included the typical reason why professional association membership is beneficial: you are instantly connected to a network of like-minded professionals. And then I ask the question: do you like your job? Are you excited about your job? Because if being heavily involved in ICEAA has done nothing else, it's made me excited about my job.

Oh, and I do not plan on reverting to being "just" a member – look forward to seeing me on future committees!



# Ask an Analyst

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



A reader of “Ask A Cost Analyst” submitted the following question:

**Q:**

A couple of our analysts are doing regressions on a set of data. So far their results are rather mediocre. However, they have discovered that certain pairs of equations, when run separately and the outputs averaged, give excellent results. My question: is this a valid approach to developing a cost model? In other words, could we publish a model that runs two separate CERs and averages them to get the cost estimate?

For this column, **Bob Bitten** of the Aerospace Corporation and yours truly teamed up to provide an answer:

Here is my answer: I think the answer is definitely yes--it is fine to run two (or even more) CERs and then average the results (or otherwise construct a consensus estimate). In fact, I think this is a much preferred approach to using one CER because all CERs have biases, errors, normalization peculiarities and all manner of other “issues”. Using an average or consensus result should tend to null out the biases if they are more or less random errors (which one would hope).

But before averaging an estimator should recognize that variability in results from two or more CERs is a good thing, not a bad thing. Why? Because it gives you an indication of the underlying possible variability in the estimate cost. If the CERs provide a close “shot pattern”, that indicates high confidence/low variability in the cost estimate. If however, the models predict “the hurricane is going in wildly different directions” (to use one of

my favorite analogies—the one between cost modeling and storm modeling), then that indicates low confidence/high risk in the cost estimate.

Bob Bitten adds: At the Aerospace Corporation our methods often do just that: we run multiple models and adjusted analogies and then we average them to get our most-likely estimate and we use the range of those estimates for our distribution. So from our perspective, yes – that’s fine!

Returning to my hurricane analogy, in North America, the National Hurricane Center predicts the size, structure, intensity and track of hurricanes and other weather events. Among other tools, they run various models and then form a consensus on the future predicted track for the storm.

So in conclusion, Dear Readers, if it’s good enough for me, the Aerospace Corporation and the National Hurricane Center, I think averaging the results of cost models is an appropriate strategy.





# ertification ongratulations

ICEAA would like to acknowledge both those who volunteer their time to proctor the Certification Examination and those who achieve certification. Without CCEA® certified proctors to manage exam administration; ICEAA would be unable to offer the exam in so many locations throughout the year. If you are CCEA® certified and would like to proctor an exam in your area in exchange for points toward recertification, please contact the ICEAA International Business office.

Thanks go out to following individuals for volunteering their time to proctor the certification exam in July and September: **Tom Dauber, Richard Jenkins, Daryl Ono, Richard Osseck, Tim Salvage** and **Kris Yoon**.

## **CCEA® Achievers:**

---

**Mary E. Chenoweth**, RAND Corporation

**Dirk G. Kalweit**, US Securities and Exchange Commission

**Corby J. Megorden**, Ennis Consulting

**Ramzi E. Shuhaibar**, Booz Allen Hamilton

**Mike Simmons**, UK Ministry of Defence

## **PCEA® Achievers/CCEA® Eligible:**

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**Adam Letcher**, Technomics, Inc.

**Alex Walter**, Tecolote Research, Inc.

**Emily White**, Naval Engineering Logistics Office

**JonMarc Winfield**, Naval Engineering Logistics Office

## **PCEA® Achievers:**

---

**Mark Bachand**, The Boeing Company

**Jessica Boatwright**, Technomics, Inc.

**Chad P. Grigsby**, Tecolote Research, Inc.

The following have  
recertified between  
July and September 2016:

Neil Albert

Ellen Barber

John Bates

Rick Battle

Stephanie Casserly

Brett Cayer

Bryan Daly

Ryan Gianneschi

Steve Green

Joseph Hamaker

Kelly Kane

Kevin R. Kuphal

Donald McGuire

Sarita Sharma

# COMMON CONCEPTS IN COST ESTIMATING

By Joe Wagner

After decades in the cost profession, I can safely say I have seen a lot of cost methodology documentation. I came across the following example from the Michigan State University Extension service while reviewing content for the ICEAA weekly online publication, *Cost Estimating NewsBrief*.

What struck me about the write-up was not so much the somewhat unusual (to a longtime DoD analyst) subject

matter, but rather how much alike the principles and practices of cost estimating and analysis can be, no matter what is being estimated. To illustrate the point, here is a quick quiz. Below are listed an even dozen costing practices and concepts, taken pretty much randomly from the ICEAA CEBok training tool outline. As you read the following excerpt from the MSU Extension article, see how many more of them you can find being applied.

