

Greater Alabama Chapter
Awards Scholarship

2022 Workshop Review

ICEAAWorld

The magazine for the International Cost Estimating & Analysis Association



Reunited

ICEAA Dues Rates Increasing October 1, 2022

Having performed a thorough analysis of ICEAA's current and projected financial situation, as well as an analysis of membership value, the ICEAA International Board gave very careful and thoughtful consideration to the issue of increasing membership dues. ICEAA's dues have not increased in over seven years, however, over that same period of time, there has been an ever increasing level of service and member benefits, most especially complimentary access to the updated Cost Estimating Body of Knowledge (CEBoK® v2.0) for all paid members. Paired with financial hardship resulting from the COVID-19 pandemic and global inflation, the \$95 annual dues rate no longer covers the rising costs and expenses of the association commensurate with the benefits provided, resulting in depleting our reserve funds for continued operations.

Current members may extend their membership by one, two, or five years at the current rate. For example, if your expiration date is December 15, 2022, you may purchase an additional year at this time and postpone your expiration date to December 14, 2023 (or to 2024 or 2028 if you purchase a two- or five-year membership).

Current, expired, and new members may also choose the Professional Development Package: purchase access to one of our paid premier training webinars and receive a complimentary year of ICEAA

membership. Details and information on the Professional Development Package can be found at iceaaonline.com/qed

The ICEAA bylaws grant members a 120-day grace period from their expiration date before member benefits are terminated. The new expiration date for members renewing within the grace period will be one year from the original expiration date. For example, if your expiration date is July 4, 2022 and you renew on September 1, 2022 your expiration date will be July 3, 2023. Membership renewals purchased after the grace period and consequent lapse of service will be treated as new members; if your expiration date was March 4, 2022 and you renew on September 2, 2022, your new expiration date will be September 1, 2023.

	<u>Current Rates</u> (through September 30)	<u>New rates</u> (Effective October 1)
One Year	\$ 95	\$ 150
Two Years	\$ 170	\$ 270 <i>10% discount</i>
Five Years	\$ 425	\$ 600 <i>20% discount</i>
Student/ Active Military Rate*	\$ 45	\$ 70
Professional Development Package	\$ 100	\$ 160

**To qualify for the student or active military rate, email iceaa@iceaaonline.org with a copy of a transcript indicating enrollment as a full-time student in an accredited college or university, or a PDF of an email from a commanding officer, supervisor, or manager verifying current active military status.*

Join or renew at the current rates by September 30 at
www.iceaaonline.com/login



**International Cost Estimating
& Analysis Association**

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The Magazine for the International Cost Estimating & Analysis Association

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Lauren Perkins, University of Alabama in Huntsville

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.

Publication of materials is at the discretion of the editor and officers of the association. Opinions expressed by contributors are not necessarily those of the International Cost Estimating and Analysis Association. The association endorses no product or service, does not engage in any form of lobbying, and does not offer for sale any commercial product or service for a profit. All revenue received from the activities of the association are used solely for the professional benefit of its members.



President's Perspective

Bob Hunt, ICEAA International President

Thank you to our sponsors, our speakers, our attendees, and the ICEAA staff for the very successful Professional Development & Training Workshop in Pittsburgh. I believe everyone was thrilled to be safely back in a group setting. Many attendees who had not previously been to Pittsburgh were pleased to find a very receptive, available, and enjoyable city. There were conference- and sponsor-supported networking events every night. I can confidently say a good time was had by all!

The presentation by **Dr. Marina Theodotou**, *Think Differently to Lead Boldly!* provided value insight into how to keep up as the pace of change increases. Continuous learning was a key element of her presentation, and continuous learning is a important to your success and career progress as a professional cost analyst.

Krystyna Kolesar's presentation on *Cost Analysis and the Art of the Possible* outlined her varied and successful career. It provided great encouragement to the cost professional about the possibilities your cost analysis career can provide. Keep your head up and you will be surprised at the opportunities before you.

Making your S Curves Actionable, the presentation by **Dr. Sam Savage** spoke directly to the analytic heart of our profession. His practical insight and experience re-invigorated our analytic perspectives. After his presentation he stayed around and positively interacted with our community. Dr Savage posted on his blog:

I typically don't pick up a lot of friends by discussing probability in polite company, leaving me feeling like the ugly duckling in the fairy tale. But earlier this month I attended a meeting of the International Cost Estimating & Analysis Association (ICEAA), at which I felt like I finally found my flock of swans. This nonprofit organization is devoted to improving cost estimation in the face of uncertainty as required by the Department of Defense Estimating Guide. By definition, they are all applied statisticians. The talks

I attended were practical but rigorous, on subjects as diverse as reducing the expense of space launch vehicles, assessing the costs of climate change, and pooling resources to create a new generation of small nuclear reactors. Unlike some meetings I have attended, the audience did not bolt for the door as soon as the session ended but stuck around to ask questions. It was very refreshing.

Tim Anderson moderated an excellent closing panel on *The Evolution of Cost Estimating: How Data Science Has Influenced our Community and What's Next*. The panel was composed of **Isaac Faber**, **Katie Geier Noreiga**, **Daniel Germony**, and **Ranae Woods**. This panel discussed how the cost estimating and data science fields have evolved over the past decade, discussed the current challenges and opportunities in the intersection of the two fields, and provided insight into how data analytics will influence the cost analysis profession in the future.

I recommend you plan now to attend our 2023 workshop in San Antonio on the Riverwalk. It is a great city and we are planning a great workshop.



OEM COG

2022 Best Paper Overall
Second Source
Manufacturing:
Lessons from the
Second World War

SEPTEMBER 15 12:00 NOON EDT

iceaaonline.com/oemcog

Business Office Update

Megan Jones, ICEAA Executive Director



Two months later and I'm still glowing over the 2022 Professional Development & Training Workshop! Technically we only missed two in-person Workshops with the cancelation of 2020 and going online for 2021, but time wise, it had been THREE YEARS since most of us had seen each other. There was a buzz of joy, giddiness, and even a sort of sense of relief that hung palpably in the air all three days, thanks to no small effort from your 2022 Workshop Committee. Hopefully the 2022 Workshop Review section of this issue can capture that feeling for everyone who got to enjoy it, and share some of that warmth with those who couldn't make it.

For years, ICEAA (and every other membership organization like it) has tried to demonstrate the leagues of difference between clicking a button to join a group on Facebook or LinkedIn vs. joining an association where you have opportunities to meet and mingle with colleagues and peers. After watching members light up upon seeing one another this year, I don't think the message will be as hard to convey as it had been in the Before Time.

And just like post-Workshop 2019, we're already getting ready to welcome everyone to San Antonio in 2023! If that sounds familiar, we were originally heading there for the 2020 Workshop, but had to reschedule due to, well, 2020. Better to stroll the Riverwalk later than never at all! And what's the best way to make sure you get to join us next year? Getting your abstract selected for a presentation of course! No need to rest on your spurs, cowpokes. Wrangle up those 75 words and drive 'em to iceaaonline.com/sat23cfp by November 1!

