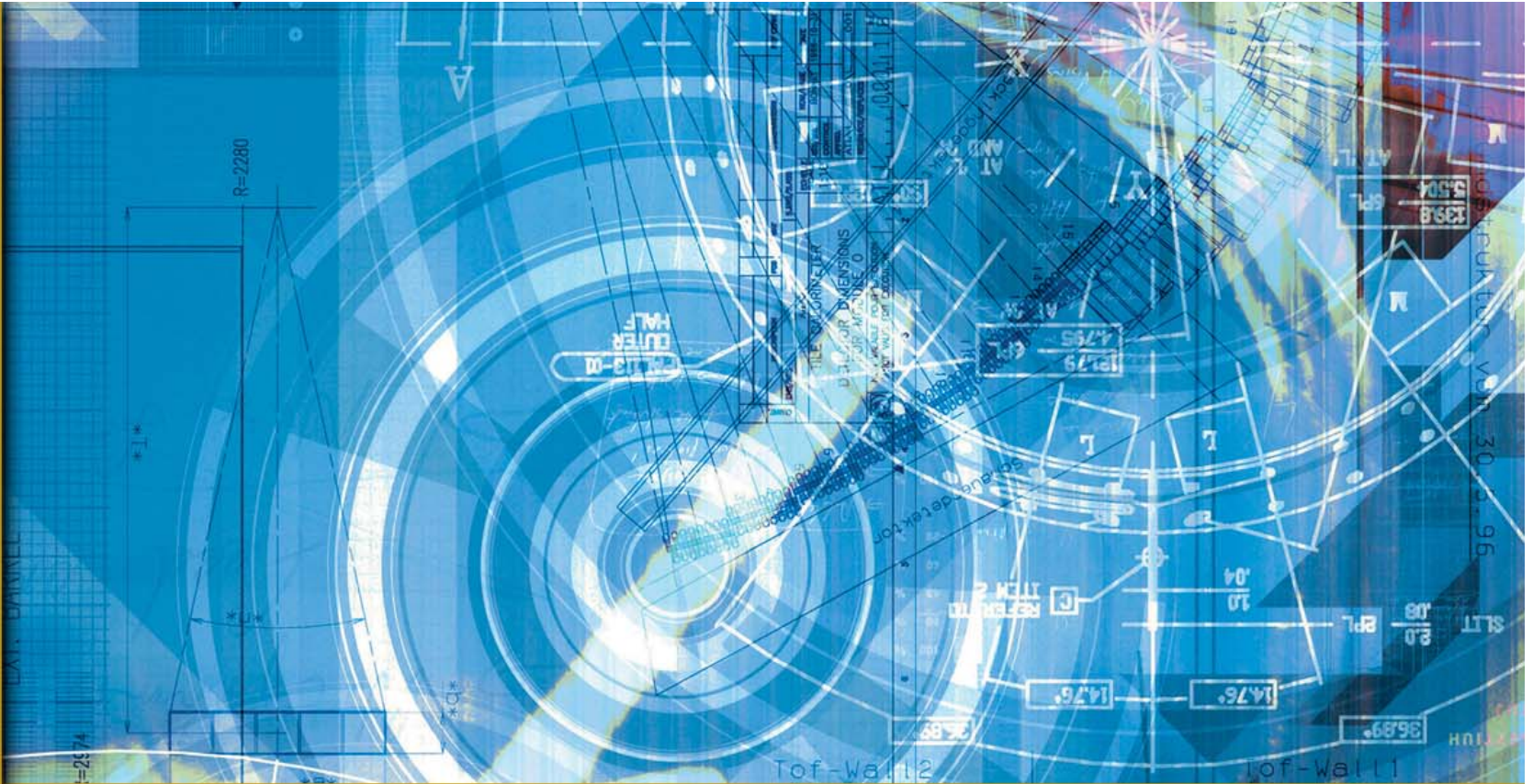




CRITICAL THINKING.
SOLUTIONS DELIVERED.



Anchoring EVM Analysis Approaches in the “GAO Guide”

presented by:

*Pat Barker
Mary Kate Lenz
Ammar Chaudry*

Presented at the 2009 ISPA/SCEA Joint Annual Conference and Training Workshop - www.iceaaonline.com

The Challenge

- Two trends are important to consider
 - A growing size and complexity of Government acquisition programs
 - A higher level of awareness of the role played by uncertainty in the acquisition community
- These trends place an ever-increasing emphasis on the linkage between risk, earned value, cost estimating, technical performance and schedule.
 - But these are historically separate disciplines
 - “Language” and “Cultural” barriers often challenge attempts to link them together in a useful way.

- **This presentation explores where MCR's Linked CREST Assessment & Analysis (LCAA) efforts, executed from an oversight capacity with respect to large Department of Defense (DoD) ACAT-1D programs, draws upon the GAO guide for Earned Value Management (EVM) analysis**
 - **Includes integration of cost, risk, EVM, technical performance, and schedule.**



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Definitions and Assumptions

presented by:

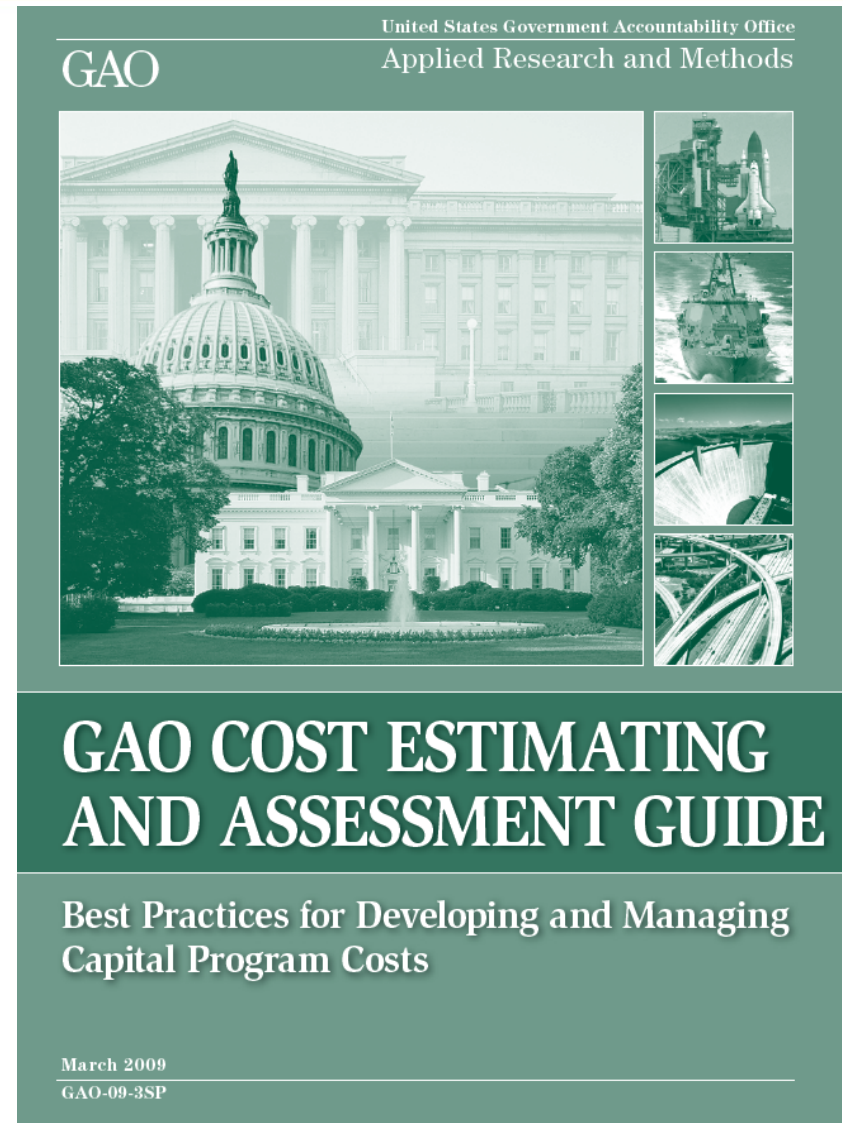


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SOLUTIONS DELIVERED.

The “GAO Guide”

- This guide was developed to establish a consistent methodology based on best practices to be used across federal government for the development and management of its program cost estimates
- Along the way in its growth to 438 pages it became an excellent reference for the EVM analyst
- Chapters 18-20 address managing program costs once a contract has been awarded and discuss: EVM, risk management and other program management best practices
- Our primary focus within this guide is Chapter 19 (Managing Program Costs: Execution)

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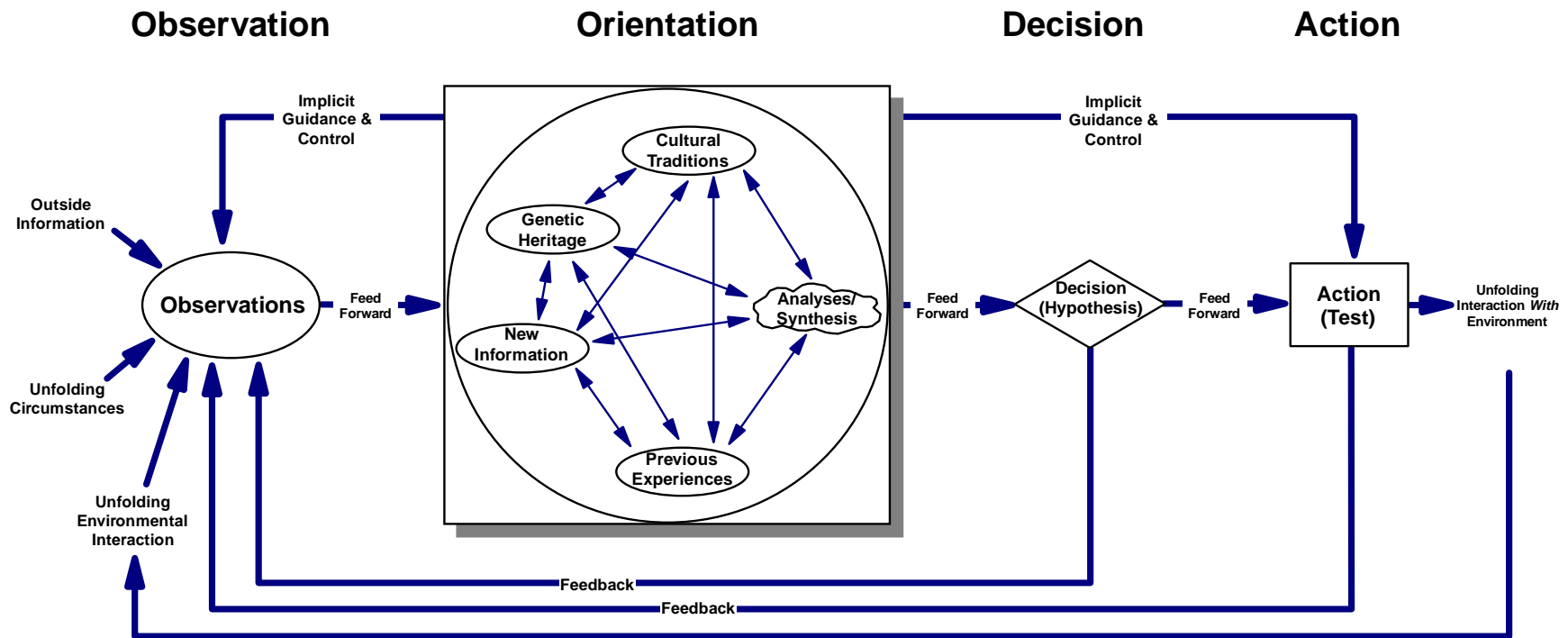
CRITICAL THINKING.
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Earned Value Management

