

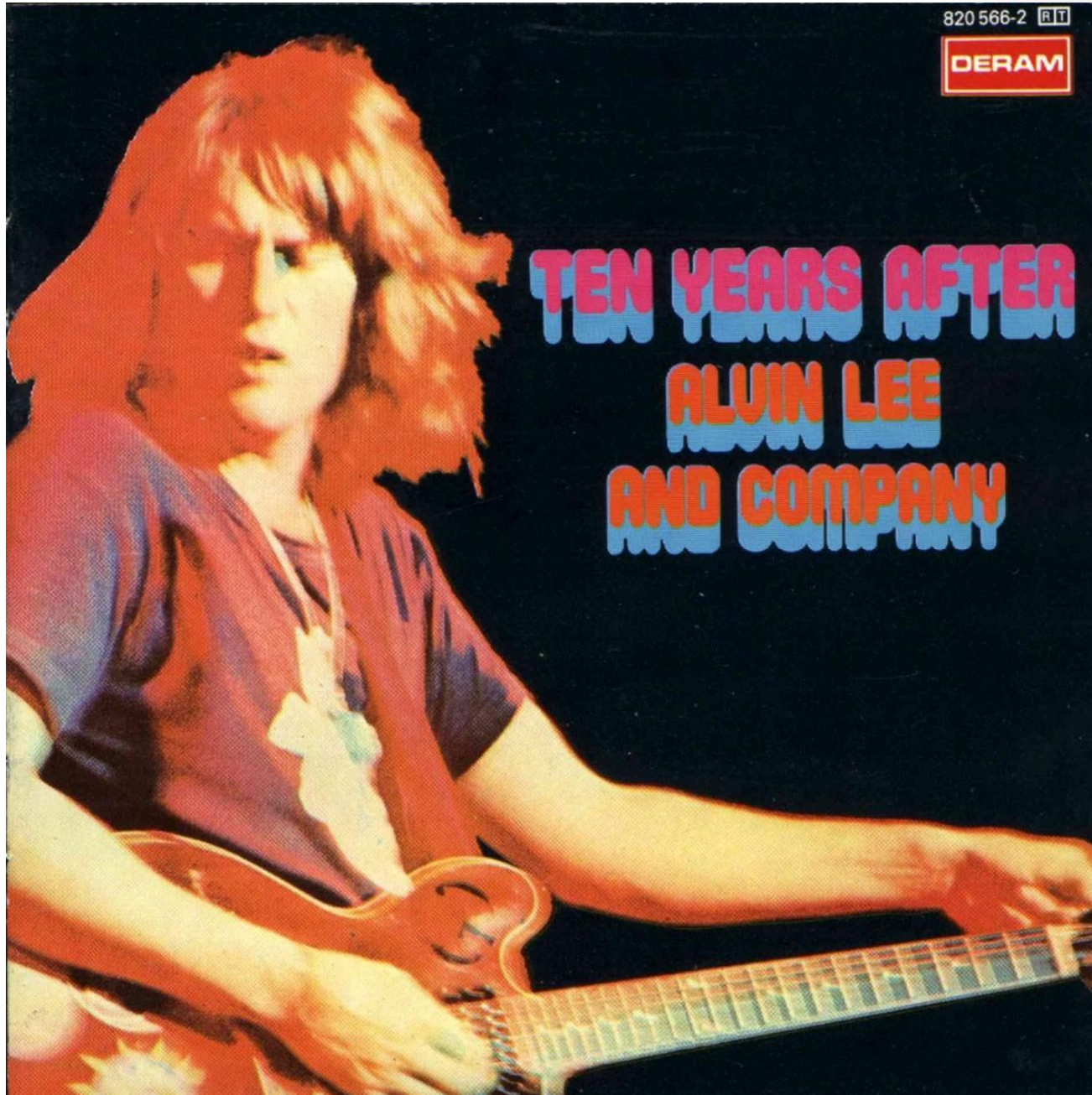
Ten Years After

“Schedule is Different”
The Measurable News
March, 2003



Walt Lipke





Abstract

Earned Schedule is an extension to Earned Value Management. The method provides considerable capability to project managers for analysis of schedule performance. From the time of the public's first view of Earned Schedule, its propagation and uptake around the world has been extraordinary. This presentation will cover the capabilities and challenges, progressing through the significant extensions, to its present status.