In other ICEAA news, we are putting the finishing touches on the CEBoK[®] 2.0 Beta and expect to announce the final transition from 1.2 to 2.0 as the official current version of

CEBoK[®] soon. Thanks to everyone who took the time to send their comments, suggestions, and edits that helped us make the new CEBoK[®] more current, comprehensive, organized, and easier to reference and study from.

Those of you who have come to enjoy and rely on the CEBoK[®] 2.0 Beta a click away on your ICEAA profile page can rejoice: the new CEBoK[®] 2.0 will remain free to access by all current ICEAA members. When you log on to your ICEAA profile at iceaaonline.com/login if you don't see the CEBoK[®] icon on the left menu bar, it's time to renew your membership.

And now is a great time to renew your membership, even if your term isn't expiring for a while. Effective **October 1**, annual ICEAA dues will be increasing from \$95 per year to \$150 per year.

Despite the fiscal challenges ICEAA has faced over the past few years, your International Board of Directors and International Business Office have been hard at work developing new benefits for ICEAA membership, including CEBoK[®] 2.0, the upcoming CEBoK-S (focused on software estimating), the revival of the *Journal for Cost Analysis and Parametrics*, and more. We are also in the process of adopting a new software system that will allow us to distribute on-demand training videos and other opportunities for members to further their professional development.

Even if your membership doesn't expire for a while, you have until September 30 to renew or extend your membership at the current dues rates. And you can extend by more than a year: discounts are available for two- and five-year terms. Visit iceaaonline.com/membership for more information.



ICEAA Professional Development & Training Workshop
May 16 -18, 2023 San Antonio, Texas

Upload your abstract summary by November 1, 2022

www.iceaaonline.com/sat23cfp



ertification ongratulations

Sharon Burger, ICEAA Certification Manager

Did you know that 58 individuals renewed their certification over past seven months? This includes those listed at the end of this article who recertified since the last edition of the magazine. Stay strong and in the game and don't let your certification expire! You can easily recertify by accumulating 30 participation and activity points over the five years your certification is valid. In fact, 15 points come just by remaining in the cost field and another five by keeping your ICEAA membership current, for a mere \$95 a year (for now...rates are going up October 1). Your ICEAA membership also allows you discounted fees and free access to other ICEAA offerings. Given these two areas, you only need an additional 10 points over the five years or only 2 points per year.

Annual workshop attendance can certainly get you there and we at the International Business Office

LOVE to be with and see you in person each year. However, if you would like to really make an impact for ICEAA and the cost community by taking a more active role within the Association, you can create and submit questions to be added to exam database. If your question is approved, you will receive at least one point toward recertification. Please contact the ICEAA Business Office regarding the guidelines for exam submission.

Talk about numbers, 77 applications to take the exam have been received so far in 2022 and more than half of those have already taken their exam. Not certified? Why not now when it's *summertime*, *an' the livin' is easy*...

We extend our congratulations to the following individuals for passing either the CCEA® or PCEA® exam between February and May 2022:

PCEA® Achievers:

Christopher Akudo, Leidos

Andrew Campo, Technomics, Inc.

Christian Germeille, US Department of
Homeland Security

Richard Krempasky, Technomics, Inc.

Gary McKerrow, Marinette Marine

Chad Pennington, Booz Allen Hamilton

Malik Smith, Technomics, Inc.

Sara Stallings, Logistics Management Institute

PCEA® Achievers/ CCEA® Eligible:

Zachary Gilman, US Department
of Homeland Security

Christina Kosmakos, Technomics, Inc.

Alexander LoRusso, Technomics, Inc.

Andrew Shoher, Technomics, Inc.

Unison Cost Engineering is the new home of PRICE Systems TruePlanning.

Proven. Data-driven. Rapid.
Model-Based Cost Engineering.



CCEA® Achievers:

Peter J. Braxton,
Technomics, Inc.

Thomas Coles, US Coast Guard

Kevin Courtney, Herren Associates

Christopher Johnson,
Tecalote Research, Inc.

Jonas McCammon, NAVAIR

Tristan Pomeroy,
Technomics, Inc.

Jeremiah Trimper, Galorath, Inc.

Scott Weaver, US Air Force

The following **28** individuals recertified between
February and May 2022

Timothy P. Anderson

Patrick Baranowsky

Joseph Bauer

John Prunty Bowers

David Bracamonte

David H. Brown

David S. Brown

Jack Bruce

Susan Catala

Roger Kim Clark

Curtis Graver

Matthew Halbrook

Keith Hallissey

Brittany Holmes

Mitch Lasky

Troy Miller

Monique Ng

Sheila Nicholson

Paul Ostrowski

Travis Packard

Andrew Pitman

James Pratt

Kenneth Rhodes

Amy Schmidt

Christina N. Snyder

Raymond Wekluk

John White

Geoffrey Zahn

Thanks to all of our sponsors and exhibitors!

2022 Gold Sponsors



2022 Silver Sponsors



Sponsors & Exhibitors:



2022 Workshop Review

Megan Jones

The ICEAA Professional Development & Training Workshop reconvened for 2022 after three long and lonely years. Over 350 individuals came together in Pittsburgh for three days of educational presentations, training, and networking, and one thing was clear: it was great to be back.



ICEAA International
President Bob Hunt

ICEAA International President **Bob Hunt** kicked off the Workshop Tuesday morning with welcoming remarks and a preview of the days to come, which contained many adjustments and new features that your

Workshop Committee has been cooking up since we left Tampa in 2019.

Next up on the main stage came 2022 Workshop Chair **Jennifer Scheel** to announce the winners of the 2022 Best Paper Awards. We've made a habit of distributing the awards first thing Tuesday morning to give attendees a glimpse of what lies ahead for the week and allow them to adjust their schedule plans to catch one or more of the best of the award-winning presentations. The winners are listed on the following pages and their full papers and presentations are available on the Pittsburgh Workshop website and the ICEAA



Dr. Marina Theodotou boldly
prepares for her keynote address

Archives for everyone to download.

Immediately after Best Paper Awards, we were joined by keynote speaker **Dr. Marina**

Theodotou, an organizational change expert at the Defense Acquisition University, for *Think Differently to Lead Boldly!* Dr. Theodotou challenged our attendees to be inspiring leaders by focusing on three skills: cultivating a growth mindset, strengthening your network, and embracing continuous learning. Her interactive demonstration on the simplest ways to grow your network by connecting with others got the entire audience chatting and energized for the day!

Tuesday was a full day of breakout sessions and training workshops capped off with the welcome reception in the exhibit hall that evening – an awesome opportunity to meet with our sponsors and exhibitors, as well as a chance to get to know fellow attendees in a fun and relaxed environment.