- Consider the OMB Definition of EVM:
 - “... a project management tool that effectively integrates the project scope of work with schedule and cost elements for optimum project planning and control.” (OMB Circular A-11, 2002)
- Consider the GAO’s View:
 - “For EVM to be effective, strong leadership from the top is necessary to create a shared vision of success that brings together areas often stove-piped by organizational boundaries ... Leadership must require information sharing in an open, honest, and timely fashion ... To ingrain this expectation, agencies should set forth policies that clearly define and require disciplined program management practices ... the focus should be on integrating cost, schedule, and technical performance data so that objective program progress can be measured and deviations from the baseline acted upon quickly.” (GAO Cost Estimating and Assessment Guide, 2009)

Note emphasis on Integration

EVM Analysis and The Decision Loop



The OODA loop is continually iterated. In a competitive environment, faster decision loops on your part tend to confuse your opponent and delay his responses. In a program oversight environment, fast OODA loop iterations by the program office tend to (1) keep prime contractors out of their “comfort zone” and thus to induce management improvements in response and (2) enable the program office to generate more robust oversight.

The Multi-disciplinary “OODA” Loop
-- Col John Boyd USAF(Ret)



Primary Object of EVM Analysis

- We shall confine our discussion primarily (but not exclusively) to the CPR as defined in DI-MGMT-81466A
- The Contract Performance Report consists of five formats:
 - Format 1 – **WBS** provides data to measure cost and schedule performance by product-oriented Work Breakdown Structure (WBS) elements, the hardware, software, and services the Government is buying.
 - Format 2 – **Organizational Breakdown Structure** (OBS) provides the same data by the contractor's organization (functional or Integrated Product Team (IPT) structure).
 - Format 3 – **Baseline** provides the budget baseline plan against which performance is measured.
 - Format 4 – **Staffing** (BAC) and (EAC) provides staffing forecasts for correlation with the budget plan (BAC) and cost estimates (EAC).
 - Format 5 – **Problem Analysis** is a narrative report used to explain significant cost and schedule variances and other identified contract problems and topics.



Linked CREST Assessment and Analysis (LCAA™)

- **Linked CREST Assessment and Analysis**
 - **C**ost Estimate
 - **R**isk Management
 - **E**arned Value
 - **S**chedule
 - **T**echnical Performance
- **A disciplined, linked analysis process**
 - It is characterized by four distinct “Gates,” followed in sequence
 - Tenants of “linking” concept captured in GAO Cost Estimating and Assessment Guide, GAO 09-3SP as best practice
- **Features unique assessment and scoring methodologies**
 - Quantified integration of cost, schedule, engineering, risk and EVM information
 - Derivation of program estimate to complete (ETC) cost ranges based on statistically summed and correlated control account level estimates.
- **Provides more than just probability distribution curves of cost**
 - Root cause analysis based on same information received by program management yields **ACTIONABLE INFORMATION** for decision-makers

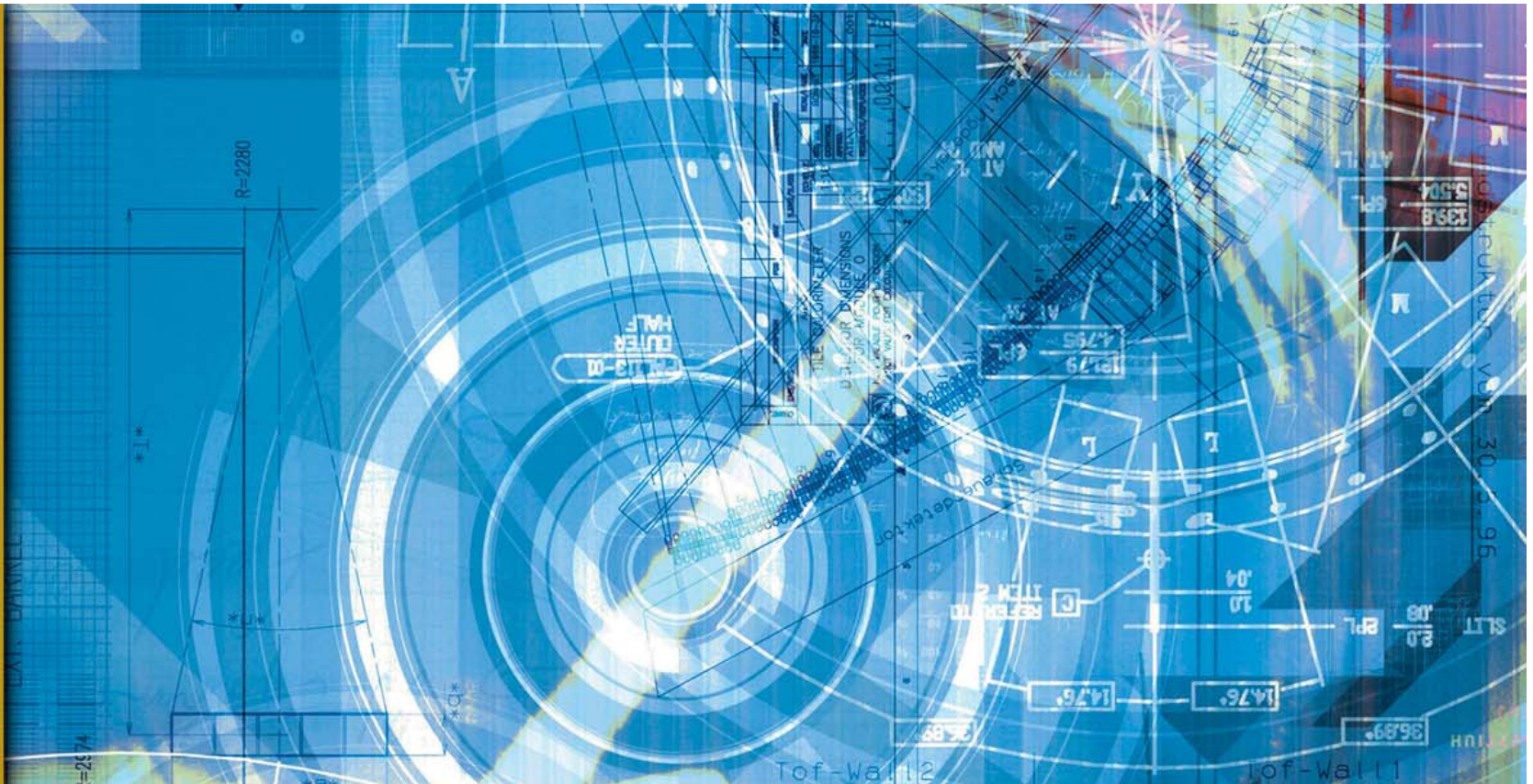


9 Critical Questions for The EVM Analyst

1. Is the management system producing reliable information to support decision-making?
2. How much progress has been made?
3. Will performance expectations be met?
4. Can the program effectively identify and handle risks?
5. How efficiently are cost and schedule objectives being met?
6. Are cost and schedule trends getting better or worse?
7. Is the estimate at complete (EAC) and reasonable and can I meet my budget?
8. Is the schedule reasonable and can I meet my required end date?
9. When things go wrong do we have confidence in management to do their part to bring the program back on track?



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Approach

presented by:

Presented at the 2009 ISPA/SCEA Joint Annual Conference and Training Workshop - www.iceaaonline.com

Approach (1 of 2)

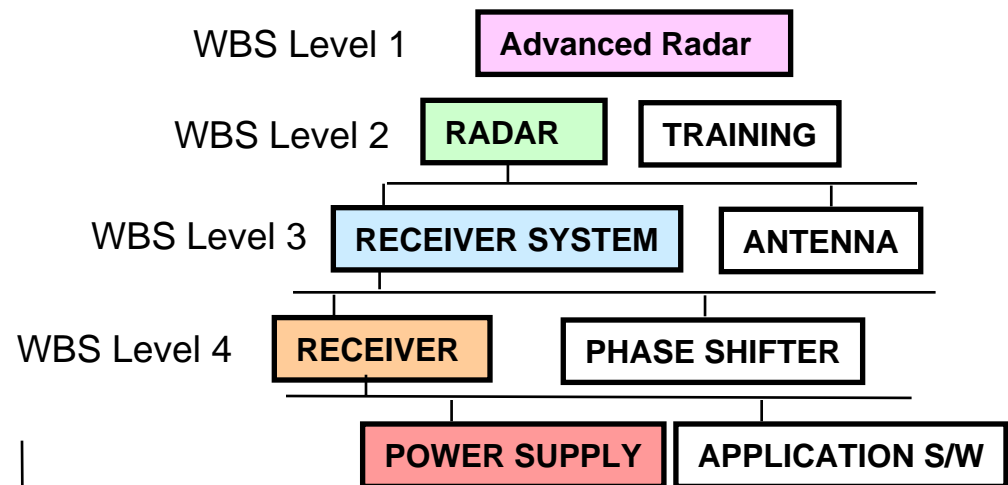
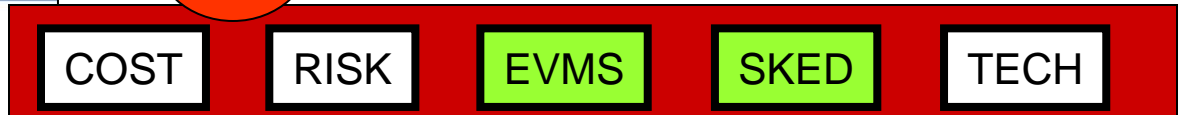
1. Choose a Critical Question from the list
2. Determine Primary CREST elements to use for analysis
3. Determine Primary Indicators to help answer question
4. Ensure attention to control account level performance data is not lost

