61st Annual Meeting of the AACE International 2017

Orlando, Florida, USA 11 – 14 June 2017

Volume 1 of 3

ISBN: 978-1-5108-4631-9

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2017) by AACE International All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact AACE International at the address below.

AACE International 1265 Suncrest Towne Centre Drive Morgantown, WV 26505-1876 USA

Phone: +1.304-296-8444 Fax: 1.304.291.5728

info@aacei.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2633 Email: curran@proceedings.com Web: www.proceedings.com

2017 AACE [®] INTERNATIONAL TRANSACTIONS

Table of Contents

BUILDING INFORMATION MODELING (BIM)

		()
BIM-2506	Virtual Construction Management 1	Michel Guevremont, P.Eng. PSP
BIM-2558	Building Information Modeling for Infrastructure 21	Jignesh S. Shah, PE CCP EVP
	Projects–Emphasis on 4D, 5D and 6D	
BIM-2569	Housing Price Estimation Using Statistical Methods and	Dr. Satish B. Mohan; Dr. Alan Hutson
	GIS Technology 40	
BIM-2632	Infrastructure: Visualizing Project Success 67	Connor Christian; Andy Kayhanfar
BIM-2697	Integrating Building Information Modeling with Project	Vidya C. Dixit
	Schedule 76	

CLAIMS AND DISPUTE RESOLUTION (CDR)

Project Claims Avoidance for Owners 97	Christopher P. Caddell, PE CCP DRMP; Andrew J. Aston
Optimizing the Resolution of Disputes on Construction Projects 108	Lynn B. Larsen, CFCC
Principles of Mediation – Explained with Case Study 129	Avinash Gaikwad
Change Happens: Implications on Contract 141 Administration Practice and Policy	Dr. George Okechukwu Okere, CCP
Overview of As-Planned versus As-Built Forensic	Scott A. Galbraith, PE CFCC;
Schedule Analysis: AACE [®] International Recommended	Michael T. Siburt, PE CCP PSP;
Practice No. 29R-03, Forensic Schedule Analysis MIP 3.1 and 3.2 159	John C. Livengood, Esq. CCP CFCC PSP FAACE
Measured Mile Improvements in Pervasively Disrupted Projects 179	Dr. Tong Zhao, PE PSP and Mark Dungan
Extension of Time Quantification 192	Thierry Linares
Forensic Schedule Analysis – Critical Path Method - Test & Evaluation Systems 217	Patrick M. Kelly, PE PSP; Kenji P. Hoshino, CFCC PSP; Michael S. Dennis, CCP; Greta A. Martin, PE PSP
Proposed Format and Content for Subordinate Recommended Practice, 29R-03-3.X 229	Kenji P. Hoshino, CFCC PSP; Michael S. Dennis, CCP; Greta A. Martin, PE PSP
Identifying Critical Path Shifts in Observational Forensic Delay Analyses 244	Thomas Peters, PE CFCC; Alan Watson Esq.
What's in a Name? – Forensic Delay Methodologies 274	Roger R. Nelson, PE; Bernard Ong
Hot Tubs and Other ADR Remedies for Disputes that Ail You 289	Kathleen Olden Barnes; Christopher J. Brasco; George "Trip" Stewart
Global Construction Disputes Report 2016 - Don't Get Left Behind 306	Roy Cooper, PE; Brian Goodreau, PSP
The Contemporaneous Period Analysis - Split	Mark F. Nagata, PSP;
Methodology Forensic Delay, MIP 3.4 318	Christopher W. Carson, CEP DRMP PSP FAACE
RP29R-03 MIP3.5 Observational/Dynamic/Modified or Recreated 344	Walied Abdeldayem; Mark C. Sanders, PE CCP CFCC PSP
An Insight to Concurrent Delay Analysis 360	Devdas Tamboli, CCP PSP; Manoj Joshi
Contemporaneous "As-Is" Period Schedule Delay 389	Anthony Gonzales; Jesus Schuldes, PSP; Katherine Hull;
Methodology - Forensic Delay Methodology MIP 3.3	Dr. Marcelo Azambuja
The Collapsed As-Built Windows Schedule Analysis Method 404	Andrew Avalon, PE PSP; Ronald J. Rider
	Optimizing the Resolution of Disputes on ConstructionProjects108Principles of Mediation – Explained with Case Study129Change Happens: Implications on Contract141Administration Practice and PolicyOverview of As-Planned versus As-Built ForensicSchedule Analysis: AACE® International RecommendedPractice No. 29R-03, Forensic Schedule Analysis MIP 3.1and 3.2159Measured Mile Improvements in Pervasively DisruptedProjects179Extension of Time Quantification192Forensic Schedule Analysis – Critical Path Method - Test& Evaluation Systems217Proposed Format and Content for SubordinateRecommended Practice, 29R-03-3.X229Identifying Critical Path Shifts in Observational ForensicDelay Analyses244What's in a Name? – Forensic Delay Methodologies274Hot Tubs and Other ADR Remedies for Disputes that AilYou289Global Construction Disputes Report2016 - Don't GetLeft Behind306The Contemporaneous Period Analysis - SplitMethodology Forensic Delay, MIP 3.4318RP29R-03 MIP3.5 Observational/Dynamic/Modified orRecreated344An Insight to Concurrent Delay Analysis360Contemporaneous "As-Is" Period Schedule Delay389Methodology - Forensic Delay Methodology MIP 3.3The Collapsed As-Built Windows Schedule Analysis