2022 ICEAA Association Awards Chair **Christina Snyder** started us off Wednesday morning with this year's Association Awards presentation, giving everyone a



2022 Workshop Chair
Jennifer Scheel

continued



*Association Awards Chair
Christina Snyder*

short description of the award criteria and allowing both the winners and their nominators to say a few words of appreciation and thanks. Read more about the positive

impacts this year's winners have made on the cost community later in the issue.

Wednesday morning's keynote address, *Cost Estimating and the Art of the Possible*, presented by native yinzer **Krystyna M. A. Kolesar**, took us on a wild trip down her path from cost estimating for the Navy to serving as the United States Army's Assistant Deputy Chief of Staff. Ms. Kolesar's inspirational message to not just avail yourself to opportunities but to also act upon them was punctuated by anecdotes featuring Clint Eastwood, Former Secretary of Defense Leon Panetta's dog, and a Terrible Towel.

Wednesday evening, our attendees and sponsors met up again for our another round of networking in the exhibit hall. Every year, our attendees tell us in their feedback survey responses that the networking opportunities at the ICEAA

Workshop are the parts of the event that they most enjoy and most value. It's never been more true than in 2022. For many of us, it was the first time we'd seen each other since the spring of 2019. Others commented that they had been on a team for two years but this was the first time they were able to actually meet their colleagues. We've always known that the Workshop is the best place to meet other cost folks, get new perspectives on old problems, and benefit from one another's research, but the past



*Krystyna Kolesar
sizes the moment*

few years have made it so much more apparent: there really is no replacement for getting together in person.

Thursday started out as it usually does with our final keynote of the Workshop. **Dr. Sam Savage** from Probability Management.org presented *Making your S Curves Actionable*, a spirited demonstration, complete with amusingly logical examples, of his theory of *chancification* and how estimators can take advantage of some new concepts to reach faster and more accurate results.

2022 Workshop Committee

Workshop Chairs

Jennifer Scheel, CCEA®
Kellie Wutzke, CCEA®

Training Chair

Jennifer Kirchhoffer, CCEA®

Abstract Review Chairs

Nick DeTore, CCEA®
Cortney Collins, CCEA®

Best Paper Chair

Cat Dodsworth

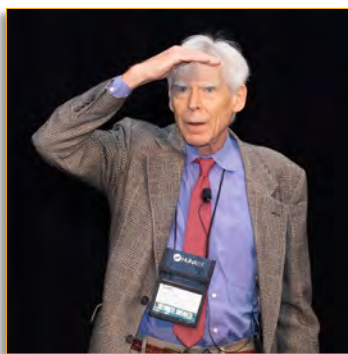
Awards Chair

Christina N. Snyder, CCEA®

We also carried on our tradition of rescheduling the winning Best Paper Overall presentation to just before lunch on Thursday to both recognize the winning author's accomplishment but also to make sure no other sessions are scheduled at the same time so everyone can enjoy the year's best paper. This year's winner pulled off the hat trick with his third consecutive win, but this was the first year we got to see **Brent Johnstone** on the main stage!

The biggest change for 2022 is an idea the 2020 Workshop Committee came up with but hadn't been able to execute until now. For longer than ICEAA has been ICEAA, the Workshop was 3 ½ days, featuring a handful of sessions on Friday morning. These sessions have always been unpopular, and left us closing the Workshop after a slow trickle of departures and no fanfare or farewell on Friday afternoon.

This year, our attendees reconvened in the ballroom Thursday afternoon for our first ever closing general session, *The Evolution of Cost Estimating: How Data Science Has Influenced our*




Dr. Sam Savage seeks actionable S-curves

Community and What's Next.

Featuring **Isaac Faber** from the U.S. Army's Artificial Intelligence Center, **Katie Geier Noreiga** from the Department of Homeland Security, **Daniel Germony** from OSD CAPE, **Ranae Woods** from AFIT, and moderated by **Timothy Anderson** from the Aerospace Corporation, our panelists discussed the evolution of

cost estimating and data science, what challenges we face as the two fields intersect, and what the future might bring for the industry. The panel discussion was lively and thought provoking, and with all the questions from the audience, truly felt like a conversation with the whole room. **Bob Hunt** bookended the Workshop thanking our attendees with some closing remarks, and we were all able to say our final goodbyes until we meet again.

And meet again we will! Preparations have already begun for the 2023, and if you're still full of inspiration from Pittsburgh, you can already send in your abstract summary at iceaaonline.com/sat23cfp! 



*Inaugural Closing General Session Panel (left to right)
Katie Geier Noreiga, Ranae Woods, Daniel Germony, Isaac Faber, and moderator Tim Anderson*



2022 Best Paper Award Winners

Congratulations to **Brent Johnstone** for his third consecutive Best Paper Overall win! If you missed his presentation in Pittsburgh or want to see it again, join the ICEAA OEM COG on Thursday, September 15 for an encore presentation: iceaaonline.com/oemcog

Thanks to all of the 2022 authors and presenters. All of your hard work, time, and effort are what make ICEAA's Workshops unmatched in quality and value.

Thanks also to all of the best paper judges for taking the time out of their busy schedules to read and rate this year's papers. The judges are broken out into teams, one for each of the six categories, and rate the papers based on technical content, creativity, usefulness in the field, and overall quality and style. The paper with the highest score is named the best in

that track. All of the judges from all tracks then review the best papers in each track to determine the overall winner.

We are always on the lookout for more judges willing to read these outstanding papers and provide their thoughts. And what's more, serving as a Best Paper judge earns valuable CCEA® recertification points for those getting ready to renew!



Brent M. Johnstone prepares to take the main stage for his Best Paper Overall presentation in Pittsburgh

Data Science & Machine Learning Category Winner

Linear Regression:

How to Make What's Old New Again

Kimberly Roye, Sara Jardine,
Christian B. Smart



Sara Jardine

With the booming popularity of machine learning techniques, data scientists may have you believe there is no place for linear regression.

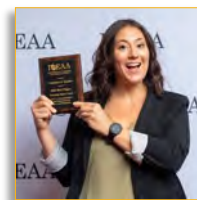
Though many cost estimating applications are nonlinear, when there

are linear relationships among features, ordinary least squares regression often performs better than the most powerful machine learning techniques. Scenarios for which linear regression should be chosen over more complicated algorithms are presented, as well as techniques such as regularization, gradient descent, and Bayesian methods.

Trending Topics Category Winner

(CE)^2 : Communication and Empowerment for Cost Estimators

Christina N. Snyder



Christina N. Snyder

Too often, cost estimator training focuses solely on technical abilities, largely ignoring the "soft skills". The behaviors of being a good communicator and empowering the team were

shown in a 2020 ICEAA community survey to be important to cost leadership efficacy. Knowing that technical skills alone will only take estimators so far, this presentation leverages communication and empowerment training to demonstrate how all cost estimators can use soft skills to exponentially impact their analyses.