Approach (2 of 2)

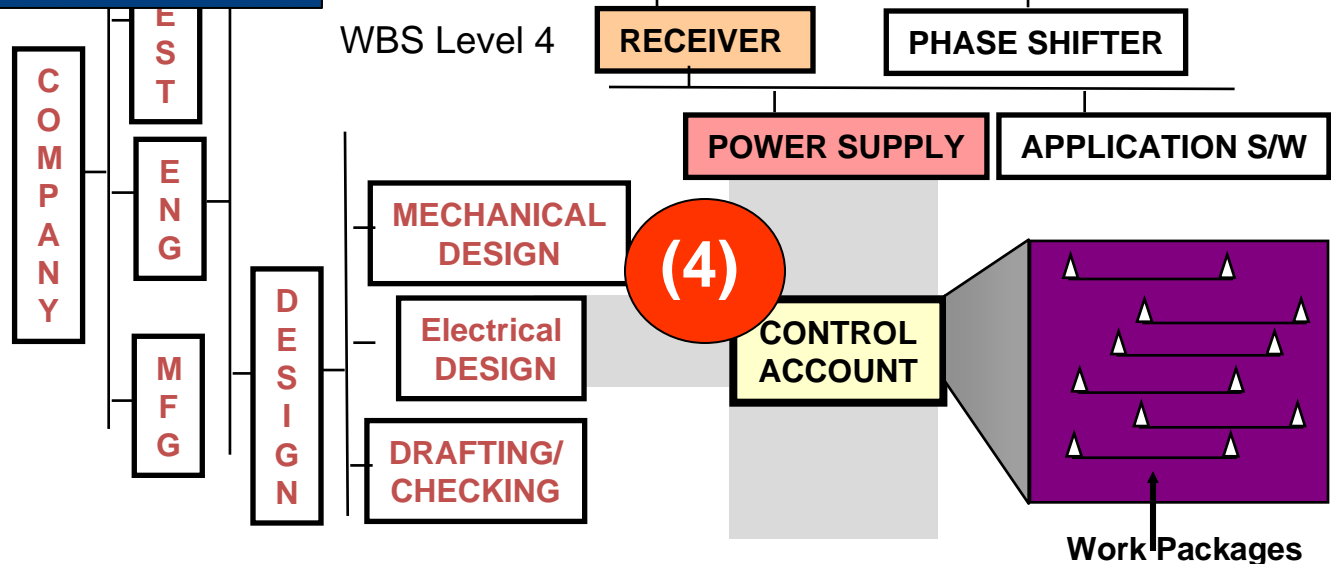
(1) 10 Critical Questions in PM's Mind

1. What progress has been made?
2. Will performance expectations be met?
3. Can the program effectively identify and handle risks?
4. How efficiently are cost and schedule objectives being met?
5. Are cost and schedule trends getting better or worse?
6. Will the program be completed within budget and on time?
7. Are the estimate at complete (EAC) and projected end date both reasonable?
8. Will the program need to trade scope to stay within time and cost objectives?
9. What deviations from plan have occurred and corresponding actions are required to bring the program back on track?
10. Is the management system producing reliable information to support decision-making?

(2)



(4)



(3) Indicators

CPI	TPM
SPI	Risk
BEI	Float
CV	VAR
SV	SRA
VAC	BAC
TCPI	IEAC
EAC	PV
LRE	EV
Etc.	Etc.

#1: Is the management system producing reliable information to support decision-making?

COST

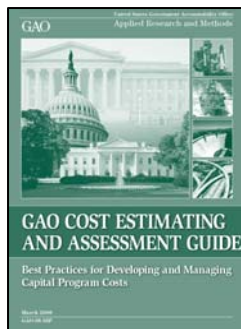
RISK

EVMS

SKED

TECH

- Primary CREST Elements
 - EVMS
- Primary Indicators (all in CPR Format 1 & 2)
 - Negative values for ACWP, BAC, BCWP, BCWS, or EAC;
 - Unusually large performance swings (BCWP) from month to month
 - BCWP and/or BCWS with no corresponding ACWP (or vice-versa)
 - BCWP with no BCWS
 - ACWP that is way above or below the planned value
 - No BAC but an EAC or a BAC with no EAC
 - ACWP, BCWP or BCWS exceeds EAC
 - Rubber Baseline (Format 3)



Chapter 19 Page 257 *"It is important to make sure that the CPR data make sense and do not contain anomalies that would make them invalid. If errors are not detected, then the data will be skewed, resulting in bad decision making."*

#2 : How Much Progress Has Been Made?

COST

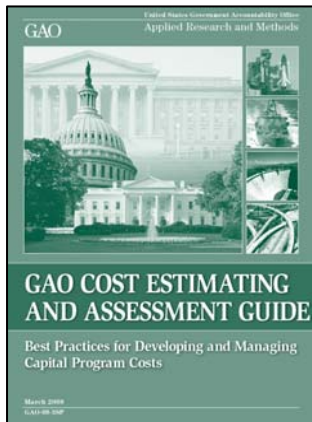
RISK

EVMS

SKED

TECH

- Primary CREST Element
 - EVMS
- Primary Indicators
 - Earned Value (EV a.k.a. BCWP) vs. Planned Value (PV a.k.a BCWS)
 - CPR Format 1 (WBS) and Format 2 (OBS)
 - Earned Value (EV) vs. Budget At Completion (BAC)
 - CPR Format 1 (WBS) and Format 2 (OBS)



Ch.19 Page 260: *“Performance reported early in a program tends to be a good predictor of how the program will perform later, because early control account budgets tend to have a greater probability of being achieved than those scheduled to be executed later. DOD’s contract analysis experience suggests that all contracts are frontloaded to some degree, simply because more is known about near-term work than far-term. To the extent possible, the IBR should check for this condition.”*

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#3: Will Performance Expectations Be Met?

COST

RISK

EVMS

SKED

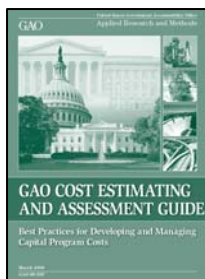
TECH

- Primary CREST Elements

- Risk
- EVMS
- Technical

- Primary Indicators

- Evidence of periodic (monthly) risk analysis down to the control account level
- Evidence of linkage between Measures of Effectiveness/Measures of Performance (operational metrics) and Technical Performance Measures (design metrics)
- Evidence of linkage of TPM's to EV Performance Claimed
 - Requires contextual information beyond CPR. However it is a perfectly legitimate question to probe with the contractor in key Control Accounts



Ch. 19 Page 251: *“Management should use the EVM data captured by the CPR data to ... integrate cost and schedule performance data with technical performance measures ...”*

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#4: Can the Program Effectively Identify and Handle Risks?

COST

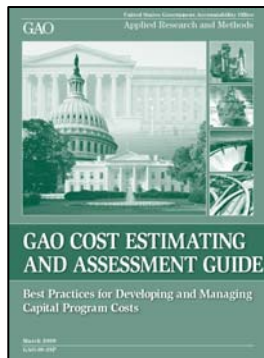
RISK

EVMS

SKED

TECH

- Primary CREST Elements
 - All
- Primary Indicators
 - LCAA-based data transparency score (called a T-Score) assesses degree of discipline, level of detail and intensity of linkages in program management system
 - Uses all 5 Formats of the CPR plus additional information from all disciplines. The T-Score should be “baselined” at the IBR and
 - progress monitored via CPR.



Ch19 page 250: “When the IBR is complete, the focus should be on the ongoing ability of management processes to reveal actual program performance and detect program risks.... Other typical business processes that should continue to support the management of the program involve activities like scheduling, developing estimates to complete, and EVM analysis so that risks may be monitored and detected throughout the life of the program.”

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#5: How efficiently are cost and schedule objectives being met?

COST

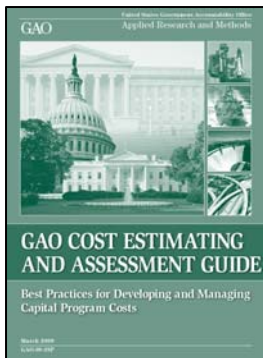
RISK

EVMS

SKED

TECH

- Primary CREST Elements
 - EVMS
 - Schedule
- Primary Indicators
 - Cost Performance Index (CPI):
 - Schedule Performance Index (SPI):
 - Critical Path Proximity



Ch.19 page 259: *“Performance indexes are necessary for understanding the effect a cost or schedule variance has on a program....The cost performance index (CPI) and schedule performance index (SPI) in particular ... give managers early warning of potential problems that need correcting to avoid adverse results. ... In addition to monitoring tasks on the critical path, close attention should be paid to near-critical tasks and near-term critical path effort, as these may alert management to potential schedule problems. If a task is not on the critical path but is experiencing a large schedule variance, the task may be turning critical.”*

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#6: Are cost and schedule trends getting better or worse?

COST

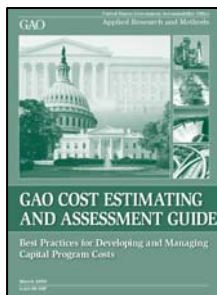
RISK

EVMS

SKED

TECH

- Primary CREST Element
 - EVMS
- Primary Indicators
 - Format 1 & 2: BAC and contractor EAC over the life of the contract;
 - Format 1 & 2: Historical, cumulative and current, cost, and schedule variance trends;
 - Format 1,2 & 5: CPI and SPI (cumulative and current)
 - Format 1,2 & 4: Monthly burn rate (ACWP, Staff)
 - Format 1,2 & 5: TCPI versus CPI (cumulative and current)
 - Format 3: Baseline data comparisons
 - Format 4: Projected versus actual staffing levels from format 4
 - Format 1,2 & 5: Management reserve allocations and burn rate.



