

3RD JOINT ANNUAL ISPA/SCEA INTERNATIONAL CONFERENCE

*"Parametrics & Cost Analysis:
Leading Decision Making for the 21st Century"*

JUNE 12-15, 2001 - WASHINGTON, D.C.

THE PROGRAM

Professional Paper Presentations

We anticipate fifty plus professional paper presentations. Each attendee will receive a Proceedings notebook with each author's vita, and an abstract of the papers to help the attendee select which papers they would like to hear. In addition to the workshops, there will be panel discussions after the Wednesday and Thursday general sessions. The panels will be composed of recognized experts and practitioners in the fields selected for discussion.

Training Programs

The highly acclaimed SCEA Training Program, "Mastering the Core of Knowledge," will be taught again by outstanding academicians and successful senior practitioners. In addition to a thorough review of the basics and the latest state-of-the-art practices of Cost Estimating and Analysis, there will be a comprehensive coverage of Earned Value Management and the use and application of Parametrics in the estimating challenge. The four day basic and advanced training programs are an excellent introduction for those new to the profession and for the seasoned practitioner to refresh and expand their skills. Continuing Education Units (CEUs) approved by IACET will be awarded for each course attended. This program is of value for individuals planning to sit for the Certified Cost Estimator/Analyst examination.

ISPA will offer for the first time a training review in eleven sessions based on the Parametric Cost Estimating Handbook. The Handbook is available on the ISPA website. An examination covering this review will be administered at the conference.

KEYNOTE SPEAKER

The Conference Keynote Speaker will be General Thomas S. Moorman, Jr. (USAF Retired). General Moorman is a Partner in *Booz-Allen & Hamilton*, and a Trustee for *The Aerospace Corporation*. Completing 35 years of distinguished military service, General Moorman served as the Vice Chief of Staff, United States Air Force. He is a member of the Defense Policy Board Advisory Committee and is a Commissioner of the US Commission to Assess National Security Space Management and Organization.



WASHINGTON, D.C. GUEST TOUR PROGRAM

Guests will have an opportunity to visit some of the National Capital Area's most interesting and beautiful sights. On **Wednesday**, Mt. Vernon is the destination with stops in Old Towne, Alexandria and the Jefferson Memorial. You will also see many other familiar sights including the Iwo Jima Memorial. On **Thursday**, the group will journey to Annapolis, Maryland. After a tour of the historic town center and the Naval Academy, you will make a stop at the State House, the oldest Capitol building in the USA. Lunch (not included in the tour price) on both days will be on your own in any of the interesting restaurants and cafes in either Old Towne or Annapolis. The tour will return to the hotel early enough to prepare for the Awards Banquet Thursday evening. For those staying in Washington over **Friday** night (and for local residents, too), we plan to offer an optional "Washington by Night" tour which will include many of the beautifully illuminated landmarks plus dinner in the popular **America Restaurant** at Union Station. Detailed information for this optional tour will be provided at a later date!

Please indicate your intentions to participate in the Guest Program on the registration form so that we can arrange for transportation. Guests are also most welcome to attend the Awards Banquet. Refer to the registration form for details.

AWARDS

Awards for professional accomplishment presented by both organizations will be announced at the Awards Banquet on Thursday night. In addition, awards will also be made for best paper in each of the tracks and for best overall paper at the conference. The following ground rules will apply:

- Best paper awards will be presented to participants regardless of their society affiliations
- Selections will be made from only those papers submitted in time for proceedings publication.