**Management & Risk/Processes & Best Practices
Category Winner**

The BS in BoeS - Oh the Games that are Played
Sandy Burney



Sandy Burney

A good Basis of Estimate (BoE) uses a historical comparison, and a complexity factor. These two choices are not statistically based, meaning a bias is introduced into most BoEs. This paper explores the bias in BoEs through the framework of Game Theory. A BoE goes through a creation, internal review, internal approval, and external review process, where each player in this process will likely have a different payoff matrix. Each player in this process will want to insert their bias into the BoE, which this paper terms “Bias Selectivity” (BS).

Analytical Methods Category Winner

Using TRLs to Predict the Future of Nuclear Weapons

Abby Schendt, M. Michael Metcalf,
Raymond Vera



Left to Right: M. Michael Metcalf,
Abby Schendt, Raymond Vera

Technology Readiness Levels (TRL) are used to measure and assess technology maturity. This paper presents innovative research demonstrating how

historical TRL data can be used to perform credible, data-driven schedule analysis for programs early in development. Originally designed to help schedule analysis for the nuclear weapons stockpile, the resultant methodology combines historical milestone data and statistical methods to generate a Monte Carlo simulation of a risk-adjusted schedule for complex programs.

Software & Agile Category Winner

Let's Go Agile: Data-Driven Agile Software Cost and Schedule Models Derived from DHS Projects

Wilson Rosa, Sara Jardine, Chad J. Lucas



Left to Right: Sara Jardine,
Chad J. Lucas, Wilson Rosa

This paper offers effort and schedule estimating models for agile software development projects using contractor backlog, monthly contract reports, and requirements documents.

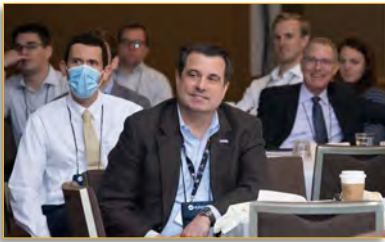
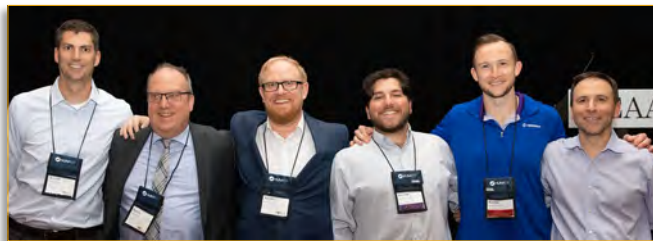
The regression models predict effort or schedule using six different sizing measures: Unadjusted Function Points, Simple Function Points, Functional Stories (Requirements), Issues, Stories, and Story Points. We also offer effort and schedule benchmarks. The analysis is based on data collected from 18 agile projects implemented within DHS and DoD between years 2014 to 2021.

2022 Best Paper Judges

Guenever Aldrich	Bob Hunt
Richard Aldrich	Arthur Kaczynski
Timothy Anderson	Jukka Kayhko
Hank Apgar	Kammy Mann
William Barfield	Patrick McGarrity
Walter Bednarski	Arlene Minkiewicz
Douglas Brown	Danielle Mrla
Charles Dobbs	David Peeler
Bob Fairbairn	Jason Richardson
Cynthia Foster	Hernani Tosoc



Visit www.iceaaonline.com/pit2022 to view more photos



Visit www.iceaaonline.com/pit2022 to view more photos

ICEAA 2022 Association Awards

ICEAA thanks everyone who nominated one or more of their colleagues for a 2022 Association Award. The stories our nominators shared gave us unique glimpses into what makes our members the best of the best in the cost professions. As you read the summaries of their achievements below, give thought to the dedicated and inspiring members you interact with regularly and consider nominating them for a 2023 Association Award!

Junior Analyst of the Year: Thomas Cook

Thomas Cook is an up-and-coming analyst within the National Nuclear Security Administration's (NNSA) Office of Programming, Analysis and Evaluation (PA&E). PA&E's mission is to provide defensible cost estimates and quantitative analysis to support decision making about the nuclear deterrent, nuclear non-proliferation, and nuclear naval propulsion. Thomas joined PA&E in 2020, after receiving his PhD in Chemistry at Stanford University, as an NNSA Graduate Fellow and then as a federal employee. The NNSA Graduate Fellowship Program develops new leaders in science, program management, and analytics at the NNSA. During and after his fellowship, Thomas demonstrated not only exceptional analytic prowess but also analytical leadership. Thomas is an ICEAA member working towards his PCEA.

Thomas' most significant contribution during his fellowship was leading the development of a discrete event simulation model of the nuclear security enterprise's manufacturing processes for certain specialized components. Thomas participated in a business case

analysis to identify the appropriate tools for PA&E to provide a timely and accurate analysis on classified systems during the COVID-19 pandemic. Thomas then built from scratch a complete model of the current manufacturing capabilities in the nuclear security enterprise and performed sensitivity analyses to identify the equipment needed to meet nuclear security requirements over the next twenty years. Thomas used the equipment set to identify the square footage needed for a specialized manufacturing facility to meet necessary throughput at various confidence levels. These outputs were used to project the cost and schedule ranges for building new facilities and to explore the feasibility of using smaller, modular facilities. Overall, Thomas excelled at his fellowship, also performing timely analyses of key commodity and equipment prices and escalation to inform NNSA procurement decisions.

Thomas federalized in 2021 and took on leading the Analysis of Alternatives for one of NNSA's largest and most complex projects, the dismantlement of plutonium pits. To meet nonproliferation objectives, the United States must dismantle a number of the plutonium cores of nuclear weapons, called pits, and safely dispose of the plutonium. This is a complex process, involving



Thomas Cook

highly specialized safety and production equipment and technical knowledge. Thomas' leadership included overseeing the development of another discrete event simulation capability, reconciling the results with site projections, and overseeing the cost and schedule estimating for procuring the appropriate equipment and either renovating existing or building new facilities. Under Thomas' leadership, the Analysis of Alternatives has completed its analysis within ten months and in time to support the next budget cycle.

Thomas Cook's uncommon dedication and exceptional analytic capability have ensured he is a key member of any analysis team. His ability to consider both the details of analyses like those required in discrete event simulations and to understand the broader picture of how the analysis supports key decision-making marks him as an exceptional junior analyst. Indeed, his work forms the core of a paper, *Discrete Event Simulation as a Tool for Cost Estimating* that was published in the AACE International's March/April edition of the Cost Engineering Journal. I anticipate Thomas continuing to share insights with the field and becoming a true innovator in the cost community.

Thomas Cook has become PA&E's lead for all discrete event simulation, supporting the NNSA in maintaining the United States' nuclear deterrent and its non-proliferation capability.