Management Practice



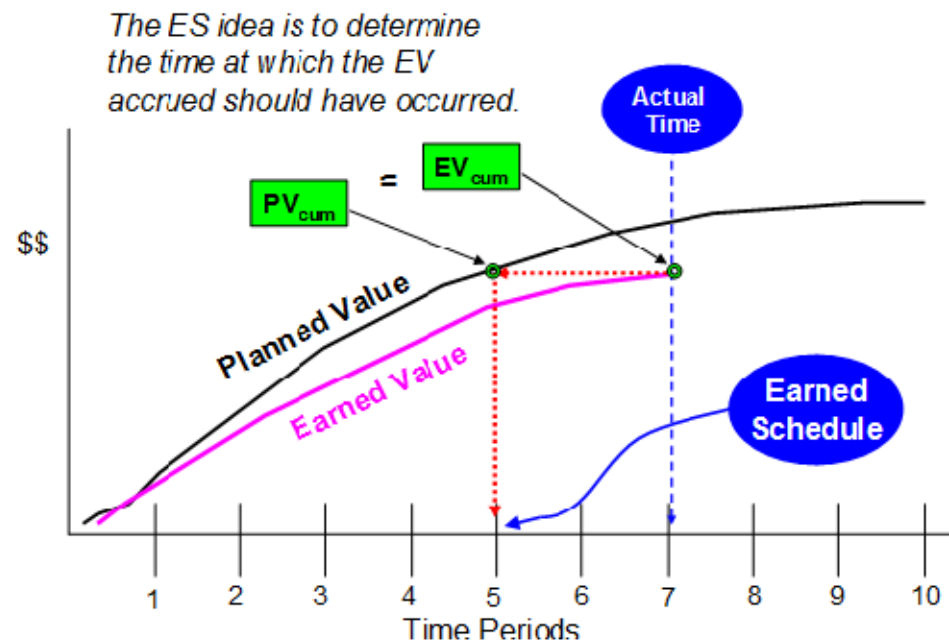
Advancing Science

“In physical science the first essential step in the direction of learning any subject is to find principles of numerical reckoning and practicable methods for measuring some quality connected with it. I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of Science, whatever the matter may be.”

- Lord Kelvin

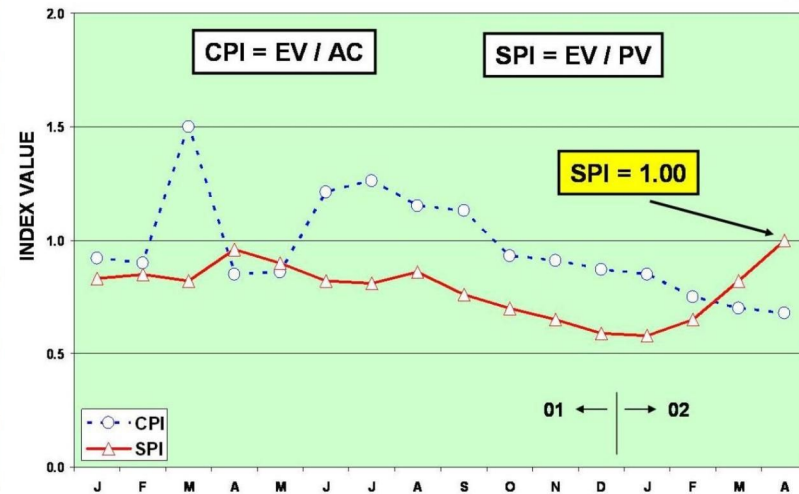
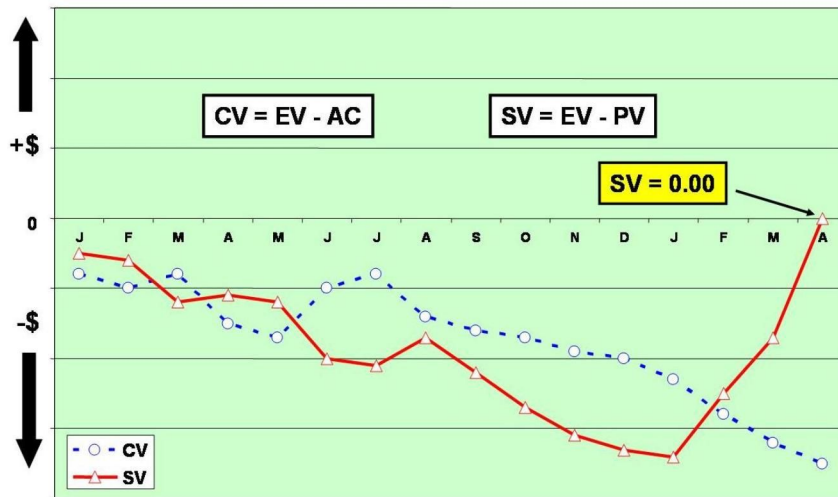
Overview