COST AND SCHEDULE CONTROL (CSC)

CSC-2436	The Ten Biggest Lies in Project Controls 425	Glen Palmer, PSP CFCC;
		Chris Carson, FAACE PSP CEP DRMP
CSC-2659	Proactive Trend and Change Management: Av	voiding the Leslie E. McMullan, FAACE
	Iceberg Effect 452	
CSC-2664	Extending Control Accounts Toward an Integra	ated Data Michael Goggin
	Model 471	
CSC-2687	Change Control Procedure during Design Deve	elopment Amgad F. Fahmy, PE CCP PSP
	of a Mega Transit Project 484	

2017 AACE [®] INTERNATIONAL TRANSACTIONS

PROFESSIONAL DEVELOPMENT (DEV)

	I NOI ESSIONAE DEVEE	
DEV-2431	Harnessing Leadership Skills in Project Management 500	9 Biju Jacob
DEV-2502	3 Practical Soft Skills for Transforming Project Controls Application 520	Rohit Singh
DEV-2541	Recruiting, Managing, and Retaining the Millennial Generation in Project Controls 532	Daniel P. Gilmour, PSP; Andrew D. Corson
DEV-2652	Humans are the New Assets - ISO 55000: Attracting and Retaining Skilled Staff 549	Ronald S. Gavrin, CCP
	ESTIMATING	(EST)
EST-2447	Estimating Construction Costs in an Emerging and Unsophisticated Market 561	Juan P. Malo R.; Gustavo Vinueza C.
EST-2486	Getting Granularity in Project Life PM and Engineering Costs 588	Shoshanna Fraizinger
EST-2501	Engineering Estimate Accuracy of Highway Construction Alternative Delivery Methods 607	Douglas Alleman, PE; Dr. Daniel Tran; Arthur Antione; Dr. Keith Molenaar
EST-2525	FPSO Bid, the Delicate Choice of Class of Estimate 630	Ousmane Aidara
EST-2573	Comparison of the International Use of Point and Range Estimating 655	Robert MacDonald; Mikhaela Gray
EST-2578	Estimating in Step with Advanced Work Packaging (AWP) for Enhanced Project Control 670	Lakshmanan Simhadri; Yogesh Srivastava; Glen Warren
EST-2618	Cost Variability Estimation at Different Levels of Project Definition 694	Franco Manuel Sánchez Romero; Edisson Pérez López

EARNED VALUE MANAGEMENT (EVM)

EVM-2471	Misuse of Earned Value Management Results in 710 Erroneous Conclusions	Charles F. Lappenbusch, Jr. CCP EVP PSP
EVM-2552	Case Study: Using ISO 20000 to Supplement Earned Value Management 732	Sheryl Erez; Justin Sloan
EVM-2581	Improving EVMS Compliance through Data Integration 746	Edward M. McNamee; Christopher E. Hanner; Charles W. Immonen
EVM-2590	Adopting a Flexible EVM Strategy to Optimize Project 760 Performance	Christen Bergerud
EVM-2606	How to Successfully Use Earned Value on Projects 772	Joseph A. Lukas, PE CCP

INFORMATION TECHNOLOGY (IT)

IT-2403 Framework for Evaluating Project Controls Software 800 Christopher P. Caddell, PE CCP DRMP Systems

OWNER ISSUES (OWN)