-Nominator **Charles Loelius**

Technical Achievement of the Year: Patrick Ahearn

Patrick Ahearn, a Senior Analyst at Technomics, Inc., has been a tremendous asset to the USCG Offshore Patrol Cutter (OPC) program, the largest acquisition in Coast Guard history and currently the Coast Guard's highest priority. Once complete, the

program's 25 cutters will make up nearly 75 percent of the Coast Guard's major cutter fleet performing a myriad of national security missions. He has approached this program with innovation, intensity, and creativity. He has revolutionized the Earned Value Management (EVM) analysis and brought insights to the program.



Patrick Ahearn

When Patrick joined the OPC program in early 2020, the shipyard was trying to recover after a hurricane struck the shipyard in 2018, creating schedule delays and resulting in an approved request of Public Law (P.L.) 85-804 (extraordinary contract relief). Patrick quickly got up to speed on the complexities of the program and began updating and delivering EVM briefs. Very early, he advised the program on data reporting requirements to both enhance his own analysis and lighten the burden on the shipbuilder. Patrick's ingenuity became very apparent when he tied data with the Control Account Plan (CAP) and built Business Intelligence (BI) dashboards to perform deep dives into the shipyard's data. His analysis and insights were immediately noticed. As a result, he built significant confidence for the USCG's overseers, the Department of Homeland Security (DHS) Cost Analysis Division (CAD).

Patrick's efforts extends far beyond gold-card analysis. His analysis is comprehensive: clarifying existing problems, identifying areas of concern, forecasting Estimates at Completion

continued

(EAC), and projecting schedule completion dates. He is innovating and exploring the data in ways that truly benefit the program, the USCG, DHS and ultimately the taxpayer. He has also made a concentrated effort to share data and get insightful tools into the hands of the decision makers. He recently developed and shared an online BI tool that enabled users to visually explore the data at very detailed levels such as trades are causing problems, performance comparison among hulls, and forecasted workload versus shipyard capacity. Patrick has even integrated his analysis into the 2020 and 2021 Life Cycle Cost Estimates (LCCE). And with OPC Stage 2 (i.e. re-compete) being in source selection, Patrick has been hand-selected by the USCG to assist with reviewing shipbuilder cost proposals.

Though Patrick's support of the OPC program has been invaluable, he simultaneously supports other programs including Navy Program Executive Office Integrated Warfare Systems. He also takes time to mentor younger new cost analyst by sharing his tools and allowing them to take lead on program briefings. He has even developed data analysis training and provided a two hour brief at the CPA-

Canada Conference. Patrick has become a resource to others within Technomics, answering questions and pushing others to properly store data to facilitate analysis and the building of insightful dashboards. He has been a champion for spearheading the implementation of BI software across multiple programs.

Patrick is an excellent choice for the Technical Achievement Award. Due to commercial sensitivities, I am unable to quantify the value delivered by Patrick, but suffice it to say that he is being a great steward of the American taxpayers. The OPC is the USCG's top acquisition priority, and, at award, the OPC contract that Patrick performs EVM on was the largest contract in DHS history. He has excelled on OPC and other programs and exceeded all expectations.

-Nominator **Robert Nehring**

Team Achievement of the Year:

Army Defensive Cyber Operations Cost Team

The DCO Cost Team was formed in 2017, supporting Agency-wide cyber missions in an ever-changing landscape. It can be difficult to estimate due to requirements being written to maximize flexibility and speed (deliberately vague). How the requirement is met can change often, but our cost estimates need to be logical, defensible, and most importantly, helpful to decision makers. Threading the needle of scientific but flexible



Ryan Webster
Augur Consulting



Greg Wright
Octo Consulting



Stephen Koellner
Augur Consulting



Gabrielle Briones
Augur Consulting



Ryan Faris
Augur Consulting



Alex Garner
Augur Consulting

Members of the Army Defensive Cyber Operations Cost Team

has been where this cost team has really shined, especially in 2021.

When asked the question *What is the cost of a cyber analytic algorithm?*, a question that has no single answer, the DCO team gathered as much data as possible to gain an understanding of the range of efforts previously pursued by this program, and others, including DARPA. The team came forward with a range of datapoints roughly analogous to the scope in question. They developed a methodology for sizing these efforts by complexity level. This enabled flexible planning based on velocity and complexity of new capabilities. This also functioned as a measuring stick for vendor negotiations during the IGCE process, enabling the contracts team to evaluate a reasonable range of cost for these vague capabilities.

When asked for an IGCE on tactical cyber kit warranties, the Cost Team decided to also do a Business Case Analysis, evaluating recent failure rates, parts covered by the SI warranty, parts covered by OEM warranty, and how many failures would have to occur for the warranty to be economic. The team's recommendation was to change course and pay for failures as they occur and consider using a fraction of the savings to increase critical spare parts. Leadership largely agreed and is looking to ensure organic maintenance chains are established to avoid paying for costly warranties. This recommendation saves \$2-\$5M per year.

The DCO cost team has brought cost realism and logic to every step of the acquisition process. They educate senior leadership on complex cost drivers tied to cloud service consumption rates and other complicated software pricing structures. They have improved the IGCE process by conducting process training delivered to the government and contractors involved in the acquisition process. They have developed quick and creative methods to evaluate agile vendor performance during renegotiations for baseline changes, tied to nebulous capability deliveries.

Countless times in 2021, the cost team performed extensive research and data analysis to forecast a

reasonable price which was used in vendor negotiations. In some cases, getting directly involved in negotiations to highlight misunderstandings in scope between the vendor and the government based on proposals being outside the expected range. This data was later sanitized and presented at IT-Cast by the cost team alongside government cost leadership from PEO EIS (Preparing for software negotiations: Adding value through the IGCE Process).

The DCO Cost Team remains prepared and engaged throughout the year. When senior leadership asked for an expedited POM submission, they rose to the challenge. A common ACEIT cost model for all ten programs centralized the data and allowed for updates throughout the year based on new knowledge obtained through their daily involvement in program planning. The cost model is tied to capabilities which enabled trade space/CAIV analysis, allowing leadership to make fully informed, but difficult decisions about capabilities and the Army's cyber posture.

In conclusion, the DCO Cost Team takes cost estimation to the next level. They do not simply take in information and deliver a report or cost product. They provide integrated program management advice through quantitative decision support. They demonstrate logical, scientific, and repeatable approaches to cost estimation. They make actionable recommendations and always have their eye on the best interest of the program and the taxpayer. When requirements are hard to define, they develop creative approaches to estimate reasonable ranges to meet the needs of ever-changing cyber requirements. The products they deliver are thorough, well documented, and result in defensible budget submissions. They demonstrate an understanding of complex technical considerations and the impact on cost. They synthesize and share their knowledge in ways that are easily comprehended, and results in actionable recommendations.