EXHIBITORS

Many of the leading organizations providing products and services of interest to the cost estimating and analysis community will be present in the Conference Exhibition Center. They will offer interesting demonstrations and have knowledgeable experts available to answer your questions. As we go to press, the following organizations have committed to exhibit their products and services: IDEAL Estimating (3F SARL, PrimeTime Software, and Team Analysis, Inc.), Galorath Inc., Mainstay Software, MCR Federal Inc, PRICE Systems, Quantech Services, Inc., Quantitative Software Management, Inc. (QSM), TECOLOTE Research, Inc., Booz-Allen Hamilton

SCHEDULE OF EVENTS

	<i>Tuesday, June 12</i>	<i>Wednesday, June 13</i>	<i>Thursday, June 14</i>	<i>Friday, June 15</i>	<i>Saturday, June 16</i>
7:00	REGISTRATION	Continental Breakfast	Continental Breakfast	Continental Breakfast	SCEA CCE/A Exam 8:00 a.m.-12:00 p.m.
8:30		GENERAL SESSION	GENERAL SESSION		
10:00	BREAK	BREAK	BREAK	BREAK	
10:30		PANEL	PANEL		
12:00	LUNCH	LUNCH	LUNCH	LUNCH ON OWN	
1:30					
3:00	BREAK	BREAK	BREAK	ISPA Exam 1:30-5:00 p.m.	
3:30					
5:00	Reception 6:00-7:30 p.m. Salon A		Social Hour & Banquet 6:30-10:00 p.m. Salon A		

- Workshops
- Training Sessions

Conference Registration opens
at 4:00 p.m. Monday, June 11

Exhibit Hall opens at Tuesday a.m. and closes Thursday p.m.

PROFESSIONAL PAPER PRESENTATIONS

(Papers accepted to date. Additional papers may be presented.)

Development of an Integrated Methodology for Uncertainty Analysis in Conceptual Design - Resit Unal, Katrina Hampton, Old Dominion University; Arlene Moore, NASA Langley Research Center

Response Surface Model Building For Operational Characteristics of Reusable Launch Vehicle Concepts - Resit Unal, Old Dominion University; Roger A. Lepsch, Douglas W. Morris, Nancy H. White, NASA Langley Research Center; Andy Prince, NASA Marshall Space Flight Center

Designing and Pricing to Win with SEER Tools - Evin J. Stump, Galorath Incorporated; William J. Vitaliano, Harris Corporation

Benchmarking for Better Planning and Estimating - David Seaver, Fidelity Investment Systems Company; Arlene F. Minkiewicz, PRICE Systems, LLC

Forecasting Parametric Data for New Technologies - Todd A Geiser, PRICE Systems, LLC

Next Generation Software Estimating - Arlene F. Minkiewicz, PRICE Systems, LLC

TruePlanning: The Next Generation of Estimating Tools - Anthony A. DeMarco, Morris Kastiyel, PRICE Systems, LLC

Activity Based Modeling - Bruce E. Fad, PRICE Systems, LLC

Interface Between Cost Estimating and Cost Engineering: The Industry Practice - Dr. R. Roy, K. Mishra, P. Souchoroukov, School of Industrial Manufacturing Science, Cranfield University

Exploring The Limits of “Faster, Better, Cheaper”: When Is a Mission Too Fast or Too Cheap? - Christian Smart, Ph.D., Litton PRC

Software Cost Disasters Happen....What now? “Will Rebaselining the Project Really Work?” - Al Dopita, Don Taylor, CALIBRE Systems, Inc.

Cost As Independent Variable (CAIV) – A CMM Compatible Process - Ray Kile, Center for Systems Management; Dave Rolley, Center for Systems Management

Software Productivity Improvements over Time - Shishu Gupta, IC CAIG; Dr. Stephen Book, MCR Federal, Inc.; Ronald Larson, Aerospace Corp.

Probability Distributions of Work Breakdown Structures - Megan E. Dameron, Jessica R. Summerville, Richard L. Coleman, TASC, Inc.; Nancy St. Louis, IC CAIG

NAVAIR Cost Growth Study: A Cohorted Study of The Effects of Era, Size, Acquisition Phase, Phase Correlation and Cost Drivers - Jessica R. Summerville, Megan E. Dameron, Cari L. Pullen, Richard L. Coleman, TASC, Inc.; Donna M. Snead, Naval Air Systems Command

THE Minimum-Unbiased-Percentage Error (MUPE) Method in CER Development - Dr. Shu-Ping Hu, Tecolote Research, Inc.

Parametric Estimating in a Collaborative Environment With the ICE Tool: A Case Study - Daniel V. Ferens, Air Force Research Laboratory; Thomas J. McConnell, Frontier Technology, Inc.