**MICHIGAN STATE  
UNIVERSITY  
EXTENSION**

## Planning for your 4-H beef project animal: Estimating costs\*

By Julie Thelen  
Michigan State Univ. Extension

### Animal Purchase

The price of a beef animal will vary depending on the quality of the animal and the reputation of the farm. It is common to see calves range from \$800 to even a few thousand dollars per calf. However, do not pay a high price for a calf with the idea that this alone will assure you of a winning champion. It takes a good feeding program and a lot of hard work, along with the right kind of calf, and good showmanship skills to win grand champion.

To determine your budget, start with looking at the average price of calves being sold in your area. If you are not able to find a local average, use sources like the USDA Agricultural Marketing Service Feeder Cattle Report to determine the current value of feeder calves. For example, in this cattle report, beef calves weighing between 600 and 700 pounds were averaging approximately \$144 per hundredweight, or \$864 for a 600-pound calf.

In reviewing the value of calves in your area, realize that the costs of calves will vary depending on quality. Use the base price you have determined from the averages to better set your budget for your calf project. Determine which sales you plan to attend and be prepared to adjust your budget slightly if needed. The Michigan Cattlemen's Association has a list of fall cattle sales that may be helpful in planning. Many cattle producers also offer cattle for sale through private treaty on their farms, which may be another option for purchasing your calf project.

Keep in mind that you will need to transport your calf home, which could require an additional trip, or added fuel costs of hauling a trailer to farms

### Feed costs

If you are budgeting or need to borrow money to buy feed for a project animal, you need to know how much feed your calf will eat. If your 500-pound feeder calf will be sold at 1,250 pounds, it will need to gain 750 pounds. You can estimate that it will take seven pounds of feed per pound of gain for cattle. Therefore, your calf will probably need to eat about 5,250 pounds of feed (or seven pounds multiplied by 750 pounds of gain).

If you estimate that a quarter of the total weight of feed is hay (roughage) and three quarters is grain (concentrate), you'll need 1,312.5 pounds of hay and 3,937.5 pounds of grain. If hay is \$120 a ton (or \$0.06 cents per pound because 1 ton equals 2,000 pounds) and your grain mixture costs \$480 a ton (or \$0.24 cents per pound), your feed costs will be \$1,023.75 (\$78.75 in roughage plus \$945.00 in grain). Thus, your cost of one pound of weight gain is about \$1.37 (\$1,023.75 divided by 750 pounds). Experienced feeders who use additional supplements or grow their own grain may have a different cost, but these are good estimates for most 4-H members.

If your calf project remains healthy, you are on your way to a successful project year. Observing your animal frequently will help you to be aware of changes in animal behavior, which could help you prevent diseases and save additional costs. As you select your animal and feed, be proactive and ask questions of where you purchase your animal and feed to make the most of your money and set you on the path for a great livestock experience.



**Baseline definition**

**Data source  
validation**

**Cross checks**

**Extrapolation of  
actuals**

**Cost methodology  
definition**

**Inflation/Indexes**

**Cost Estimating  
Relationships**

**Parametric  
methods**

**Data collection**

**Rates & Factors**

**Data  
normalization**

**Risk analysis**

Posted on **September 30, 2016** by Julie Thelen, Michigan State University Extension, 4-H Livestock and Veterinary Science Educator  
[http://msue.anr.msu.edu/news/planning\\_for\\_your\\_4\\_h\\_beef\\_project\\_animal\\_estimating\\_costs](http://msue.anr.msu.edu/news/planning_for_your_4_h_beef_project_animal_estimating_costs)

# International Training Symposium Overview

October 17-20, 2016 • Bristol, England

By Dale Shermon



ICEAA has a tradition that every four years - in a leap year - we pick an international location to host a second ICEAA workshop. Since 2016 is a leap year, it was time for an out-of-America experience. In 2012, the international workshop was very successfully held in Brussels, Belgium, so there were high expectations for this year's conference.

The largest population of ICEAA certified members outside America is located in the southwest of the UK near the city of Bristol, in proximity to the Ministry of Defence (MOD) facility at Abbey Wood, which is headquarters of the cost assurance and analysis service (CAAS). For this and other reasons, Bristol was selected for the 2016 ICEAA International workshop. And so it was in mid-October over a hundred ICEAA members from around the world headed for the Bristol Marriott City Centre hotel.

Many months of planning by ICEAA and the other hosting entities had prepared for this joint conference. Participating organisations included the **Society for Cost Analysis and Forecasting (SCAF)**, **Association of Cost Engineers (ACostE)**, **Space Systems Cost Analysis Group (SSCAG)**, **Association of Project Management (APM)**, **Dutch Association of Cost Engineers (DACE)**, **Netherlands Software Metrics User Association (Nesma)** and **International Function Point Users Group (IFPUG)**.