Ch19, Page 261: *“EVM data should be analyzed graphically to see what trends are apparent. Performance trends provide valuable information about how a program has been doing in terms of cost and schedule. They also help in understanding performance, important for accurately predicting costs at completion. Knowing what has caused problems in the past can help determine whether they will continue in the future.”*

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#7: Is the estimate at complete (EAC) and reasonable and can I meet my budget?

COST

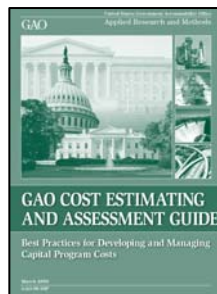
RISK

EVMS

SKED

TECH

- Primary CREST Elements
 - Cost
 - Risk
 - EVMS
 - Schedule
- Primary Indicators
 - Initial program cost estimate and any recent cost estimates
 - Correlations between risks incorporated into the cost estimate and risks documented in the risk register
 - Quantified risk impacts (in risk register) in terms of dollars and time
 - A comparison of the $TCPI_{EAC}$ to the CPI_{CUM}
 - An independent calculation of the EAC via multiple “standard” formulas
 - A schedule risk assessment to gauge “marching army costs” issue



Ch 19. Page 267: *“EACs should be created not only at the program level but also at lower levels of the WBS. By doing this, areas that are performing poorly will not be masked by other areas doing well. If the areas performing worse represent a large part of the BAC, then this method will generate a higher and more realistic EAC.”*

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#8: Is the schedule reasonable and can I meet my required end date?

COST

RISK

EVMS

SKED

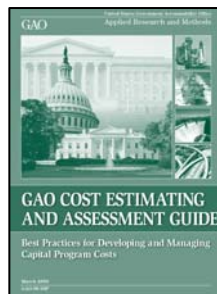
TECH

- Primary CREST Elements

- Cost
- Risk
- EVMS
- Schedule

- Primary Indicators

- Combined probabilistic cost and schedule estimate
- Quantified risk impacts (in risk register) in terms of time
- Inclusion of schedule analysis in CPR Format 5
- Independent analysis of schedule construction plus a schedule risk assessment
- Trends in consumption of float, schedule reserve
- Adding more people, working overtime to “speed up” the effort



Ch 19. Page 258: *“A good network schedule that is kept current is a critical tool for monitoring program performance. ..(and) quickly determining when forecasted completion dates differ from the planned dates...It is also important to determine whether schedule variances are affecting downstream work.”*

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#9: When things go wrong do we have confidence in management to do their part to bring the program back on track?

COST

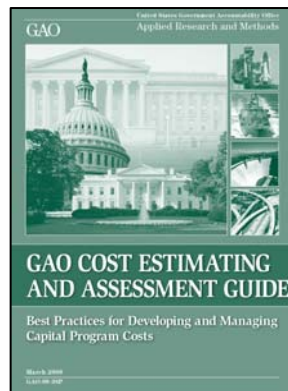
RISK

EVMS

SKED

TECH

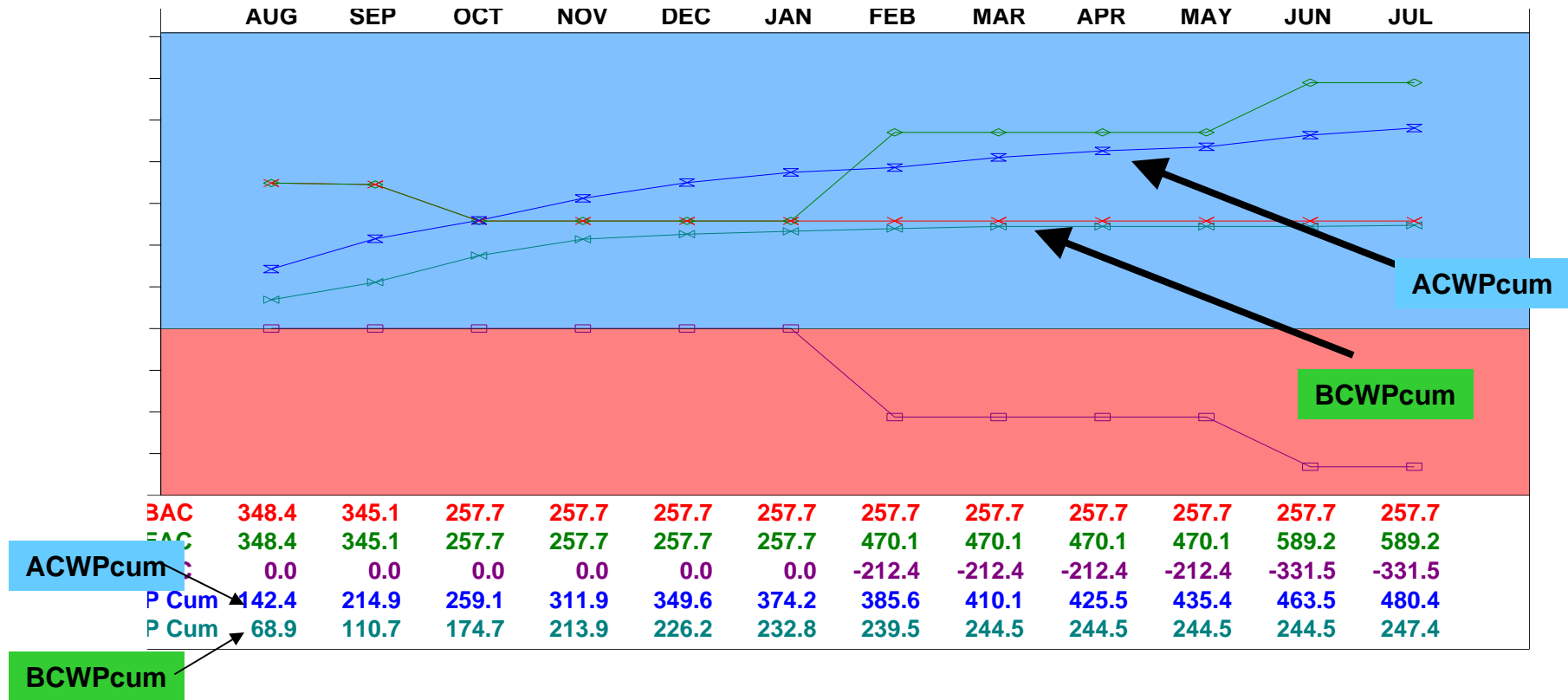
- Primary CREST Elements
 - EVMS
 - Schedule
- Primary Indicators (all in CPR Format 5)
 - Root Cause Identification
 - Variance Impact Analysis
 - Corrective action planning and monitoring
 - Inclusion of schedule analysis with analysis of schedule variance
 - Inclusion of variance analysis reporting for reasons other than threshold breach



Ch. 19, Page 264: *“After determining which WBS elements are causing cost or schedule variances, examining the format 5 variance analysis can help determine the technical reasons for variances, what corrective action plans are in place, and whether or not the variances are recoverable. Corrective action plans for cost and schedule variances should be tracked through the risk mitigation process.”*

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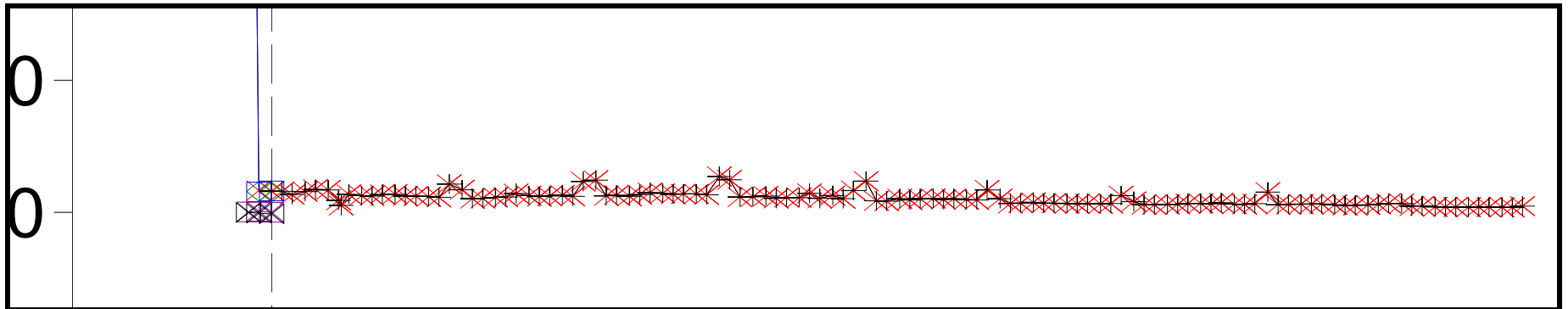
Is the management system producing reliable information to support decision-making?