The Use of Earned Value Management Systems (EVMS) Data - Gary C. Humphreys, Humphreys & Associates, Inc.; Gary W. Troop, C/S Solutions, Inc.(C/SSI)

Forecasting Software Cost Explosion (Early): Fantasy Meets Reality For a Large Application As We Re-Estimate the LCCE With Early-On Program Data - Don Taylor, CALIBRE Systems, Inc.

Cost and Efficiency Measurement for Military Hospitals - Matthew Goldberg, Ted Jaditz, CNA Corporation

Cost Model Validation: A Technical and Cultural Approach - Dr. Jairus Hihn, JPL Mission and Systems Architecture Section; Leigh Rosenberg, Kevin Roust, Keith Warfield

An Automated End-to-End Enterprise Solution for Affordability Studies - David Sauve, Richard Moe, Raytheon

Using ACEIT to Model Operating and Support Costs - Chris Galler, MCR Federal, Inc.

Estimating Costs and Benefits for Information Systems: Some Hands-On Techniques - Michael W. Zelina, Mitretek Systems

Implementing Risk Management on a Large Scale Information System Upgrade – A Case Study - Paul R. Garvey, Susan S. Kapsokavadi, Michael C. Swelger, The MITRE Corporation

Cost Estimating Relationship Regression Variance Study - Don McKenzie, Wyle Laboratories

The VECAST Project - Robert Quaglieri, AFRL, Lee Fischman, Galorath, Inc.

Cost Analysis and Estimation, A Biotechnology Art! - Benjamin Schreiber, ESA

Applying UML (Unified Modeling Language) Use Cases to Software Estimating - Bill Haseltine, MCR Federal, Inc.

Earned-Value Analysis - Dr. Jonathan Gayek, Aerospace Corp.; Dr. Stephen Book, MCR Federal, Inc.

Cost and Organizational Culture - Pierre Foussier, 3F

Correlation Coefficients for the USCM 7 Database - Raymond Covert, Aerospace Corp.

CAIV Implementation - David Graham, Aerospace Corp.

Space Based Radar (SBR) Affordability Considerations - Kirk Hoy, Summit Engineering

On-Orbit Spacecraft Servicing Cost Considerations - Kirk Hoy, Summit Engineering

Cost Considerations for the UAV Tactical Control System (TCS) - Kirk Hoy, Summit Engineering

System Architecture Cost Considerations in the GLOBAL HAWK UAV Analysis of Alternatives Study - Kirk Hoy, Summit Engineering

“The Wit of the Staircase” Or “Answers to 10 Shocking Questions the Apprentice Cost Analyst May be Asked!” - Joe Hamaker, NASA MSFC

The Missing Piece of Risk - Relational Correlation and the Geometry of Regression - R.L. Coleman, J.R. Summerville, M.E. Dameron, C.L. Pullen, TASC; S. Gupta, IC-CAIG

The Value of Return-on-Investment (ROI) Analysis to the Government and Other Non-Profit Organizations - Kevin S. Buck, The MITRE Corporation

Software Sizing-Historical Perspective - George Bozoki, Consultant

SCEA TRAINING COURSES

TUESDAY

BASIC TRACK				ADVANCED TRACK	
Start Time	End Time	Topics Covered	CEU Points	Topics Covered	CEU Points
8:30	10:00	EVM 1 - Basic Concepts of EVM	0.150		
10:00	10:30	BREAK		BREAK	
10:30	12:00	CE 1 - Organizing and Estimating the Project	0.150		
12:00	1:00	LUNCH		LUNCH	
1:00	3:00	EVM II - Practical Software Measurement and EVMS	0.150	CE II - Contracts Types	0.150
3:00	3:30	BREAK		BREAK	
3:30	5:00	CE III - Improvement Curves	0.150	EVM III - Advanced Cost Performance Analysis	0.150