OWN-2418	High Performance Owner Project Team: Creating a 813 Competitive Advantage	Joshua P. Rowan, CCP; Sally Love
OWN-2422	Cost Benchmarking of a Joint Venture Project 828	Johnson Olugbelenke Awoyomi, CCP CEP
OWN-2433	Strategic Budget Allocation Model for Deferred 843 Maintenance	Soojin Yoon; Makarand Hastak
OWN-2474	Incentivizing Construction Contracts to Enhance 866	Dr. Douglas D. Gransberg, PE CCP;
	Sustainability in Construction Projects	Dr. Carla Lopez del Puerto, CCP; Jose J. Fontan Pagan
OWN-2475	Streamlining Government Change Order Processes – Can It Be Done? 876	James G. Zack, Jr., CFCC FAACE Hon. Life
OWN-2509	Program Level Scheduling - Enterprise Alignment for Programmatic and CPM Schedules 901	John Blodgett; Brian Criss, PSP
OWN-2547	Public Procurement: Uncovering Hidden Costs & 919 Capturing Missed Opportunities	Bryan Payne, PE CCP CFCC Esq.
OWN-2565	Data-Driven Management for Digital Capital Projects 9	36 Margaret Lucey; Jesse Lund; Avi Schwartz; Samarth Shah

2017 AACE ® INTERNATIONAL TRANSACTIONS

OWN-2657	Managing C	Capital Cost Overrun Risks in the Mining
	Industry	956

Tin Lwin, P.Eng.; Jose Lazo

PROJECT MANAGEMENT (PM)

PM-2446	Project Controls and Project Management on Bus Rapid	Rashmi Vailaya
	Transit Project 977	
PM-2538	How to Quantify and React to Different Project Controls	Robert J. White
	Cultures 994	
PM-2605	Turning Around Problem Projects 1009	Joseph A. Lukas, PE CCP
PM-2628	Workflow Improvements and Project Success Driven by	Jax Kneppers; Dr. Borja García de Soto, PE
	Mobile Technology 1029	
PM-2629	Project Performance Review–A Model for Continuous	Dr. Alexia Nalewaik, CCP
	Monitoring and Controls 1047	
PM-2639	Identifying and Predicting Labor Availability in the	Dr. Nour Bouhou; Anthony Gonzales;
	Construction Industry 1062	Dr. Marcelo Azambuja
PM-2677	Developing a Project Skyline View for Workable Backlog 1080	Doug Shako

PLANNING AND SCHEDULING (PS)

PS-2390	Critical Path Shifts: Everything You Need to Know 1096	Mark F. Nagata, PSP; William Haydt
PS-2407	Alternate Methodology for Managing Large Complex 111. Project Schedules	2 Abbas Saifi; Greg Hall
PS-2412	Protect Your Project Schedule Using the Unified 1139 Scheduling Method	William W. Davis
PS-2413	Extracting the Resource-Constrained Critical/Longest 11 Path from a Leveled Schedule	62 Thomas M. Boyle, PE PSP
PS-2425	Jobsite Photography Should Be a Scheduler's Job 1189	Ronald M. Winter, PSP FAACE
PS-2427	P6 File Corruption, Part 2 1206	Ronald M. Winter, PSP FAACE; Marina G. Sominsky, PSP
PS-2428	Improving the Update Process: Solutions for a 1224 Contentious Industry	Greg M. Hall, PSP
PS-2491	Implementation of the Half-Step Analysis During the 124 Project Phase II	7 Brian Furniss, PE PSP CFCC; Cory Milburn PSP CFCC; John Orr, PSP
PS-2649	Portfolio Management in P6 1263	Molly I. Donaldson, CCP
PS-2658	Categorizing Schedule Activity Relationships for Logic 127. Analysis	9 Paul Reeser
PS-2670	Draft Recommended Practice 92R-17: Analyzing Near- 129	<i>9</i> Dr. Amin Terouhid, DRMP PSP;
	Critical Paths	Dr. Maryam Mirhadi Fard, PSP; Thomas M. Boyle, PE PSP

DECISION AND RISK MANAGEMENT (RISK)