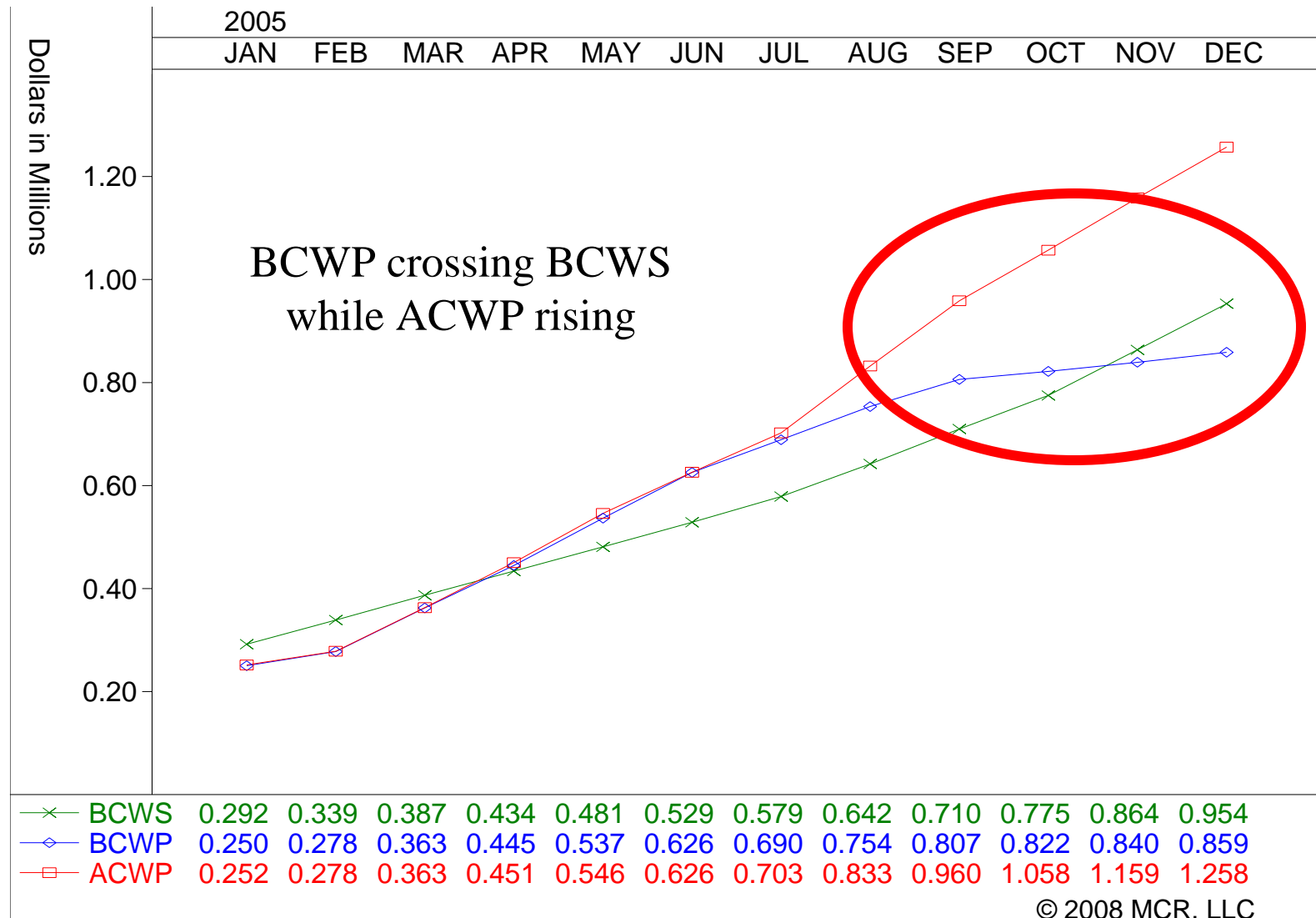
Sometimes called “Aggressive EV” Actual costs increasing but no value taken for a long time because none left to earn (yet work continues)

Is the management system producing reliable information to support decision-making?

In this space satellite development program, each year is relatively “flat” with the most significant variations, or “bumps” occurring precisely at fiscal year boundaries. No relation to program milestones



How Much Progress Has Been Made?



Will performance expectations be met?

February TPM Report

Updates							
15-Jan	SS Latency	15-Feb	SS Latency	15-Mar	SS Latency	15-Apr	SS Latency
38		38		-		-	
1	49	1	49	-	0	-	0
10		10		-		-	
8.895		8.895		-		-	
50	65.084	50	65.084	-	0	-	0
6.189		6.189		-		-	
	100		100	-	0	-	0
6.189		6.189		-		-	
50	64.777	50	64.777	-	0	-	0
8.588		8.588		-		-	
15	15	15	15	-	0	-	0
	294		294		0		0
	406		406				

April TPM Report

Updates											
15-Jan	SS Latency	15-Feb	SS Latency	15-Mar	SS Latency	15-Apr	SS Latency	15-May	SS Latency	15-Jun	SS Latency
38		38		38		38		-		-	
1	49	1	49	1	49	1	49	-	0	-	0
10		10		10		10		-		-	
8.895		8.895		8.895		8.895		-		-	
50	65.084	50	65.084	50	65.084	50	65.084	-	0	-	0
6.189		6.189		6.189		6.189		-		-	
	100		100		100		100	-	0	-	0
6.189		6.189		6.189		6.189		-		-	
50	64.777	50	64.777	50	64.777	50	64.777	-	0	-	0
8.588		8.588		8.588		8.588		-		-	
15	15	15	15	15	15	15	15	-	0	-	0
	294		294		294		294		0		0
	406		406		406		406				

Each report shows the latest in analysis as well as the actual & planned verification methods via a color coding.

Here, both monthly reports claim to exceed the requirement with margin to spare... and that is the message transmitted to the Government PM

BUT LOOK CLOSER

you don't need to be an engineer to see something might be amiss – just compare the colors for same months and see how it correlates with recent CPR trends

Indices-Dollars	SPI	CPI
Current	0.039	0.332
Cumulative	0.728	0.991

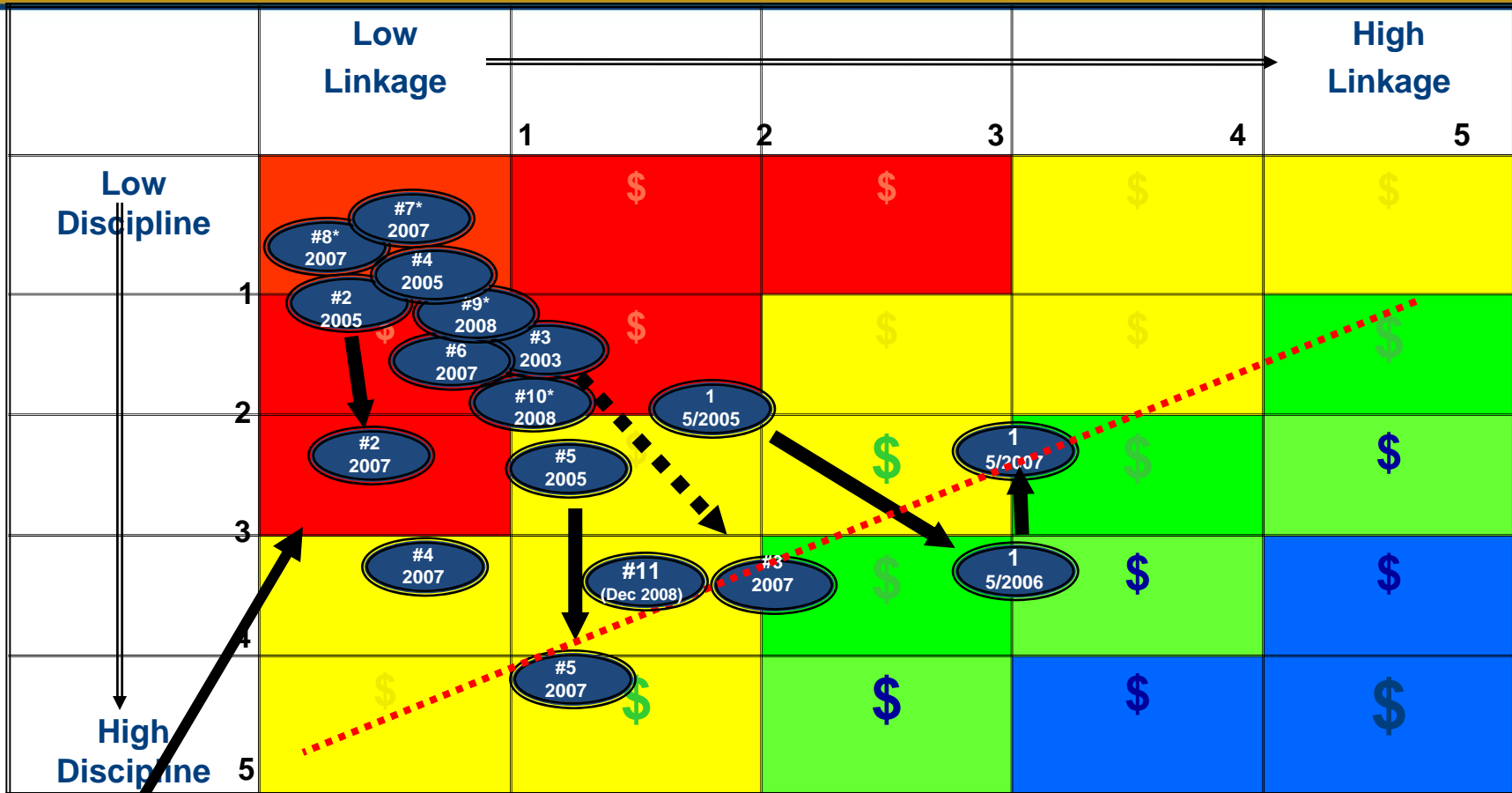
TPM Report Key: Each color corresponds to an increasingly reliable TPM verification method

ROM Estimate
Design Model
Measurement (no/low load FAT)
Measurement (high load FAT)
Service Performance Monitoring (SPM)



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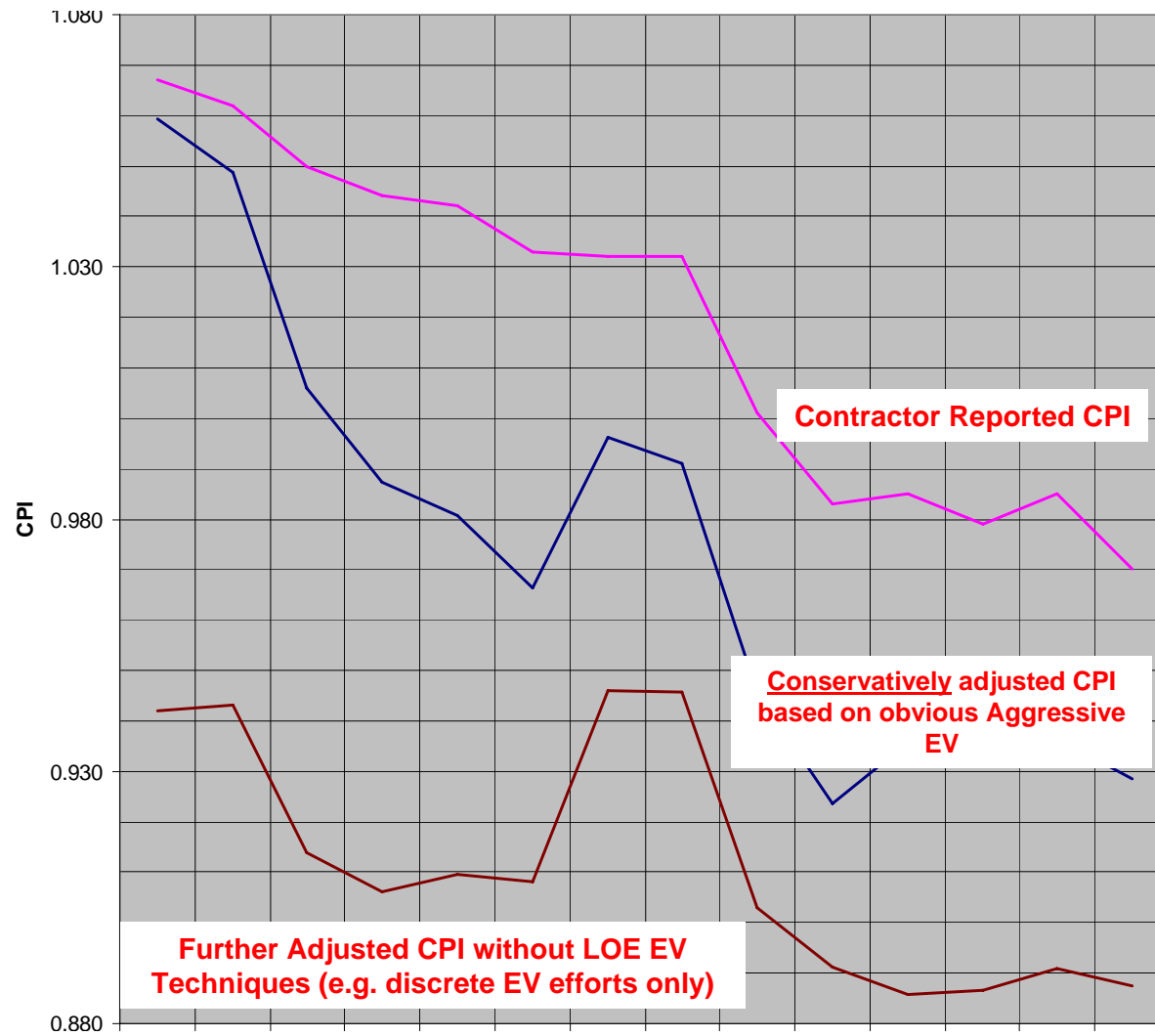
Can the program effectively identify and handle risks?