-Nominator Martha Spurlock

Management Achievement of the Year: Cash Fitzpatrick

Mr. Cash Fitzpatrick is the Director for the Office of Programming, Analysis, and Evaluation (PA&E) of the National Nuclear Security Administration (NNSA). NNSA is a semi-autonomous agency within the US Department of Energy, and PA&E's mission is to provide defensible cost estimates and quantitative analysis of its ~\$20 billion annual budget to support decision making about the nation's nuclear weapons stockpile, nuclear non-proliferation, and nuclear naval propulsion. Cash oversees a range of analytical and policy functional areas for the agency including programmatic cost estimating, analyses of alternatives, and enterprise cost modeling. He also chairs the Cost Estimating Analysis Group (CEAG), the community dedicated to furthering cost estimating of both the agency and its eight national laboratory and site partners encompassing the nation's nuclear security enterprise.

In late 2019, Cash began as acting Director and has since hired more than 30 federal and contractor cost analysts. He also established the agency's first cost research and development team, as well as a modeling working group with the agency's laboratory and site partners. After being selected as the permanent PA&E Director in May 2021, he established relationships with peer offices at the Department of Defense (DoD) and National Aeronautics and Space Administration (NASA). He routinely participates in their cost estimating communities and has advised the White House's Office of Management and Budget (OMB) in promoting cost estimating best practices across the federal government.

Cash also promotes integration and synergy as the lead for NNSA's Cost Estimating Community of Practice (CECOP) symposiums, an annual gathering of cost estimating and related professional disciplines (e.g. project controls, schedulers, etc.) to exchange best-practices, methodologies, and strengthen ties within the wider community. These symposia bring practitioners

together to share innovative solutions, and under his leadership has significantly expanded to include ~250 professionals across NNSA, DOE, DoD, Air Force, NASA, Institute for Defense Analysis (IDA), Booz Allen Hamilton, and Government Accountability Office (GAO).



Cash Fitzpatrick

PA&E has significantly improved NNSA's cost analysis community. It has established an analytic corps dedicated to providing cost analysis of NNSA's largest and most complex weapons programs, and performed the agency's first early-stage planning studies for large capital acquisitions that integrate requirements development and cost estimating to ensure agile project development. PA&E also ties cost analysis and related decision support into the programming phase of the PPBE process, empowering decision makers to balance risks across their portfolios with quantitative and defensible cost and schedule analyses that tie directly to the budget process.

Cash continues to cultivate expertise, experience, and excellence. His thought leadership and dedication to "raising all boats" through collaboration and continuous improvement have strengthened not just the agency's cost estimating community, but also the nuclear security enterprise and wider cost community writ large.

---Nominator **Charles Loelius**

Educator of the Year: Carol Dekkers

Congratulations to Carol Dekkers, the 2022 recipient of the ICEAA Educator of the Year Award! Carol Dekkers' dedication to the ICEAA Cost Estimating Body of Knowledge-Software (CEBoK-S) development, promotion, and dissemination will have lasting effects on the current and future success of cost estimators and analysts. The inception of CEBoK-S goes back many years, many teams, and several attempted versions. Carol leveraged all of this previous work together with new materials, and using her software leadership expertise, her instructional enthusiasm, and seasoned presentation skills revamped the entire CEBoK-S curriculum into one cohesive body of knowledge. Carol's completed work (a comprehensive suite of nine CEBoK-S lessons) debuted, in its entirety, during the 2021 ICEAA Training Summit in September 2021.

Ms. Dekkers is best known for her software measurement expertise, and her authorship of industry textbooks and many articles including *The IT Measurement Compendium: Estimating and Benchmarking Success with Functional Size Measurement* (Springer); *Program Management Toolkit for Software and Systems Development* (Talentum); *Practical Software Project Estimation* (ISBSG); and others. She has also published many articles in a wide variety of software industry journals.

Ms. Dekkers has been a keynote presenter and instructor at major IT conferences worldwide (spanning more than 35 countries) on topics ranging from functional size measurement and software cost estimation to project management, technical leadership and communication including: MITRE's Cost Estimating Center of Excellence, International Software Benchmarking Standards Group (ISBSG) IT Confidence summits, International Function Point Users Group (IFPUG) conferences, PMI (Project Management Institute) Global Congresses, Heart of Agile (HoA) conference, and SAP's Global Quality Days. Ms. Dekkers has been a leading expert on the US delegation to International

Standards (ISO/IEC JTC1 SC7) since 1994 and has contributed to the development of many global software and systems engineering standards. She is president-emeritus of IFPUG where she continues to hold a leadership role. She continues to be instrumental in the development of advanced software cost estimating approaches including the release of SiSE – Simplified Software Estimation – at the US Department of Homeland Security (SiSE is based on streamlined approaches to software sizing, functionality patterns and analogous estimating specifically for agile software development.)



Carol Dekkers (left) with nominator and 2021 Educator of the Year Denise Nelson

Carol has developed and taught course curriculums for Defense Acquisition University, for government agencies (National Geospatial-Intelligence Agency, USAF, USPS, Veterans Affairs, Medicare, etc.) as well as private enterprises. Carol is a Project Management Professional (PMP), Certified Function Point Specialist (CFPS -Fellow), a Professional Engineer, and a Certified Scrum Master (CSM).

In summary, Carol's impact on the software cost estimating community is immeasurable and continues to increase through authorship, thought leadership, curriculum and International standards development, in addition to continued collaboration with industry groups including ICEAA, IFPUG, ISBSG, PMI, IEEE, and COCOMO (including COCOMO III).

Thus, Carol Dekkers is well deserving of this year's 2022 ICEAA Educator of the Year Award. The resultant quality of CEBoK-S is attributed to her efforts. A large, geographically dispersed team of full-time professionals is not an easy group to corral. As lead author, she coordinated the existing body of work, reorganized it, reduced redundancy, appropriately integrated CEBoK, and managed the reviews, comments and edits under schedule constraints that were almost never met.

--Nominator **Denise J. Nelson**

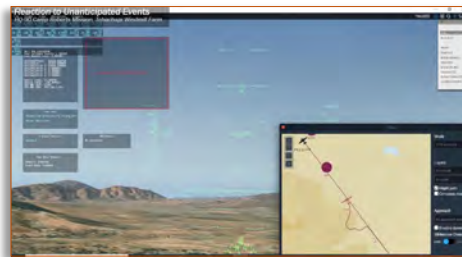
Southern California Chapter Report

Steve Sterk and Hank Apgar, Southern California Chapter Board of Directors

On Wednesday, March 29th, 2022, the SoCal Chapter hosted an exciting webinar on autonomous aircraft collision avoidance presented by Mr. **Mark Skoog**, recently retired from NASA's Armstrong Flight Research Center. Mr. Skoog's presentation, *Leveraging Multi-Monitor Run-Time Assurance* had ICEAA members on the edge of their seats watching nerve-wracking videos with scenes similar to the new Tom Cruise movie *Top Gun* where pilots were flying at supersonic speeds through mountainous terrain.