- Capabilities
- Challenges
- Affirmation
- Resources
- Wrap-Up



Capabilities

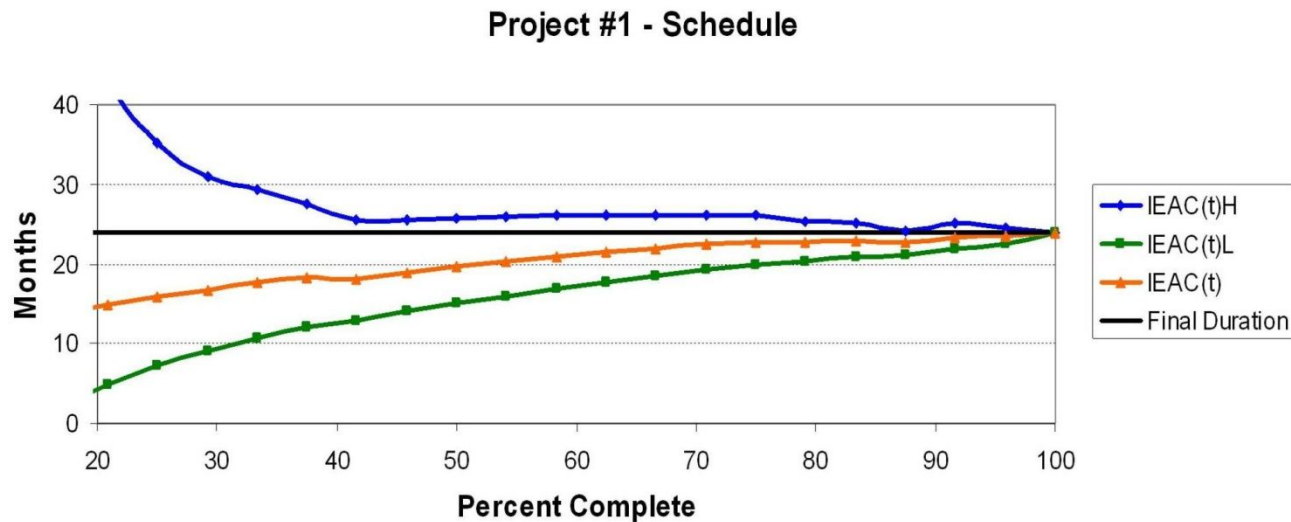
- Reliable indicators – $SV(t)$ & $SPI(t)$
 - True performance at completion