Nunn-McCurdy Breaches

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How efficiently are cost and schedule objectives being met?



Upwards of 30-50% LOE in several programs!

LOE --→ SPI = 1.0

- Understaffed LOE skews CPI much higher.
- Aggressive EV inflates CPI
- No insight provided into non-LOE performance

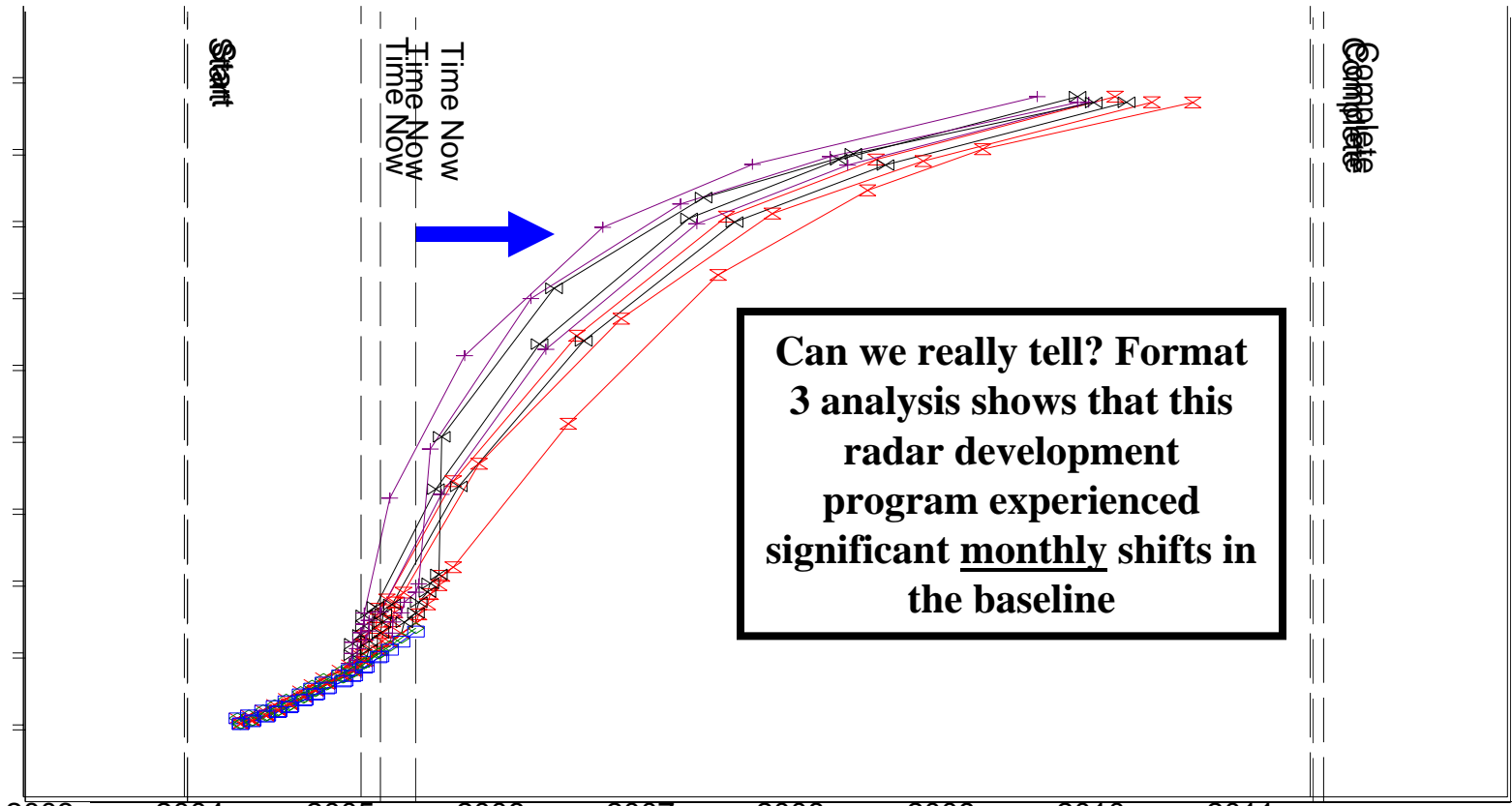
Bottom line: CPI inaccurate & not reflective of true performance

Warning is **Delayed!!**



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SOLUTIONS DELIVERED.

Are cost and schedule trends getting better or worse?

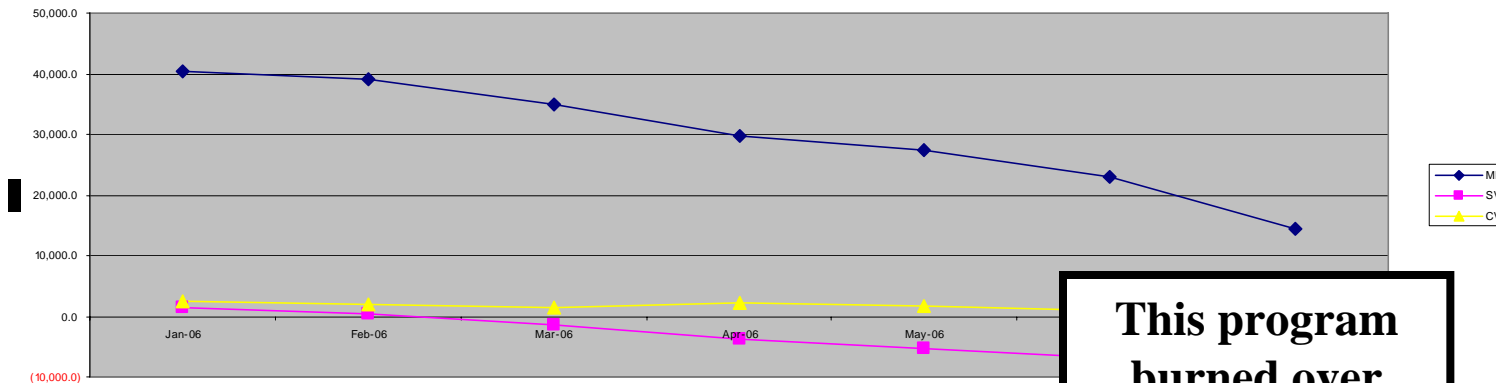


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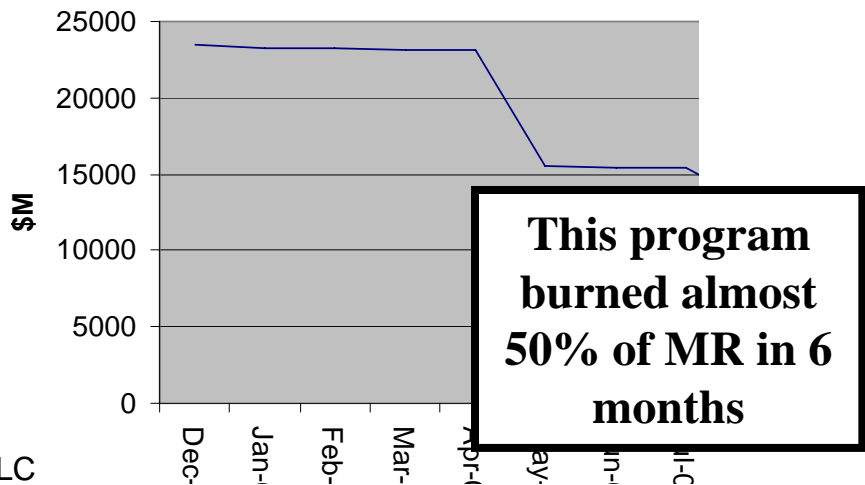
CRITICAL THINKING.
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Are cost and schedule trends getting better or worse?