WEDNESDAY

Start Time	End Time	Topics Covered	CEU Points	Topics Covered	CEU Points
10:30	12:00	PM I - Cost Modeling	0.150	CE IV - CER Development	0.150
12:00	1:30	LUNCH		LUNCH	
1:30	3:00	PM II - Statistics	0.150	PM III - Software Estimating	0.150
3:00	3:30	BREAK		BREAK	
3:30	5:00	EVM V - EVM and Software Development	0.150		

THURSDAY

Start Time	End Time	Topics Covered	CEU Points	Topics Covered	CEU Points
10:30	12:00	PM IV - Linear Regression	0.150	EVM V - ABC and EVM	0.150
12:00	1:30	LUNCH		LUNCH	
1:30	3:00	CE V - Cost/Schedule Risk Analysis (Part 1)	0.150	PM V - Outliers and Influential Observations	0.150
3:00	3:30	BREAK		BREAK	
3:30	5:00	EVM VI - CCDR and EVM	0.150	PM VI - Multiplicative Regression	0.150

FRIDAY

Start Time	End Time	Topics Covered	CEU Points	Topics Covered	CEU Points
8:30	10:00	EVM VII - Subcontractor and Material Issues with EVMS	0.150	CE VI - Cost/Schedule Risk Analysis (Part 2)	0.150
10:00	10:30	BREAK		BREAK	
10:30	12:00	PM VII - Commercial Models	0.150	PM VIII - Multiplicative Regression	0.150
12:00	1:30	LUNCH ON OWN		LUNCH ON OWN	
1:30	3:00	SCEA Certification Exam Overview	0.150		

CE=Cost Estimating Training Sessions

EVM=Earned Value Management Training Sessions

PM=Parametric Training Sessions

ISPA PARAMETRIC COST ESTIMATING REVIEW

ISPA will be offering a parametric cost estimating review at the conference. Course material will focus on criteria and practices used by industry and government analysts for successful submission and defense of parametric based cost proposals. An examination covering the material presented will be administered on Friday afternoon. There is no cost for the examination for conference attendees. For those not attending the conference who wish to take the examination, the cost is \$100.00 payable at the door. The review is based on the Parametric Cost Estimating Handbook (available on the ISPA website) and consists of the following sessions:

COURSE SESSIONS	TIME	DAY
Session 1 - Introduction to Parametric Cost Estimating	8:30-9:15	Tuesday
Session 2 - Data Collection and Analysis Overview	9:15-11:15	Tuesday
Session 3 - Data Collection and Analysis Data Sources & Normalization	11:15-2:15	Tuesday
Session 4 - Cost Estimating Relationships (CERs)	2:15-4:15	Tuesday
Session 5 - Company Developed Models	4:15-5:00	Tuesday
Session 6 - Commercial Hardware Models	1:30-4:15	Wednesday
Session 7 - Regulatory Compliance	4:15-5:00	Wednesday
Session 8 - Commercial Software Models	1:30-5:00	Thursday
Session 9 - Establishing a Parametric Implementation Team	8:30-9:15	Friday
Session 10- Auditing Parametrics	9:15-10:00	Friday
Session 11- Technical Evaluation of Parametrics	10:30-12:00	Friday

ACCOMMODATIONS



Sheraton Premiere At Tysons Corner

8661 Leesburg Pike
Tysons Corner/Vienna, Virginia 22182
(703) 448-1234

For hotel reservations, please call
(703) 448-1234 or 1-800-572-ROOM
www.sptc.com

All conference attendees qualify for the prevailing government per diem rate. Ask for the SCEA/ISPA room block.

Superior Location:

At Route 7 and Dulles Toll Road. Convenient to Beltway (I-495), I-66, and I-270 south corridor in Montgomery County.

- 15 minutes to Dulles Airport
- 25 minutes to Washington National Airport
- 20 minutes to downtown Washington, D.C.
- 20 minutes to the Pentagon and Crystal City
- Regular complimentary shuttle service available to Dulles Airport and Metro.