Attendees had a great mixture of backgrounds from industry, government, consulting and academia. It was a truly international conference with representatives from eleven different countries including Australia, China, Germany, Canada, France, USA, Belgium, Greece, Denmark, Netherlands and UK.

The technical tracks considered topics such as Management, Models & Methods, Space Systems, Software, Risk Analysis and finally Government Perspectives. The training track was a selection of sessions taught from the ICEAA CEBoK tool, and proved very popular. There was also an opportunity to take the ICEAA certification exams on Friday that was seized upon by five intrepid individuals with true stamina.

The sponsor showcase provided the opportunity for those firms to demonstrate and present their capabilities. We were grateful for sponsorship from gold sponsors **QinetiQ** and **PRICE Systems**, and silver sponsors **Galarath**, **Palisade**, **4cost** and **MCR**.

*continued*

## Gold Sponsors



## Silver Sponsors



Paul Marston welcomes the attendees

ICEAA Executive Director **Megan Jones** worked with a team including **Jason Dechoretz**, **Andy Langridge**, **Peter Braxton**, **Brian Glauser**, and **Sherry Stukes** arranging sponsorships, organising training schedules, judging papers and presentations, and taking registrations for months before ICEAA President **Paul Marston** declared the conference open.



*Presented in partnership with:*



*Monday Evening Welcome Reception*

The registration and opening reception on Monday came with a relaxed atmosphere and gave those attending the opportunity to network and register before the busy training symposium began. People circulated through the conference spaces and caught up with old friends and colleagues.

Following a full English breakfast on Tuesday, October 18<sup>th</sup>, the training symposium started formally with

**Dr. Tim Sheldon** from the UK MOD providing a stimulating keynote talk on the UK's Defence Equipment and Support (DE&S) establishment of an effective project controls capability for delivering equipment and support to the UK's Armed Forces – valued at over £132 billion over the next 10 years.



*Shane Forth*

Later on Tuesday attendees heard from **Shane Forth** from Costain and **Catherine Lambert** of the Engineering Construction Industry Training Board (ECITB) about the ongoing efforts to develop and launch the first project controls modern apprenticeship program in the UK.



*Catherine Lambert*

Wednesday commenced with a thought provoking keynote presentation by **Michael Lionais** from the Canadian Treasury Board Secretariat. Mike asked the audience to consider how to go about presenting their cost conclusions in a way that provided recipients with an easier decision.

Finally, on Thursday when a scheduled speaker was unable to attend, **Andy Prince** from NASA stepped in with a fascinating talk on the economics of the space shuttle programme.



*Dr. Tim Sheldon*



*Michael Lionais*



*Andy Prince*

*continued*





*Best Presentation Winner Alan Jones Outs the Outliers*

During Wednesday's plenary session, chair of the International Training Symposium Best Paper Committee **Andy Prince** took time to explain the review process and judging of the best presentation and best paper for the conference. With 36 technical presentations and a similar number of associated papers this was a substantial process and Andy had a number of volunteer judges who offered both their time and support.

Due to the high quality of papers reviewed, the decision to name a single best paper was not an easy one. So much that there was a draw for first place between:

*Measurement of Software Size: Contributions of COSMIC to Estimation Improvements* by **Alain Abran, Charles Symons, Christof Ebert, Frank Vogelegang, and Hassan Soubra**


-and-

*The Signal and the Noise in Cost Estimating* by **Christian Smart**

An honorable mention went to **Steve Sterk** and **Anthony Olquin** for their paper, *NASA's X-Plane Database and Parametric Cost Model V2.0*.

What makes a great paper isn't always what makes a great presentation. In an effort to recognize these subtle differences, the Best Paper Committee decided to create a new Best Presentation award for the Symposium's best slideshow. This inaugural award went to **Alan Jones** for his comprehensive presentation, *Outing the Outliers* dealing with numerous methods of dealing with outliers in a dataset.

These papers and their corresponding presentations are all available for download on the ICEAA website at [www.iceaaonline.com/bristol2016](http://www.iceaaonline.com/bristol2016)

And after those long three days of concentrated content, the certification exams on Friday brought another European ICEAA training symposium to an end. Attendees had made new friends, renewed old friendships, learnt a lot and laughed a lot. It was a great success and all those involved in the ICEAA and other organisations that I have mentioned in this article, and those I have forgotten (apologies!), should be proud of arranging a great event and inspiring the international costing community further in terms of training, skills and capability. 



*Ryan Feeks and Sarah Green provide CEBoK training*



*Best Paper Winner  
Alain Abram (L) with  
Andy Prince (R)*



*Best Paper Winner  
Christian Smart (L) with  
Andy Prince (R)*



*Best Paper Honorable Mention  
Winner Steve Sterk (L)  
with Andy Prince (R)*



*Best Presentation Winner  
Alan Jones(L)  
with Andy Prince (R)*



# Air Force Institute of Technology (AFIT) Update & Call for Research Topics

*By Lt Col Brandon Lucas*

*Director, AFIT Graduate Cost Analysis Program*



*2017 AFIT Graduating Class*

In the summer edition, I estimated that we had 13 new students inbound to our graduate program this fall. Well, much like some of our acquisition programs, I underestimated that number and we actually have 14 new students for a total of 29 military and civilian personnel. Thankfully someone else estimated software and computer requirements so we have enough resources for the students to run regressions and conduct analyses!