MR Burn-down

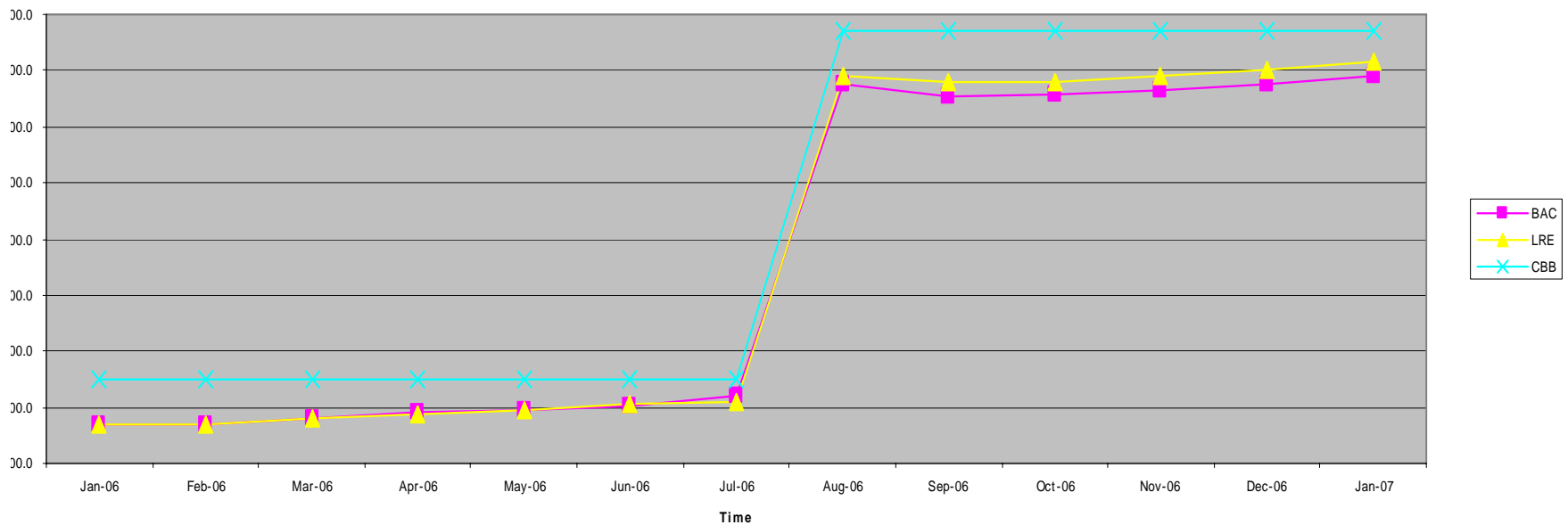
This program burned over 50% of MR in 6 months



This program burned almost 50% of MR in 6 months

Rapid MR burn-down tends to signal poor planning and potential masking of cost variances

Is the estimate at complete (EAC) and reasonable and can I meet my budget?

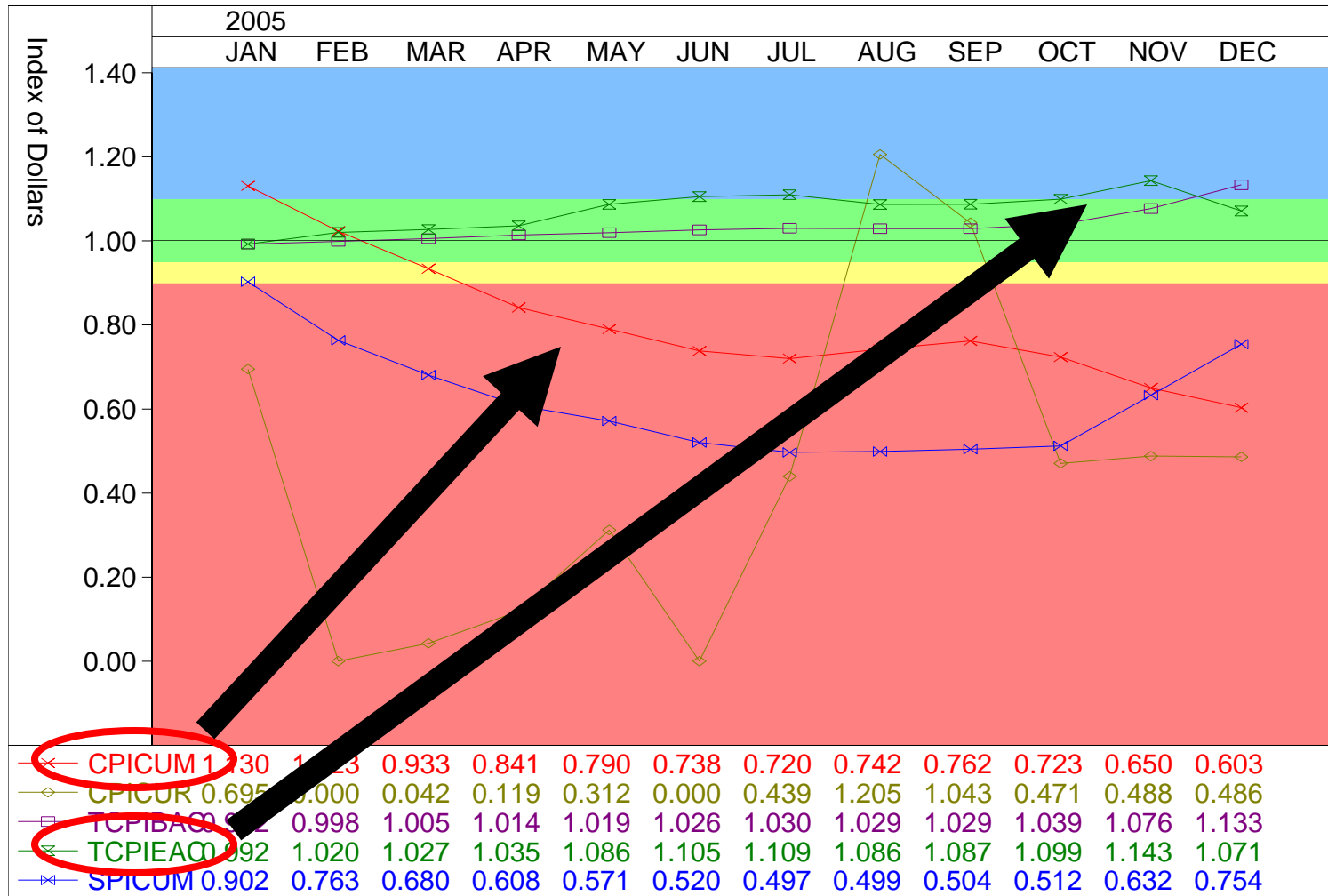


Reactionary, non-predictive EACs (LREs) BAC Slowly Climbs, then Jumps and Slowly Climbs Again LRE Follows it Closely



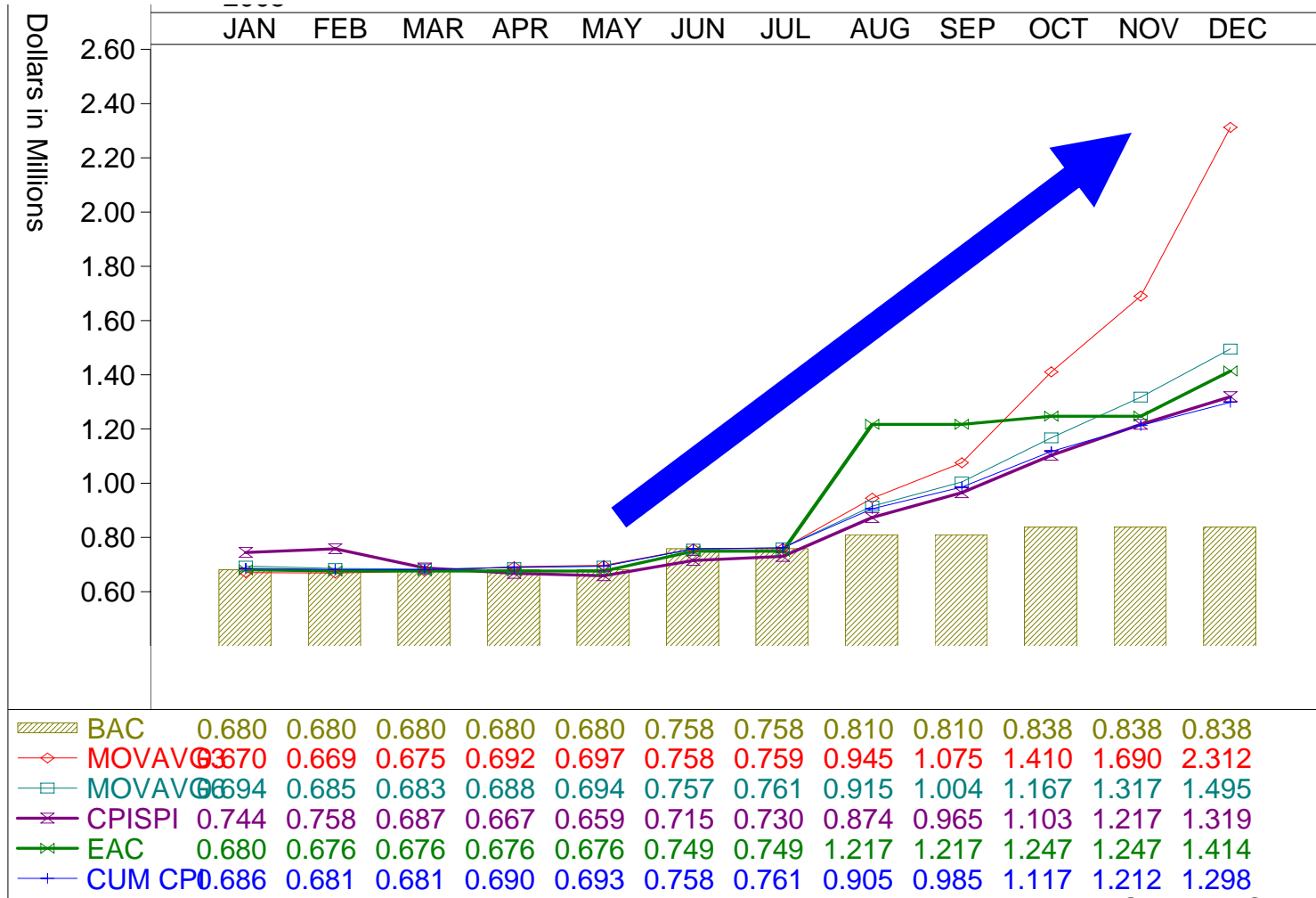
CRITICAL THINKING.
SOLUTIONS DELIVERED.

Is the estimate at complete (EAC) and reasonable and can I meet my budget?