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SCEA TRAINING COURSES

Background: The training track provides instruction and application at both the basic and advanced levels for those new to the profession or for those who want to refresh their skills. The training track provides a firm basis for more advanced study and prepares the individual to readily benefit from on-the-job training. This training track integrates Cost Estimating (CE) techniques and practices with Earned Value Management (EVM) analysis and evaluation, and Parametric Modeling (PM) applications and models. These sessions touch on the key skills in the cost estimating/ analysis profession.

Syllabus: Every training track attendee will receive a bound soft-cover book containing the presentation material used by each instructor.

Re-certification Points: Points towards re-certification for holders of CCE/A certification will be awarded.

Continuing Education Units (CEUs): CEUs are awarded for each SCEA course attended.

Instructors: The presenters are recognized experts in their areas of instruction. All are active members of the Society of Cost Estimating and Analysis and many are Instructors at Defense Acquisition University (DAU) as well as other university/college institutions across the country. While attending the national workshop they have generously agreed to contribute to the advancement of the profession of cost estimating and analysis by teaching in their area of expertise.

COST ESTIMATING TRAINING SESSIONS (CE)

<p>CE I - Organizing and Estimating the Project (Basic) The session emphasizes the development and application of cost analysis techniques and interpretation of the results. The course structure is based on the five primary steps in the cost estimating process: Definition and Planning, Data Collection, Estimate Formation, Review and Presentation, and Final Documentation.</p>

<p>CE II - Contract Types (Advanced) Contract types define the bounds for how cost risk is shared between parties and the profit/fee potentials commensurate with that risk. This block covers key concepts such as “point of total cost assumption,” determining the “range of incentive effectiveness,” “share ratios,” and the affects of technical and schedule risk on cost risk.</p>
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<p>CE III - Improvement Curves (Basic) The learning curve (cost improvement curve or experience curve) continues to be a standard in both the commercial and defense industry. This presentation will focus on the unit and cumulative average learning curve theories. Following an introduction on the concept of cost improvement the participants will be guided through a series of exercises in which unit costs and lot costs are calculated using the equations associated with the two theories.</p>

<p>CE IV - CER Development (Advanced) This session provides the basics for understanding how to develop good Cost Estimating Relationships (CERs). Discussion includes the steps to establishing a CER, including understanding the hypothesis, the database characteristics necessary, and the methods of hypothesis testing, which define the CER's significance.</p>

<p>CE V - Cost/Schedule Risk Analysis (Part 1) (Basic) Even well developed cost estimates and schedules can overrun. The session presents several approaches to risk analysis, sources of and attitudes towards risk, qualitative assessment, risk scoring and contingency analysis. Technical performance measures and risk assessment is also discussed. The main emphasis will be on quantitative analysis of cost and schedule baselines.</p>

<p>CE VI - Cost/Schedule Risk Analysis (Part 2) (Advanced) Even well developed cost estimates and schedules can overrun. The session presents several approaches to risk analysis, sources of and attitudes towards risk, qualitative assessment, risk scoring and contingency analysis. Technical performance measures and risk assessment is also discussed. The main emphasis will be on quantitative analysis of cost and schedule baselines. (This is a continuation of Part 1, with more advanced discussion and techniques.)</p>

EARNED VALUE MANAGEMENT TRAINING SESSIONS (EVM)

<p>EVM I - Basic Concepts of EVM (Basic) This session will provide an introduction to the basic concepts of Earned Value Management. Material covered ranges from initial project planning through execution and will include data analysis and baseline revisions. Attendees at this session will gain a thorough understanding of EVM and become familiar with the basic concepts.</p>
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<p>EVM II - Practical Software Measurement & Performance Based EVM (Basic) This session will provide useful guidance implementing performance based earned value in a practical, cost effective manner, including specific recommendations and performance measures for better project planning, meaningful analysis, and improved management control. Performance measures will be consistent with “Practical Software Measurement” (PSM), the DoD guide that provides practical, easy to use “best practices” for software measurement.</p>

<p>EVM III – Advanced Cost Performance Analysis (Advanced) Developing an accurate cost performance analysis is a useful output of effective Earned Value Management. Using the EVM data and predicting project outcomes is an essential element of good project management. This session transcends the traditional formulas and bottom-up estimates to identify where and how these methods can be valuable tools to convince others of the real status of the project.</p>
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SCEA TRAINING COURSES

EVM IV - Advanced Schedule Analysis

(Advanced)

Effective use of EVM stems from an integrated approach to project management and understanding the link between network schedules, critical path analysis and Earned Value information. EVM systems provide early warning to possible schedule problems. This session addresses the use of the schedule variance, the schedule performance index (SPI) and network schedules.