Bad estimator jokes aside, we really are excited to have such a large group of students. As each student completes a thesis as part of the graduate program, he or she advances or develops new streams of cost estimating research. Our students graduating in March of 2017 are already pursuing an assortment of topics ranging from engineering change orders and schedule estimation to attritable aircraft and personnel turnover analysis. However, our new students are now in need of topics too.

A “future topics” call was sent in November of this year to Air Force cost center personnel to help shape next year’s research agenda. We thought it would be a great idea to also provide the ICEAA membership with an avenue to submit suggested thesis topics for our AFIT students. We would like to foster opportunities between sponsor organizations such as ICEAA and its membership, who may lack the time or expertise to perform research, and our students, who desire relevant projects and feedback from experienced cost practitioners.

After a student selects a topic, the submitter of that topic serves as a subject matter expert on a student’s thesis committee along with AFIT faculty. Students arriving this fall will graduate approximately 18 months later, with the last 9 to 12 months focused on thesis projects. The thesis process culminates with an oral defense of the work prior to graduation. Additionally, several

students present at conferences or publish journal articles to further disseminate the research.

If this opportunity to propose thesis topics for AFIT students sounds interesting, please keep the following considerations in mind:

- The thesis topic should allow for a scholarly pursuit of a research question that employs the scientific method and contributes significantly to the development and/or application of cost analysis, cost estimating or financial management.
- The topic should result in a thesis that is a definable/ doable project completed in a timely manner (delivery/ completion ~ Jan 2018 for the new cohort).
- What is the objective of the thesis topic? Does the topic have a well-defined scope? Is data available?

If you or your organization has a question, or would like to submit and support a research topic, please email me at [brandon.lucas@afit.edu](mailto:brandon.lucas@afit.edu). A short paragraph (5-6 sentences) describing the topic (Issue, Problem, & Possible Method/ Solution if available) and a POC for further information are sufficient to start the process. You will be notified if/when one of the students chooses a submitted topic.



*Predicted 2018 AFIT Graduating Class*



# Cost Consistency and Completeness as an Impossible Exercise: Gödel's Impact on Hilbert's Problems for Cost Estimating

by Colonel David L. Peeler, Jr.

In two previous papers, which were presented to the 2007 Joint Conference of the Society of Cost Estimating and Analysis (SCEA) and the International Society of Parametric Analysts (ISPA); and subsequently a revision presented at the International Cost Estimating and Analysis Association (ICEAA) in 2013, **Braxton and Coleman** used the structure and analysis of Hilbert's Problems as the catalyst to propose (2007) and revisit (2013) their formulation of Hilbert's Problems as applied to Cost Estimating. What follows in this paper employs Gödel's theorems of undecidability w/respect to Hilbert's application onto the cost estimating community as laid out by Braxton and Coleman. What can we learn about ourselves as estimators and where can we exert greatest impact with our estimates? Using Gödel's two theorems as catalyst, we explore the effect and utility of exacting mathematics and other notions on cost estimates specifically and programatics generally.

German mathematician David Hilbert put forth a list of 23 mathematics problems<sup>1</sup> that were unsolved at the time. His influential presentation, "The Problems of Mathematics," was given on 8 August 1900 in the Sorbonne at the Paris conference of the International Congress of Mathematicians. As the most renowned mathematician of his time, "Hilbert believed that everything in mathematics could and should be proved from basic axioms."<sup>2</sup> Thus, enabling an answer to every single question and freeing the discipline of inconsistencies. Hilbert's famous talk influenced the course of mathematical activity for the next century.

The basis axioms from which Hilbert sought proofs for "everything in mathematics" were structured within axiomatic set theory. The intuitive approach to set theory tacitly assumes that a set may be formed from the class of all objects satisfying any particular defining condition. The most widely studied systems of axiomatic set theory imply that all sets form a cumulative hierarchy. The most common axiomatic set theory is Zermelo-Fraenkel set theory, which is intended to formalize a single primitive notion, that of a hereditary well-founded set; so that, all entities in the universe of discourse are such sets. However, the assumption of set formation gives rise to paradoxes, although axiomatic set theory was originally devised to rid set theory of such paradoxes.<sup>3</sup> Thus, Hilbert's desire to find proofs for all problems in mathematics had a yet unforeseen foreshadowing axiomatic set theory problem.