EVM schedule indicators fail for late performing projects

Capabilities

- Forecasting
 - Duration & completion date
 - Always converges to actual result

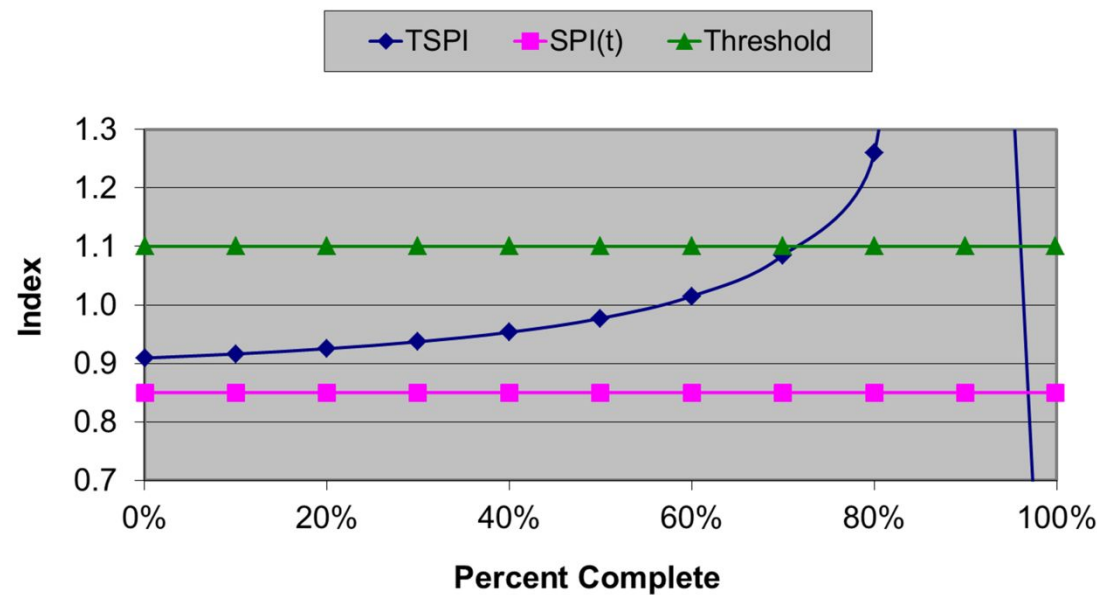


Capabilities



- Prediction

- To Complete Schedule Performance Index (TSPI)
- Answers question – “Is completion at (time) achievable?”