EVM V - Role of EVM with Software Development

(Basic)

This session will discuss the use of EVM in executing a software development contract; how the EVM approach and methodology are critical to this process; and satisfying the Program Manager's need for information to support the decision making process for a successful contract.

EVM VI - Activity Based Costing and EVM

(Advanced)

With activity based costing and EVM important parts of the estimator/analyst toolkit, this presentation will show how these techniques are integrated and how to determine which activities can have their technical, cost and schedule aspects measured.

EVM VII - Contractor Cost Data Reporting and the EVM

(Basic)

The session will provide a brief overview of the CCDR, their purpose, and historical data used to develop estimates. It will also discuss how the CCDR reports are used and the connection between this data and the EVM data collected. The different uses and analyses that each system facilitates are also discussed.

EVM VIII - Subcontract and Material Issues in an EVMS

(Basic)

This session will address the key subcontract and material performance measurement issues in an Earned Value Management System (EVMS). Gaining a solid foundation concerning how these important areas support the EVMS will enable the project control analysts, control account managers and project management staff to better understand, interpret and analyze performance measurement data.

PARAMETRIC ESTIMATING TRAINING SESSIONS (PE)

PM I - Cost Modeling

(Basic)

This session provides the foundation for model development by identifying some of the fallacies in actual studies and modeling efforts as well as suggesting a structured approach to parametric modeling. The steps to establishing a parametric implementation team will also be discussed.

PM II - Statistics

(Basic)

Knowledge of fundamental concepts such as measures of central tendency and dispersion will be covered in this session and provide the framework on which other statistically based estimating techniques are built. Application of confidence intervals and hypothesis tests will also be addressed.

PM III - Software Cost Estimating

(Advanced)

This session will center on Software cost estimating techniques, models and approaches. The topics that will be addressed are software development processes, estimating source lines of code, function points, and other measuring factors, understanding what characteristics drive software costs and what models or methodologies may be used to help achieve estimating results.

PM IV - Linear Regression

(Basic)

Whether in a cost-based or price-based estimating scenario, regression is a tool that serves well as either a primary or secondary estimating methodology. In this session we will address the interpretation and application of the statistics associated with regression such as the standard error of the estimate, r-squared, F statistic and T statistic. Participants will evaluate regression outputs and perform model comparisons.

PM V - Outliers and Influential Observations

(Advanced)

This session will continue our discussion of regression with one of the most significant issues for those dealing with small data sets - outliers and influential observations. We will discuss the process for identifying and investigating these observations and also address the implications on the model through a series of examples.

PM VI - Multivariate Regression

(Advanced)

The significant statistics generated as additional independent variables are entered into the model are covered in this session. One specific area of interest is the effect of correlation between the independent variables. Also important is the interpretation of the T statistics and the impact that the additional variables have on the r-squared. The trade-off between sample size and number of independent variables will also be discussed.

PM VII - Commercial Models

(Basic)

Are all commercial models really parametric models or are some simply accounting models? Are all lines of code created equally? What are function points? What do we mean by calibration and validation? These questions and others will be addressed during this session's review of commercial hardware and software cost estimating models.

PM VIII - Multiplicative Regression

(Advanced)

Building on the previous sessions, the participants will now address the issues of curvilinear data. Transformations of the dependent and independent variables will be discussed as well as the interpretation of log-linear statistics. Again, actual studies will be evaluated to highlight some of the misapplications of these models.

SCEA Certification Exam Overview

This session is a review and discussion of the key sections of the SCEA Certification Exam. The session will show example questions, provide insight as to what the major focus of the exam is, and provides a forum for answering questions on exam expectations and results.