Hilbert selected the 23 problems he felt most important and some related to the general field of mathematics. The problems were aimed to serve as examples of the kinds of problems whose solutions would lead to advancing mathematics. Therefore, some were areas for investigation and not strictly problems for calculated solutions. Most of the problems focused on the logical structure of the discipline, and many were not new. Immediate results occurred with respect to some of the problems, while others remain unsolved today. The abundance of success is partially attributable to Hilbert's statement of the problem and definition/explanation, as some of the 23 problems had existed for hundreds of years. Those problems not quickly resolved still benefited from Hilbert's program via conversation and debate, some even

*continued*

<sup>1</sup> Hilbert originally had 24 problems on his list, but decided against including one of them in the published list. The "24th problem" was rediscovered in Hilbert's original manuscript notes by German historian Rüdiger Thiele in 2000.

<sup>2</sup> Singh, Simon. Fermat's Enigma: The Epic Quest to Solve the World's Greatest Mathematical Problem. Anchor Books: New York, N.Y.; 1997, page 136.

<sup>3</sup> van Heijenoort, Jean. From Frege to Gödel: A Source Book in Mathematical Logic, 1879–1931. Harvard University Press: Cambridge, MA; 1967.

sparking the creation of mathematical subdisciplines.

Hilbert retired in 1930 confident that mathematics was on a restorative, unifying path. He anticipated a consistent logic sufficient to answer every mathematical question. Then in 1931, Kurt Gödel, aged 25, burst upon the scene, publishing a paper that forever devastated Hilbert's vision of a definitive and consistent logic of mathematics. Thus, Gödel joined Hilbert as one of the two greatest figures of twentieth century mathematics.<sup>4</sup> In an interesting side note, although Hilbert lived for 12 years after Gödel's theorem, no indication has been found that he wrote any response to Gödel's work.

Informally, Gödel's first incompleteness theorem states that all consistent axiomatic formulations of number theory include undecidable propositions.<sup>5</sup> Gödel's second incompleteness theorem states that if number theory is consistent, then a proof of this fact does not exist. Gödel had proved a complete and consistent mathematical system was impossible. The exact opposite of Hilbert's dream. The importance of Gödel's first incompleteness theorem is that it provides a negative answer to Hilbert's program, asking whether mathematics is "complete," in the sense that every statement in number theory can be either proved or disproved. In his second incompleteness theorem, Gödel proves that all consistent formulations include undecidable propositions.<sup>6</sup> Simply put: the first incompleteness theorem shows, "If axiomatic set theory is consistent, there exist theorems that can neither be proved or disproved" and the second incompleteness theorem strengthens the first in that, "There is no constructive procedure that will prove axiomatic theory to be consistent."<sup>7</sup> So:

Essentially Gödel's first statement said that no matter what set of axioms were being used there would be questions that mathematics could not answer — completeness could never be achieved. Worse still, the second statement said that mathematicians could never even be sure that their choice of axioms would not lead to a contradiction — consistency could never be proved.<sup>8</sup>

Well, you might be asking, 'What does this mean for cost estimating? ... What is your point?' Please, stay with me a bit longer... We're getting there.

The application of Gödel's incompleteness theorems to fields other than logic and mathematics can provide broader revelations. However, strict application or sound reasoning can be questionable, especially if the system being studied is not sufficiently axiomatic. Some have tried to apply Gödel's conclusions "in contexts where its relevance is at best a matter of analogy or metaphor."<sup>9</sup> These systems are not formal in the logic sense — examples include philosophy, quantum mechanics, the Bible, and the legal system, where no formal rules of inference exist.

One influential application of Gödel was by Roger Penrose.<sup>10</sup> He argues that human brains cannot be given a full explanation in terms of currently understood physics because there's just something about a human mathematician that can somehow *see* the consistency of a *formal system* — like the analytic truth of axioms — which ought to be prevented by Gödel's theorem, if our brains were just formal systems in the sense

*continued*



<sup>4</sup> Hofstadter, Douglas R. Metamagical Themas: Questing for the Essence of Mind and Pattern. Basic Books, Inc.: New York, N.Y.; 1985, page 485.

<sup>5</sup> Hofstadter, Douglas R. Gödel, Escher, Bach: An Eternal Golden Braid. Vintage Books: New York, N.Y.; 1980, page 17.

<sup>6</sup> Ibid, page 17.

<sup>7</sup> Singh, Simon. Fermat's Enigma: The Epic Quest to Solve the World's Greatest Mathematical Problem. Anchor Books: New York, N.Y.; 1997, page 139.

<sup>8</sup> Ibid, page 141.