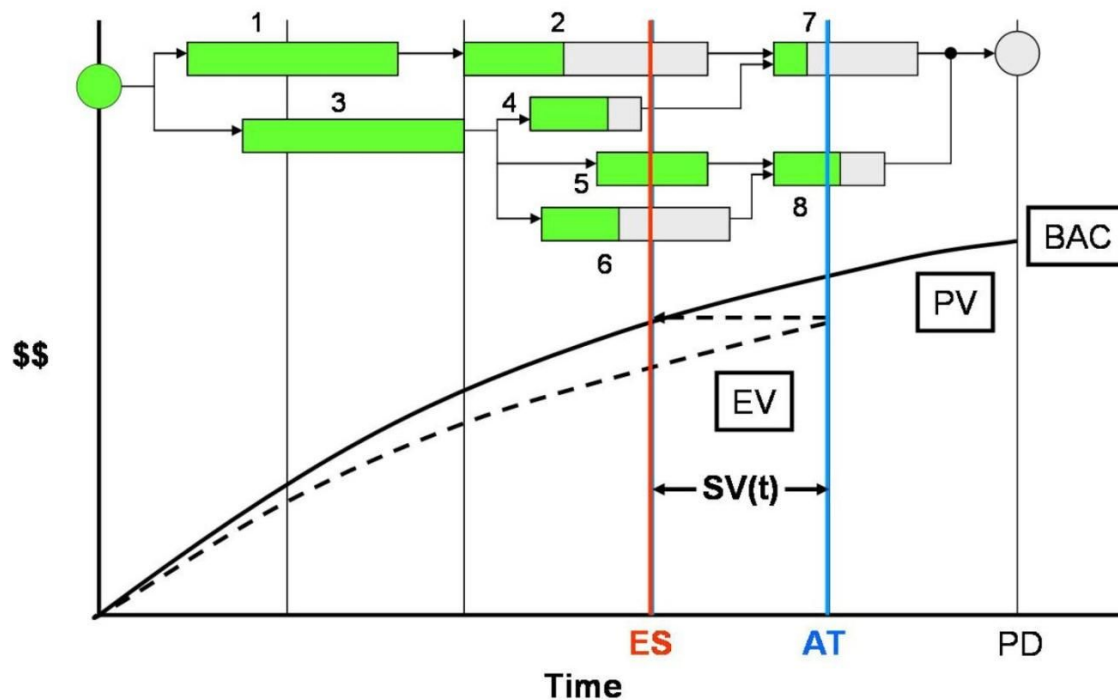
Capabilities

- Critical Path
 - Comparison of project and CP performance

		●●● Performance Period ●●●												
Indicator		0	1	2	3	4	5	6	7	8	9	10	11	12
Total Project	CPIp	xxx	xxx	0.800	0.800	0.827	0.771	0.900	0.838	0.727	0.900	0.750	0.600	1.000
	CPIc	xxx	xxx	0.800	0.800	0.818	0.804	0.818	0.822	0.812	0.816	0.810	0.805	0.808
	SPI(t)p	xxx	0.000	0.800	1.486	1.314	0.775	0.450	0.975	0.700	0.450	1.950	0.500	0.600
	SPI(t)c	xxx	0.000	0.400	0.762	0.900	0.875	0.804	0.829	0.813	0.772	0.890	0.855	0.833
	SPIp	xxx	0.000	0.800	0.457	1.433	0.675	0.600	1.550	3.200	0.900	3.000	xxx	xxx
	SPIc	xxx	0.000	0.400	0.444	0.840	0.783	0.745	0.842	0.912	0.911	0.968	0.984	1.000
	IEAC(t)	xxx	xxx	25.00	13.13	11.11	11.43	12.44	12.07	12.31	12.95	11.24	11.70	12.00
Critical Path 1-4-8-10	CPIp	xxx	xxx	0.800	0.800	0.833	0.600	xxx	0.800	0.667	xxx	0.714		
	CPIc	xxx	xxx	0.800	0.800	0.815	0.781	0.781	0.787	0.763	0.763	0.753		
	SPI(t)p	xxx	0.000	0.800	1.600	2.000	0.600	0.000	1.700	1.300	0.000	2.000		
	SPI(t)c	xxx	0.000	0.400	0.800	1.100	1.000	0.833	0.957	1.000	0.889	1.000		
	SPIp	xxx	0.000	0.800	1.600	2.000	0.600	0.000	1.200	1.600	0.000	2.000		
	SPIc	xxx	0.000	0.400	0.800	1.100	1.000	0.833	0.925	1.000	0.900	1.000		
	IEAC(t)	xxx	xxx	25.00	12.50	9.09	10.00	12.00	10.45	10.00	11.25	10.00	xxx	xxx