At Armstrong, Mark was the Principal Investigator for Autonomy, where he led a collaborative effort between NASA, the FAA, DoD and Industry to develop certification methods for autonomous vehicles. Mark explained how they integrated new technology, specifically digital terrain and mapping algorithms, into android smart-phones to prevent aircraft collisions. Every year combat pilots are killed in the United States flying training missions when they become disoriented or lose consciousness. This new technology, initially tested on the F-16 flight computer, was adopted by the Air Force and is now used to prevent aircraft and ground collisions, saving lives and loss of fighter jets. Check out the presentation and nail-biting videos on the ICEAA SoCal Chapter page: www.iceaaonline.com/socal

Also in SoCal Chapter news, as previously reported, the SoCal chapter is developing an overview Design-to-Cost (DtC) training module intended for ICEAA audiences who have a basic understanding of cost estimating. This training initiative was established in response to member requests to fill a gap relating to DtC in the repertoire of professionally-developed training courses. This 1.5-hour course is an introduction to DtC, and hence raises the question: So, just what is DtC? In general, DtC



Screenshots from Mark Skoog's March 29, 2022 presentation

emphasizes “cost-effective design (minimizing cost while achieving performance)” as described by the Defense Acquisition University (DAU). This course is geared toward acquisition-focused government and industry cost estimators with interest in DtC and related affordability initiatives such as CAIV, Better Buying Power, and Should Cost, which also focus on cost-effective design.

Earlier this year, the SoCal team developed a candidate course outline and draft PowerPoint graphics (with instructor notes). At this point we are in the peer review stage and thank all the volunteers who answered a request for help posted during the ICEAA Professional Development and Training Workshop in May. Early feedback has already expanded the affordability popular definitions, broadened the discussion of affordability tools, and added proposal support to the range of estimator activities. In addition, we have identified a need for a more advanced course detailing how to implement DtC. We plan to premiere a beta version of the introductory course by the end of 2022 during a SoCal workshop.



ICEAA Southern California Chapter 2021-2022 Board of Directors:

President: **Karen Mourikas**
Vice President: **David Bloom**
Treasurer: **Melissa Winter**
Secretary: **Nicole Leighton**

Board Members: **Hank Apgar, Lisa Colabella, Darin Hoffman, Justin Knowles, Mike Pfeifer, Steve Sterk**

Volunteers: **Tom Bosmans, Kurt Brunner, Matthew Ramirez**

Greater Dayton Chapter Report

Greg Brown, Greater Dayton Chapter President

On 1 July, the 2022-2023 board will take over as the current board term expired. Although much of the board composition will remain the same for the new term, **Beth Hodson** will be taking over as President, and we would like to welcome **Candice Honious** to her new position as Vice President & President-elect! Candice has previously served on the ICEAA Greater Dayton board, and she brings a wealth of cost analysis and estimating experience to her new position.

In March, the Greater Dayton board hosted three graduating Air Force Institute of Technology (AFIT) students who presented the results of their graduate research. **Capt. Kaiana Miller** discussed how to more accurately estimate factors for Economic Change Orders. **Capt. Susan Moore** covered the use of learning curve step-down functions when moving from development to production. Lastly, **1st Lt. Sammantha Jones** examined whether the Department of Defense is getting better at estimating cost and schedule in acquisition programs. The event was a smashing success, drawing 50 local cost analysts hoping to learn more about the subject areas and apply the research results to their own cost estimates.

Also in March, the ICEAA-Greater Dayton board presented the Best Thesis Award to a graduating AFIT student on behalf of the International ICEAA association.

ICEAA Greater Dayton Chapter 2021-2022 Board of Directors:

President:	Greg Brown
Vice President:	Beth Hodson
Treasurer:	Julie Louthain
Secretary:	Deb Walter
Region 4 Director	Joe Bauer

Board Members: **Capt. Robert Walker, Scott Weaver, Alicia White-Alsup, Joe Bauer, Bryan Daly**

Capt. Moore took home the award for her research effort on step-down functions in learning curves.

From March to April, the Greater Dayton board hosted several different training courses, covering topics to include manufacturing cost estimating and software cost estimating. In aggregate, over 120 continuous learning points (CLPs) were generated for local cost analysts! Cost analysts apply these points to their ICEAA certifications in addition to various continuous learning requirements set by the acquisition and financial management communities.

Lastly, in June the Greater Dayton board hosted a local 'Cost Chiefs Roundtable' comprised of senior cost leaders from each of the major cost and economics organizations located on Wright-Patterson Air Force Base. Ms. **Teresa Frank** represented the Air Force Materiel Command, Mr. **Jeremy Mitchell** represented the Air Force Life Cycle Management Center, Mr. **Zac Newman** represented the Air Force Research Lab, while Mr. **Kevin Kennedy** represented the local operating location of the Air Force Cost Analysis Agency. The virtual event attracted over 70 government and contractor personnel from the local area hungry to learn more about career development and current events in cost estimating.



Top, left to right: Jeremy Mitchell, Zac Newman
Bottom, left to right: Teresa Frank, Kevin Kennedy



New England Chapter Report

Ann Bagay, New England Chapter Treasurer

The road that got us here may have had MANY potholes, but the board has persevered and sustained membership whilst trudging through the dark trenches of the past two years. Telework thought it would be able to squash all that was left of our social meter, but 2022 finally opened the doors to a multitude of possibilities.

While the board was working on re-branding our social status, the ICEAA NE chapter members were low-key killing it at the paper game. The NE chapter contributed two presentations at the 2022 ICEAA Professional Development and Training Workshop in Pittsburgh:

The Progression of Regressions by **Jennifer Aguirre** and **Kyle Davis**, Quantech Services, Inc

No Estimation Without Escalation - The Inflation Revolution by **Shannon Cardoza** and **Alex Smith**, Quantech Services, Inc

In addition to the workshop presentations, the chapter was also able to provide a virtual luncheon - learning about cost estimation from the safety and comfort of your own



Left to right: members Kyle Davis, Jennifer Aguirre, Bill Lane, Shannon Cardoza, and Alex Smith at the 2022 ICEAA Workshop



Jennifer Aguirre and Kyle Davis



Alex Smith and Shannon Cardoza

couch just hits different. The chapter brought in two great speakers from the National Reconnaissance Office (**Ivan Bembers** and **Michelle Jones**) to educate the masses with an excellent presentation on Schedule Execution Metrics.

Emerging from the social media-fed, doom scrolling hole of the past two years, the ICEAA New England Chapter hosted its first in-person social event since the beginning of the pandemic. Chapter members were invited to attend the second annual ICEAA New England Golf and Social. Members were encouraged to hit the golf course for a round of 18 holes of competitive fun. Following golf, members met at the location of one of our generation's favorite past times: drinking craft beer. The golfers met the non-golfers at the Lord Hobo Brewery in Woburn for appetizers, beverages and actual conversations that did not involve mute buttons and “sharing our screens.”