<sup>9</sup> Franzén, Torkel. "The Popular Impact of Gödel's Incompleteness Theorem." *Bulletin of the American Mathematical Society*, Volume 53, Number 4 (April 2006), page 440.

of machines. Hence, Penrose rejects the plausibility of strong artificial intelligence, pending the discovery of something like quantum gravitational effects in the human brain. Hofstadter made another interesting assertion of a Gödelian loop “which limits the depth to which any individual can penetrate into his own psyche? ...is it not reasonable to expect that we cannot mirror our complete mental structures in the symbols which carry them out?”<sup>11</sup>

Almost there...

In their 2007 paper, Braxton and Coleman presented a sequel to Hilbert’s problems, a set of problems for cost estimating, and an award winning update in 2013. I affectionately think of these as the Braxton-Coleman Problems. Like Hilbert’s, the Braxton-Coleman problems range in topic and precision. They did a great job organizing the problems facing the field of cost estimating into four categories: professional identity; analytical techniques; cost estimating implementation; and integration with other disciplines. Also like Hilbert, they embrace new developments and specialties within our discipline. The Braxton-Coleman program should be of intense interest to cost estimators appreciative of how it all fits together, as well as those doing research with respect to the specific problems clarified and defined. Braxton and Coleman have admirably done for cost estimating what Hilbert did for mathematical logic. These problems should receive continued study until resolved; and may well guide cost estimation research for the coming decades. However, care must be taken not to construe the Braxton-Coleman program into a complete unified theory of cost estimating with internal consistency. I do not believe that is their intent, but the casual reader might leap to an implicit or explicit conclusion that

once all these problems are solved, the cost estimating community will have arrived at an axiomatically consistent system wherein our construction is provable.

The reason for such a warning stems from the abundance of research we costers do to show many things with extreme rigor and advanced mathematics. As Hilbert pointed out:

This conviction of the solvability of every mathematical problem is a powerful incentive to the worker. We hear within us the perpetual call: There is the problem. Seek its solution. You can find it by pure reason, for in mathematics there is no *ignorabimus*.<sup>12</sup>

Many cost conferences contain rigorous mathematics seeking to show or prove esoteric points related to cost estimation. Often these interesting and analytically stimulating problems have limited applicability to the field of practice. Whereas, practitioners of cost estimating have firm mathematics backgrounds and enjoy the search for solutions, we must remember that cost estimating is an inexact science.

However, unlike the above examples of religious texts, philosophy, and the like that apply Gödel’s conclusions as metaphor and analogy, cost estimating uses a lot of mathematics and formal rigor to demonstrate and apply pure science to what inherently has social science aspects, albeit significantly influential ones. If we fail to remain conscious of the limitations under which we strive, the incentive mentioned by Hilbert has the potential to blind us to Gödel’s devastating effect on a vision of a consistent logic to answer all cost estimating questions. The effort is a

*continued*



<sup>10</sup> Penrose, Roger and Gardner, Martin. The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics. Oxford University Press: New York, N.Y.; 1989.

<sup>11</sup> Hofstadter, Douglas R. Gödel, Escher, Bach: An Eternal Golden Braid. Vintage Books: New York, N.Y.; 1980, page 697.

<sup>12</sup> Hilbert, David. “Mathematical Problems.” Bulletin of the American Mathematical Society, Volume 8, Number 10; 1902, pp. 437-479. The Latin maxim *ignoramus et ignorabimus*, meaning “we do not know and will not know,” stood for a position on the limits of scientific knowledge, in the thought of the nineteenth century.

<sup>13</sup> Peeler, Jr., David L. “The Art of Costing: Musings on Estimating, War, & Analytical Rigor.” *National Estimator*, Spring 2011.



noble one; and the caution is just that, a reminder to be judicious in our claims, as cost consistency and completeness is an impossible exercise.

We must always remember that cost estimating is as much art as it is science.<sup>13</sup> No matter how rigorous the math we extract and apply, the totality of our programmatic estimates, their context, and their decision environment are influenced by people that serve as inputs to the problems. Thus, we must be equally mindful of the social science side of our business. The solution isn't confined to the equations; it's also influenced by human biases. Further, the overall complexity is vast, requiring principles from other disciplines, in a widening array of possibilities beyond our set of problems. All this, taken together, might help form a consensus understanding of the problem, its contextualization, and lead to generally accepted solutions or applications. What we learn makes the search worthwhile, but a finite answer or set of answers is unobtainable. One of the main goals of Hilbert's program was a finitistic proof of the consistency of the axioms of arithmetic; this shouldn't be a goal of the cost estimating field. While it might take us decades to resolve specific Braxton-Coleman problems, informed by Gödel, we should have a better understanding of what we're working toward.

Gödel's incompleteness theorems are among the most important results in modern logic. His discoveries revolutionized the understanding of mathematics and logic, and have potentially dramatic implications for fields of study heavily reliant on mathematics. Using Gödel's two theorems of undecidability as catalyst, the effect and utility of exacting mathematics was explored as it relates to problems in cost estimating. Examining the impact of Gödel on Hilbert's problems for cost estimating, the limitations of completeness and consistency were shown. We learned that estimators should focus on more than the mathematical problems at hand and impact estimates, as well as decision makers in a broader social sense. The Braxton-Coleman program is very valuable to the cost estimating community. Future updates are highly desired and invaluable to progress within the discipline of cost estimating.