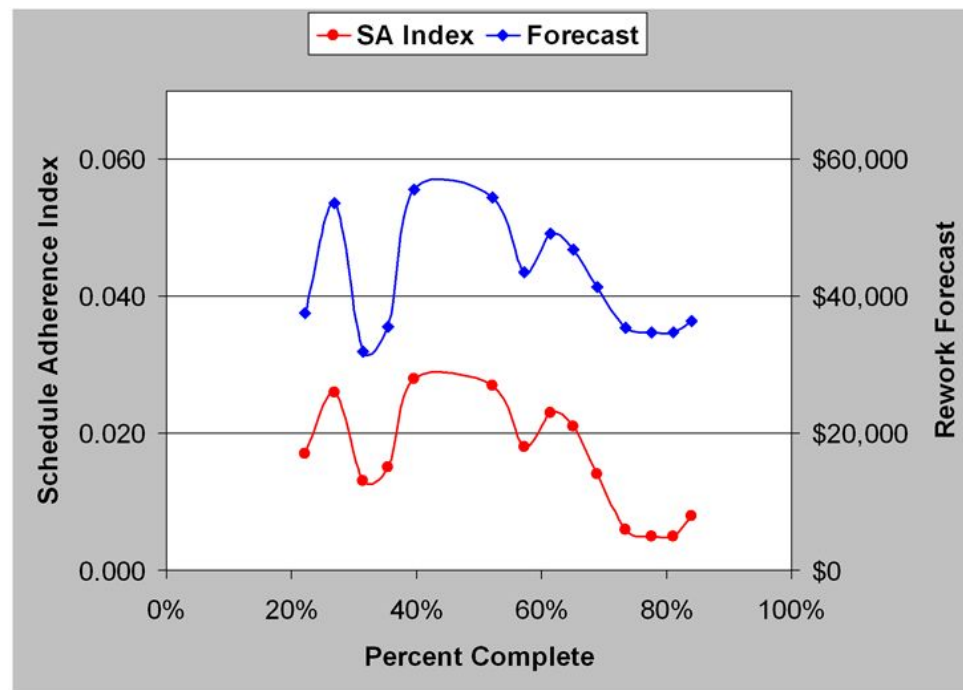
Capabilities

- Detail Analysis – Schedule Adherence
 - Identifies out of sequence performance
 - Isolates tasks - constraints/impediments & rework
 - Facilitates calculations - EV_R & rework forecast, EV_{eff}



Capabilities

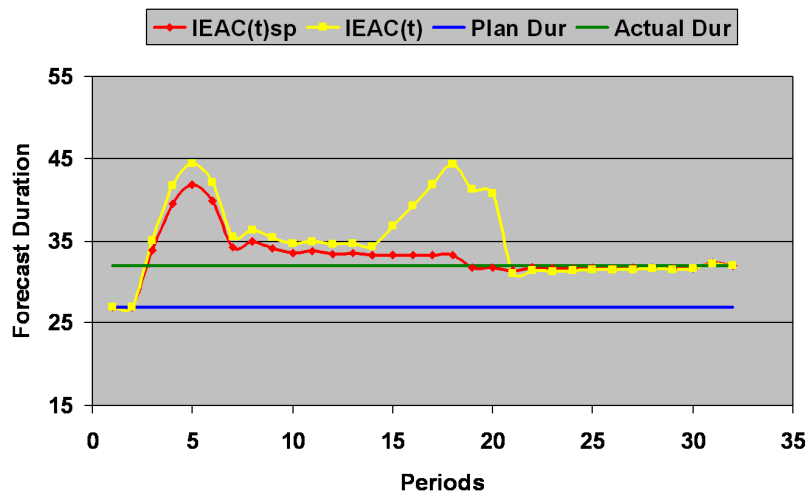
- Detail Analysis – Schedule Adherence
 - Cost of poor adherence - Rework Forecast
 - Managing schedule execution - Schedule Adherence Index



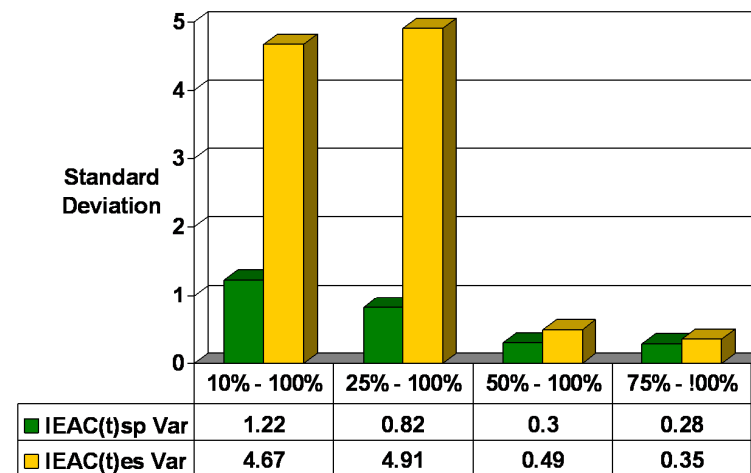
Capabilities

- Discontinuous performance – stop work & downtime
 - Accommodates and improves forecasting