In 2022, the NE chapter has been driving to keep up membership, integrate knowledge across any platform available and enrich the telework experience for all of our loyal members. Let's keep the momentum going – Cheers!



A collection of 3 of the teams that played golf during our second annual ICEAA New England Golf and Social

Region 6 Report

Brent M. Johnstone, ICEAA Region 6 Director

Region 6 held its second 2022 virtual meeting on June 30, 2022. **Dr. Don Kinard**, Senior Fellow at Lockheed Martin Aeronautics, discussed the current and future state of digital engineering and digital transformation.

Dr. Kinard addressed the Digital T's – the digital thread, digital twins, digital technology, and digital transformation. The digital thread – or model-based engineering – allows the 3D engineering model created during design to be used by downstream users in production, tooling and sustainment. Digital twins are virtual representations of assets or systems used to simulate the physical asset's design and performance for validation and test. By maturing initial product performance and reducing physical testing requirements, the digital twin can reduce cost as well as engineering design and manufacturing span times.

Dr. Kinard outlined the current state of the art in digital technology in such uses as automated drilling, robotic coatings application, 3D printed tooling and the optical projection of work instructions. He also discussed on-going research and development in the integration of engineering tools, manufacturing simulations, determinant assembly, and flexible assembly.

Lastly, Dr. Kinard discussed "Industry 4.0" – the Fourth Industrial Revolution, the revolution of data. An aircraft factory is in actuality a data factory – and that data can be seamlessly integrated between design, production and test, and sustainment to provide improved systems visibility and allow descriptive, predictive and prescriptive data analysis to improve performance. The results will be shorter engineering and manufacturing spans, lower T1 costs, improved quality, and cheaper and more flexible tooling.

The wide-ranging question-and-answer session centered around the US government's expectations surrounding digital engineering, best highlighted by former Assistant Secretary of the Air Force Dr. Will Roper's 2020 article, *Take the Red Pill*. Digital engineering is a critical component in speeding up acquisition times to provide

planes, ships and missiles to the warfighter much faster than the decades it currently takes to design and field new weapon systems. In addition, the obstacles to digital engineering -- technical as well as internal and external resistance -- were discussed. The difficulty of estimating the future benefits of digital engineering with limited data were also addressed, as well as the necessity of collecting good metrics on cost and schedule benefits.

The session was moderated by **Brent Johnstone**, current ICEAA Region 6 director.

Like the prior session held in February, the online audience exceeded expectations, and overall, the session received very positive comments. Region 6 will continue to hold quarterly webinars in the future on different topics of interest to cost estimators.



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UAH alumnus & author presents scholarship to undergraduate math major

Lauren Perkins

The Greater Alabama Chapter of International Cost Estimating and Analysis Association (ICEAA) awarded Ms. **Christina Tarsitano**, Mathematical Sciences major and Finance minor, a scholarship and one-year membership into the local chapter.

Christina was chosen for this award due to her "dedication to the mathematics and finance academic fields and for her outstanding record of volunteerism in the local community," shares a representative from the Greater Alabama ICEAA chapter.

Christina is also participating in a National Science Foundation (NSF) Research Experiences for Undergraduates (REU) this summer for Solar and Heliospheric Physics working with Center for Space Plasma & Aeronomic Research (CSPAR) and NASA Marshall Space Flight Center (MSFC). She will be working with Dr. **Amy Winebarger**, astrophysicist at NASA MSFC, and Dr. **Athiray Panchapakesan**, Research Scientist at CSPAR. The project is about analyzing the solar observational data obtained from a sounding rocket flight launched in July 2021.

"When she was little, she would launch rockets with her dad. It's exciting to have her following in her dad's and grandad's footsteps. It makes it a family thing," says her grandmother, who also attended the award ceremony.

Dr. **Christian B. Smart**, an alumnus of the University of Alabama in Huntsville (UAH),



Dr. Christian Smart presents Christina Tarsitano award on behalf of the ICEAA Greater Alabama Chapter.

presented Christina with this award. Dr. Smart earned his M.A. in mathematics 1994 and a Ph.D. in applied mathematics 1996, both at UAH. He says that "probability and mathematical thinking have benefitting me most through my entire career. We work on a lot of Department of Defense and NASA projects, sometimes that cost billions of dollars, forecasting decades in the future. A lot of certainty and risk goes into that. That's where mathematics comes in - quantifying that. Cost analysis is crucial."

Dr. Smart also presented the Department of Mathematical Sciences with a signed copy of his new book entitled *Solving for Project Risk Management: Understanding the Critical Role of Uncertainty in Project Management* for their library.



"Make it happen is a saying in our family. She's making it happen."

*Val Davis
Proud Grandma*

Reprinted with permission from the University of Alabama in Huntsville. Original available online at <https://www.uah.edu/science/science-news/17053-uah-alumnus-author-presents-scholarship-to-undergraduate-math-major>

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2023-2025 International Board of Directors

Submit your declaration of
intent to run for office
by **December 15**



ICEAA's Board of Directors meets three times annually for approximately eight hours per meeting, and directors are expected to spend at least two hours reviewing materials in preparation for those meetings. Board members are encouraged to volunteer to participate in additional activities or complete tasks as needed by the association that require varying amounts of time and effort.

The Executive Committee consists of five elected positions, one legacy position, and the ICEAA Executive Director. These individuals are expected to attend all Board of Directors meetings, participate in additional meetings/calls of the Executive Committee, and perform specialized duties as listed below. Executive Committee members should be prepared to spend a minimum of **80 hours per year** in their role:

President

Executive Vice President

**Vice President for Professional
Development**

Secretary

Treasurer

Immediate Past President (not an elected position; the last sitting President assumes this role at the end of their term)

The remaining members of ICEAA's Board of Directors are two **Elected Directors**, seven **U.S.-based Regional Directors**, and **International Regional Directors** for our key areas abroad. All are expected to attend the three annual board meetings and additional duties as required or desired.

Any board member should be prepared to spend a minimum of **60-80 hours per year** in their role. An Officer or Director who misses two consecutive board meetings or three total over the two-year term may be removed from their position by a majority vote of Executive Committee.

In addition to the elected members of the ICEAA International Board of Directors, committees to address areas such as certification, marketing, member outreach, chapter development, government participation, finance/budget, and governance are formed to solve problems, research solutions, and figure out how ICEAA can best serve its members. Though neither the members of these committees nor their chairs can vote during a Board of Directors meeting, committee participation and involvement is always encouraged, and as a mostly-volunteer run association, vital to ICEAA's success. Nearly all of ICEAA's voting board members got their start by serving on a committee.

Additional details, position descriptions, and nomination forms at:

www.iceaaonline.com/leadership

Don't wait until an election to get involved on a committee; please email iceaa@iceaaonline.org to find out where and how you can participate!



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ICEAA 2022 All-Member Virtual Meeting

September 21  12 noon EDT

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