The 2007 and 2013 Braxton-Coleman presentations on *Hilbert's Problems for Cost Estimating* are available on the ICEAA website:

[2007 Presentation](#)

[2013 Presentation](#)

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# ICEAA Chapter and Region Updates

## Northwest Chapter Update

### NW Chapter Officer activities

*Chad Larson, NW Chapter Secretary*

The ICEAA Northwest chapter has been busy in 2016. Last March we hosted our annual member's event at the Museum of Flight in Seattle, we also conducted two certification exam prep classes, and plan to do more member outreach and networking events over the remainder of 2016. This fall also brings a new election cycle to determine the chapter officers for 2017-2018. If you are interested in getting involved and for more information on any of the elective offices, please feel free to contact any NW Chapter officer.

### Chapter Elections

*Stacy Dean, NW Chapter President*

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



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Treasurer: **James Deignan**  
james.r.deignan@boeing.com

Secretary: **Chad Larson**  
chad.m.larson@boeing.com

## Central Florida Chapter Update

*By Jim Roberts, Past President*

The Central Florida ICEAA Chapter held a regular chapter meeting on August 30 at the Olive Garden Restaurant in Orlando and on October 25 at the Perkins Restaurant in Melbourne, FL. By moving our meetings around among these central Florida employment centers, we both enable greater attendance for our membership and offer a viable chapter experience to a greater number of cost professionals in both government and the contractor support industry.

At the Orlando Meeting on Aug. 30, presentations were made by **Joe Ruwe**, Central FL ICEAA Board Member, giving us an overview of the 2016 ICEAA Professional Development

& Training Workshop held in Atlanta on June 7 - 10, and another by **Jim Roberts**, Central FL Past President, on results of the International BOD Meeting in Atlanta on June 6, preceding the Workshop.

At the Central FL Chapter meeting on Oct. 25 in Melbourne, plans for the Chapter were discussed, including how to increase member attendance and participation, as well as decide on dates for future events. A Central Florida Chapter Christmas Party is planned for Saturday, December 3 - to be held at the Perkins Restaurant in Melbourne, FL.



### ICEAA Central Florida Chapter Board of Directors

President: **Chris Hobbs**

Vice President: **Karen Rivaud**

Treasurer: **Greg Seavers**

Secretary: **Tina McMillan**

Past President: **Jim Roberts**

At Large: **Terry Lambing, Joe Ruwe**

## Washington Capital Area Chapter Update

*By Meghan Kennedy, Washington Capital Area Chapter President*

This fall the Washington Capital Area chapter has continued to offer unique programming to our members. October's luncheon program with local meteorologist Veronica Johnson was very successful, with one of our largest turnouts ever, including a large audience dialing in virtually. We've also attempted to virtually include other chapters in our monthly lunch presentations with some success. There are some new events planned, including a service project in December. Read below for more information on what we've been up to and what we're planning!

### Monthly Presentations

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

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

September 7, 2016: "Selling Your Work: Improving Your Briefing Skills". Presented by **Troy Miller** of Tecolote. Held at Tecolote Research, Inc., Arlington, VA.

October 19, 2016: "Weather Predictions and A Day in the Life of a Meteorologist". Presented by **Veronica Johnson** of WJLA. Held at MITRE, McLean, VA.

### Upcoming Events

Service Project: A chapter service project is planned with the Arlington County Food Assistance Center in December.

Membership Annual Meeting: Our annual meeting is currently planned for February 2017.

If you live or work in the greater Washington DC area, please consider joining us for our interesting and worthwhile meetings and chapter projects. Stay tuned for more details on these and other great chapter events in the months to come!



*There was a large turnout for October's luncheon presentation with local meteorologist Veronica Johnson*

## Central Virginia Chapter Update

*By Thomas Knoll, Central Virginia Chapter President*

The Central Virginia Chapter recently transitioned to new chapter leadership. The newly installed chapter officers are collaborating to identify areas for improvement in chapter activities, and to define specific goals and objectives for the upcoming term. These goals and objectives are focused primarily on providing quality, well-communicated meetings to members throughout the region. Our goal is to increase member participation as well as attract new members to our chapter. The chapter hosted its first official quarterly meeting on October 27. Our guest speaker was **Dr. Jonathan Brown** from the Naval Surface Warfare Center Dahlgren Division, Department V11. Dr.