Special Case #2

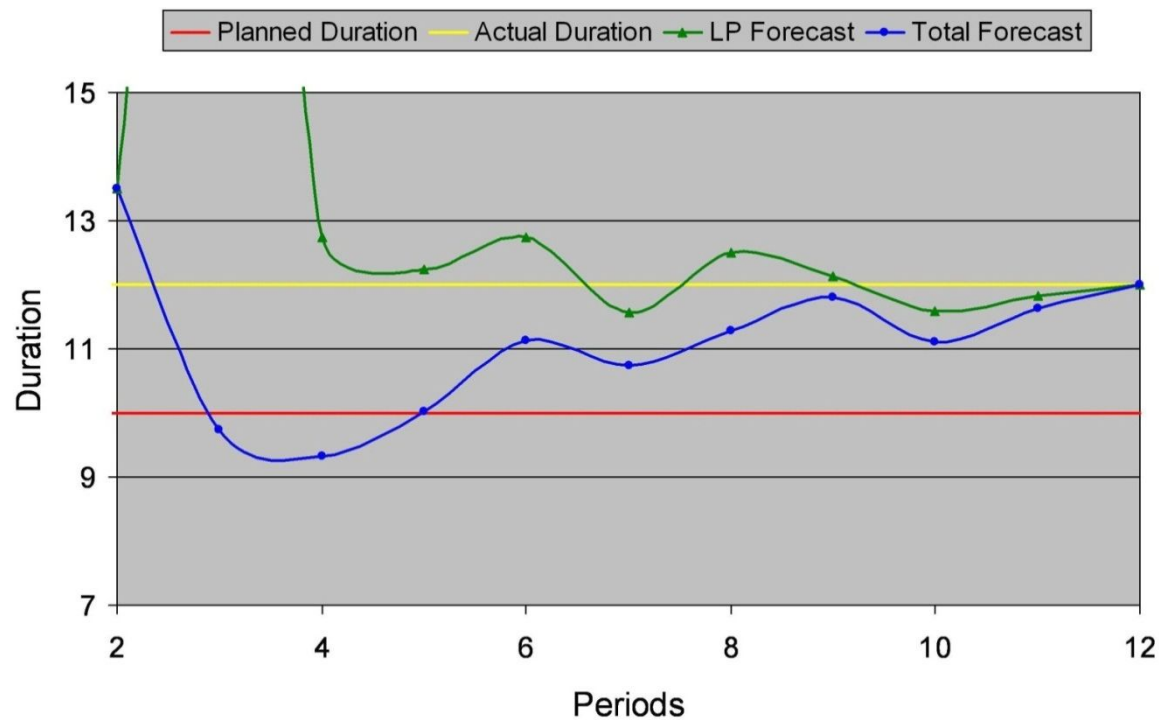


Forecast Comparison - Case #2



Capabilities

- Schedule Topology
 - Longest path concept improves forecasts for parallel networks



Challenges

- Too much, too soon
 - Discard EVM schedule indicators
 - Emerging practice
- Ridicule
 - Who are these neophytes?
- Mathematics
 - Misunderstanding of calculation
- Skepticism & Rigidity
 - Resistance to change
- Acceptance from EVM community

Challenges

- Acceptance from EVM community

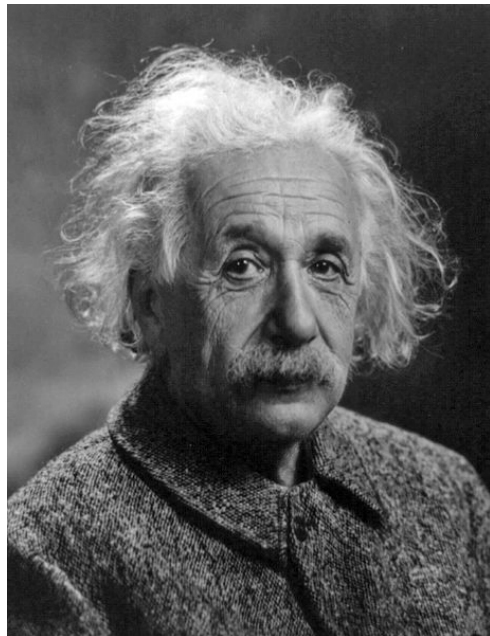
“A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.”

- Max Planck

There is no coordinated effort by ES advocates to speed up this process

Challenges

- Acceptance from EVM community



“Great spirits have always encountered violent opposition from mediocre minds.”