RISK-2394	An Introduction to Analysis for Small Data Populations 1311	James D. Whiteside II, PE FAACE; Gregory J. Whiteside, PE CCP
RISK-2404	Holistic Project Assessment (HPA) 1343	Ken Cressman, CCP EVP
RISK-2406	Practical Risk Management for Airport Projects Case 1353 Study	Hosam A. Eid Mohammed
RISK-2441	Integrated Cost-Schedule Risk Analysis Using Monte 1382 Carlo Simulation	Dr. David T. Hulett, FAACE
RISK-2442	Numerical Bias of Risk Teams vs. Project Actual Bid 1399 Results	David A. Hamilton, PE CCP
RISK-2445	Risk and Uncertainty Practices in GAO's Best Practice 1418 Guides	Karen Richey; Jason T. Lee
RISK-2470	From Activity-based Ranging to Risk Driver Approach 1431	Craig Veteto
RISK-2473	Lessons Learned in Completing a Tailored Project Risk 1445	Bryan Skokan, PE CCP; Connie (Wei) Liu;
	Management Assessment Tool	Rodney Lehman; Jake Lefman; Dan Melamed, CCP EVP
RISK-2488	A Rationale for Lean Models for Quantitative Schedule 146 Risk Analyses	5 Luis Figueroa
RISK-2498	LA Metro Implements ProjectStatus for Collaborative 1479 Risk Tracking	Julie Owen, CCP PSP; David Davies; Brian Criss, PSP

2017 AACE [®] INTERNATIONAL TRANSACTIONS

RISK-2505	Fully Integrated Cost Schedule Model–A Stochastic 1496 Alternative	Liwen Ren; Gustavo Vinueza C.
RISK-2510	Modelling Realistic Outcomes Using Integrated Cost and 1516 Schedule Risk Analysis	Colin H. Cropley
RISK-2511	Role of Project Novelty, Execution and Bias in Risk 1550 Quantification	Dr. Yuri Raydugin, P.Eng.
RISK-2515	Realistic and Practical Project Risk Quantification 1575 (without CPM)	John K. Hollmann, PE CCP CEP DRMP FAACE Hon. Life
RISK-2516	Variability in Accuracy Ranges: A Case Study in the 1587 Canadian Power Transmission Industry	John K. Hollmann, PE CCP CEP DRMP FAACE Hon. Life; Andrea Almeida P.Eng.; Raminder S. Bali, P.Eng.; John M. Boots, P.Eng.; Kevin Burnham; Victor Hsieh; Qaiser Iqbal, P.Eng.; Donald Konan, P.Eng.; Guillaume Lafortune, P.Eng.; Joe Ly; Clement Wu, P.Eng.
RISK-2523	Application of Chaos in Megaproject Risk Analysis 1603 Models	Feng Jin, Wenwu Xiang; Bochen Zhang
RISK-2555	Contingency Cage Match: Simultaneous Contingency 1618 Assessment Methods, A Case Study	Matthew Schoenhardt, P.Eng.; Vachel Pardais
RISK-2570	An Engineering Approach to Schedule Risk Assessment 1647	Angela Tuffley; Adrian Pitman; Dr. Elizabeth Clark
RISK-2592	Integrated Cost/Schedule Risk Analysis for Pre-Concept Alternatives Analysis/Technology Selection 1661	Samuel Steiman, PE; Molly Donovan
RISK-2596	Backward-Looking Schedule Risk Analysis - Determining 1694 Acceptable Variability in Project Start	Molly Donovan; Samuel Steiman, PE
RISK-2694	An Innovative Approach to Escalation Risk Mitigation 1718	Warren Fletcher
RISK-2700	Quantitative Cost Risk Analysis at Bid Stage 1739	Didier Lagrange
RISK-2701	Risk Dependency Analysis in Complex Projects 1752	Cavanna Paolo; Caron Franco; Fratoni Filippo

TOTAL COST MANAGEMENT (TCM)

TOTAL COST MANAGEMENT (TCM)				
TCM-2392	Reviving Entrepreneurial Thinking and Behavior in 1775 Capital Projects	Scott Whitbread; Nathaniel D. Greene		
TCM-2500	The True Power of Estimate and Schedule Basis 1789 Documents	Robert Mathias; Paul G. Williams		
TCM-2503	The Economic Effects of a Revenue Neutral Fee on Fossil 1807 Fuels	Desmond Orsinelli, PE CCP CEP		
TCM-2534	Mining and Mineral Processing Uniform Cost Coding 1825 Structure	Tas Hellis		
TCM-2535	Portfolio Scheduling – How to Achieve Success and What Does Success Look Like? 1859	John C. Philbrick, PE CCP; Francisco Cruz Moreno, PE		
TCM-2600	Data Integration for Enterprise Project Control 1878	Ochamuke Ejofodomi		
TCM-2693	Economic Benefits of Green Buildings 1892	Dr. Satish B. Mohan; Benjamin Loeffert		