Brown briefed on the findings from his recent study, "Exploring Implementation of Fully Integrated Cost Schedule Method (FICSM)". Dr. Brown covered the specific approaches he employed for integrating cost and schedule estimating into a single model as well as the real-world interpretation and application of the resulting outputs. Both current and potential ICEAA members located in the Quantico, VA and Patuxent River, MD areas are encouraged to participate with the chapter as we rotate meetings between these two locations. We will also provide teleconference/virtual attendance options for all quarterly chapter meetings.



### ICEAA Central Virginia Chapter Board of Directors

President: **Thomas Knoll**  
tknoll@tecolote.com

Vice President: **Robert Watts**  
rwatts@tecolote.com

Treasurer: **Geoffrey Driskell**  
geoffrey.driskell@navy.mil

Secretary: **Brittany Staley**  
brittany.staley@jlha.com

Membership: **Maureen Deane**  
mdeane@tecolote.com



## Region Seven News

### Southern California and San Diego Chapters

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

The Southern California (SoCal) Chapter of ICEAA Region 7 conducted an extremely successful Fall Workshop jointly with ISBSG (International Software Benchmarking Standards Group) at the beautiful Galorath Facility in El Segundo, California on September 7, 2016. This workshop focused on IT Data collection, Analysis, Benchmarking and Cost Estimation, and was very highly rated by the many attendees.

Among the terrific speakers and presentations was **Karen McRitchie**, Vice President for Product Development at Galorath Incorporated, who served as our Keynote Speaker. Also presenting were **Chris Lokan**, University of New South Wales, Australia; Thomas Fehlmann, Euro Project Office, Zurich, Switzerland; Arlene Minkiewicz and Ashley Hoenigke, PRICE Systems; **Grant Liddle**, Marc Jones, Pete Pizzutillo, of CAST Software; Randy Jensen, Ph.D.; Software Acquisition Consultant; **Rafael de La Fuente**, Dacil Castelo, and Raúl Fernández, LEDA, Madrid, Spain; **Don Reifer**, Reifer Consultants LLC, Prescott, AZ; and **Pekka Forselius**, 4Sum Partners, Espoo, Finland.

Now, it's time for another tremendous SoCal Chapter Winter Workshop, to be held December 14, 2016 at the expansive Fort MacArthur Air Force Base in San Pedro, California. Currently the agenda includes announcement of the election results for



*Kurt Brunner*



*Quentin Redman*

the new SoCal Board of Directors. Anticipated presenters also include:

**Wayne Wright**, Proposal Analyst Senior Staff, Lockheed Martin Aeronautics Company: *Estimating Life Cycle Costs at the Skunk Works®*

**Christian Smart**, Ph.D., Director, Cost Analytics and Parametric Estimating, Missile Defense Agency: *The Signal and the Noise in Cost Estimating* [Best Paper Winner at the ICEAA International Training Symposium]

**Doug Howarth**, CEO, MEE Inc.: *Things Change: Immediate Versus Ultimate Aiming*

**Anthony Olguin**, NASA Armstrong Flight Research Center: *NASA's X-Plane Database and Parametric Cost Model V2.0* [Outstanding Paper Winner at the ICEAA International Training Symposium]

**Dan Galorath**, CEO, Galorath Incorporated, *Estimation Bias: Why Can't People Estimate? (Updated)*

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



# Chapter and Region Updates



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

instructions. The agenda is also posted on the ICEAA Southern California website [www.iceaaonline.org/socal](http://www.iceaaonline.org/socal).

Typically, we have 80 to 100 attendees from across the nation (and from overseas) that participate in these no cost, daylong events. These forums have consistently drawn a cross section of the cost analysis and parametric community, presenting the latest concepts and techniques.

At the conclusion of each of our 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 Sterk 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. As always, our workshops are free.

And, as sure as spring follows winter, the SoCal Chapter Spring 2017 Workshop, scheduled for March 2017, promises to continue the tradition. Further details will be available soon, so start your planning now.

Please consider hosting a workshop or presenting at a workshop. It will be a rewarding experience. Please contact **Kurt Brunner** at [kurt.r.brunner@leidos.com](mailto:kurt.r.brunner@leidos.com) or **Quentin Redman** at [drqredman@gmail.com](mailto:drqredman@gmail.com).

The current SoCal Board will serve through December 31, 2016. We would like to thank the board for their tireless teamwork in making the SoCal chapter and its programs a great success, as well as all the members and

participants for their support over the years.

The ICEAA Region 7 San Diego Chapter has also been hosting training projects, including holding regular webinars and early evening get-togethers in the San Diego area. 

## 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>

Board Members:

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

## WANTED

### CCEA<sup>®</sup> and Specialty Exam Test Questions

To enhance the portfolio of questions in ICEAA exams, study guides and training materials

#### 1. Topic Category

Parametric Estimating:

#### 2. Topic

CER

#### 3. Question

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

#### 4. Five multiple choice answers

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

#### 6. Solution:

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

#### 5. Answer

B

#### 7. Reference

CEBoK Module 3