- Albert Einstein

Affirmation

- Simple theory
- Initial prototype
- Independent confirmation
 - Trials
 - Testing
 - Usage
- EVM Tools
- Educators/Researchers

Affirmation

- Simple theory
- Initial prototype
- Independent confirmation
 - Trials

“The retrospective analysis of ES using my own EVM projects’ data, ... has confirmed with remarkable precision the accuracy of the ES concept and ES metrics ...when compared to their historic EVM counterparts.”

- Henderson (2003)



Affirmation

- Simple theory

- Initial prototype

“The results reveal that the earned schedule method outperforms, on the average, all other forecasting methods.”

- Vanhoucke & Vandevoorde (2007)

- Testing

“This research finds Earned Schedule to be a more timely and accurate predictor than Earned Value Management.”

- Capt. Kevin Crumrine (2013)

• Educators/Researchers



Affirmation



Evidence of Earned Schedule Usage		
Application	USA	Lockheed-Martin Boeing Booze-Allen-Hamilton Government & Defense
	Australia UK Belgium Kazakhstan India	Private & Defense Network Rail & Defense Fabricom (GDF-SUEZ) Petroleum Development Building Construction
University Coursework	USA	George Washington University, Drexel, University of Houston, University of Nevada (Reno), West Virginia University, Pennsylvania State University
	non-USA	University of Ghent (Belgium), Australian National University
Books	USA	<i>Earned Schedule</i> by Walter H. Lipke <i>Project Management Theory and Practice</i> by Dr. Gary L. Richardson <i>The Earned Value Maturity Model</i> by Ray W. Stratton <i>A Practical Guide to Earned Value Management, 2nd Edition</i> by Charles & Charlene Budd <i>Project Management Achieving Competitive Advantage</i> by Jeffrey K. Pinto <i>Practice Standard for Earned Value Management</i> by Project Management Institute
	non-USA	<i>Measuring Time: Improving Project Performance Using Earned Value Management</i> by Dr. Mario Vanhoucke <i>Earned Schedule - an emerging Earned Value technique</i> issued by UK APM EVM SIG

Projects are generally extremely large, running for a decade or more and costing in excess of \$1 Billion.

Resources

- Earned Schedule Website
<http://www.earnedschedule.com/>
 - Papers, Presentations, Calculators, Terminology
- PMI® *Practice Standard for Earned Value Management*, 2nd Edition
- *Earned Schedule* book (English, Japanese, Portuguese)
 - Print
 - ePub (Nook & iPad)
 - Kindle
 - PDF



Resources

- Read two articles ...to begin
 - "Schedule is Different"
 - "Further Developments in Earned Schedule"
- Scan the Calculators ...experiment with them
 - ES Calculator (v1b & vs1b)
 - P-Factor Calculator
 - Statistical Forecasting Calculator
 - SA Index & Rework Calculator
 - Prediction Analysis Calculator

Resources



Name	Country	Email
Walt Lipke	USA	waltlipke@cox.net
Kym Henderson	Australia	kym.henderson@gmail.com
Mario Vanhoucke	Belgium	mario.vanhoucke@ugent.be
Stephen Vandevoorde	Belgium	stephen.vandevoorde@ fabricom-gdfsuez.com
Alex Davis	UK	alex.davis@uwclub.net
Robert Van De Velde	Canada	vandev@primus.ca

Wrap-Up

- ES facilitates considerable capability
 - Analysis from EVM measures not believed possible
- Acceptance – should help popularize EVM
 - Integrated analysis ...finally
- ES has had impact on EVM
 - And my life as well as others

If you haven't done so already – Give ES a try!

Acknowledgement

- Kym Henderson
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- Major John Garrett
- Norm Brown
- *The Measurable News*
- *CrossTalk*
- *PM World Today /
PM World Journal*
- *IJPM*
- CPM/EVM Europe
- PMI (Greg Smith)



Lastly



Iconic rock song, *Stairway to Heaven*, was initially not well received: "Many critics trashed this song - Lester Bangs described it as 'a thicket of misbegotten mush,' and the British music magazine *Sounds* said it induced 'first boredom and then catatonia.'" - www.songfacts.com

It is well known, *Stairway to Heaven*, is the most requested song on FM radio. ...Initial reaction, although important, oftentimes does not determine the lasting impression and value.





Thank You!!

TM