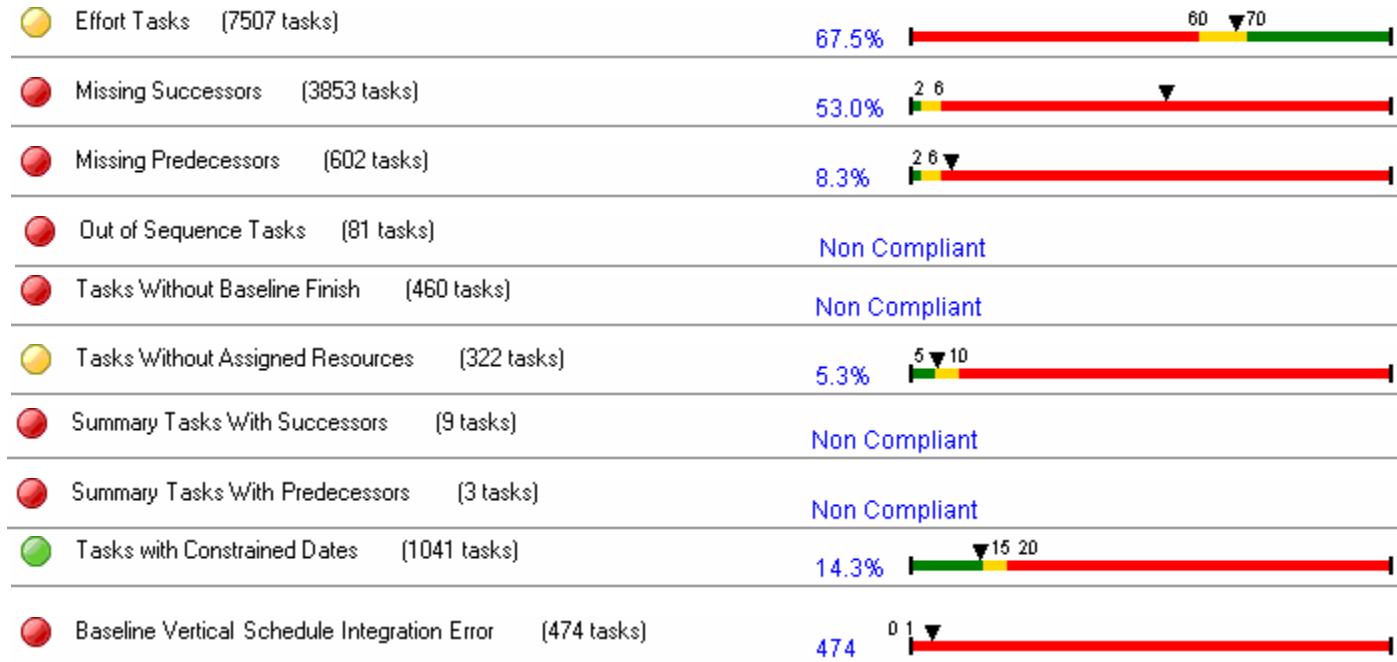
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Is the estimate at complete (EAC) and reasonable and can I meet my budget?



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Is the schedule reasonable and can I meet my required end date?



Here is a schedule construction analysis of a \$200M program 18 months after contract award. Can this IMS reflects integrated, networked program performance?

Is the schedule reasonable and can I meet my required end date?

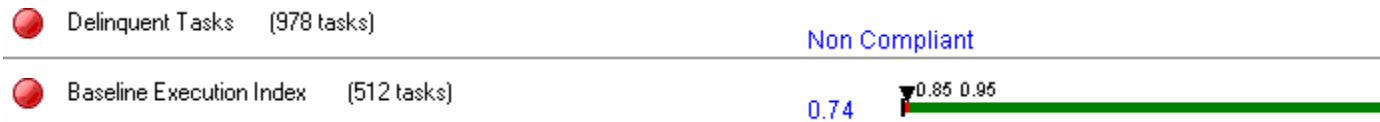
Item	BCWS	BCWP	ACWP	SV	SV %	CV	CV %
Cur Dollars	4,612.5	4,433.7	4,029.0	-178.9	-3.88	404.6	9.13
Cum Dollars	59,839.3	57,752.9	56,055.7	-2,086.4	-3.49	1,697.2	2.94

Unit	BAC	EAC	VAC	VAC %	VAR	CumCpi	CpiSpi
Dollars	193,921.5	193,254.5	677.1	0.35		188,232.4	193,007.5

Indices-Dollars	SPI	CPI	TCPI (EAC)	Delta CPI-TCPI	% Plan	% Comp	% Spent
Current	0.961	1.100					
Cumulative	0.965	1.030	0.993	0.038	30.86	29.78	28.90

Explanation of Variance/Description of Problem:

The program cost and schedule performance is tracking the baseline plan, with CPI = 1.03 and SPI = 0.97. This represents essentially no change in the schedule performance from last period.



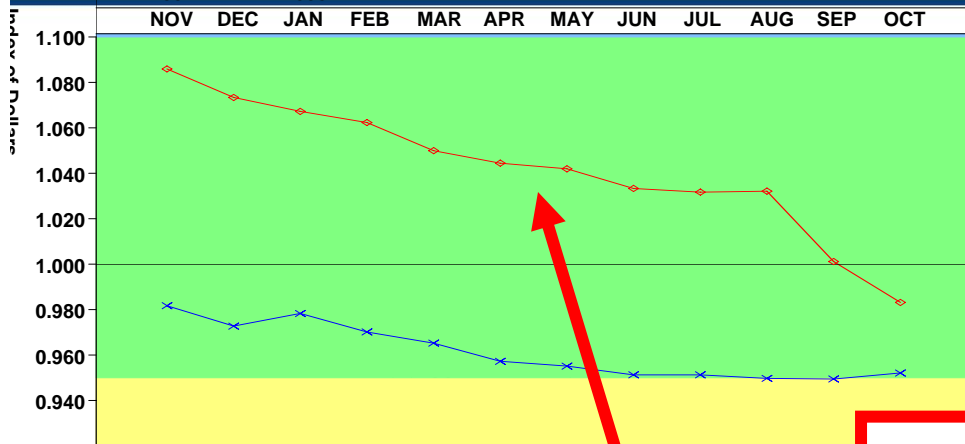
Same program as previous slide:

The CPR tells us the program is nearly on time, on schedule with an SPI near 1.0. A .74 BEI and 1000 delinquent tasks don't seem to correlate with the SPI. Moreover, the schedule has construction issues

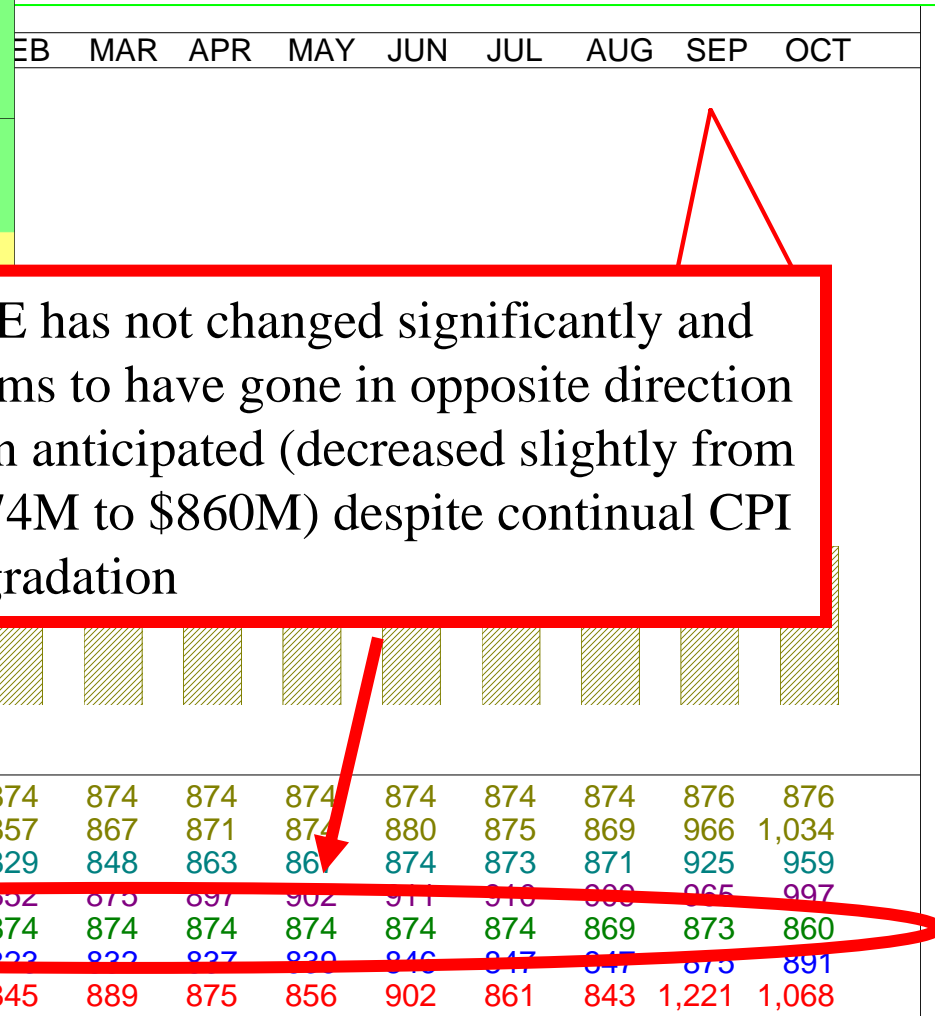


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When things go wrong do we have confidence in management to do their part to bring the program back on track?



	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
—x— CUM SPI	0.982	0.973	0.978	0.970	0.965	0.957	0.955	0.951	0.951	0.950	0.949	
—◇— CUM CPI	1.086	1.073	1.067	1.062	1.050	1.044	1.042	1.033	1.032	1.032	1.001	



LRE has not changed significantly and seems to have gone in opposite direction than anticipated (decreased slightly from \$874M to \$860M) despite continual CPI degradation

▨ BAC	874	874	874	874	874	874	874	874	874	874	874	876	876
—◇— MOVAVG3798	824	851	857	867	871	874	880	875	869	966	1,034		
—□— MOVAVG6788	805	818	829	848	863	867	874	873	871	925	959		
—x— CPI/CPI	0.802	0.826	0.833	0.832	0.873	0.897	0.902	0.911	0.910	0.800	0.665	0.997	
—x— LRE	874	874	874	874	874	874	874	874	874	869	873	860	
—+— CUM CPI	885	844	840	822	822	827	820	840	847	847	873	891	
—*— CUR CPI	822	870	860	845	889	875	856	902	861	843	1,221	1,068	

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When things go wrong do we have confidence in management to do their part to bring the program back on track?

SV is volume of work and thus only a portion of and schedule picture. The time element is missing. The network relationships are missing.

Top 10 Schedule Variance

Activity	SV	CV	SPI cum	CPI cum	TopBac	% Spent	% Comp
Installation, and Checkout	-425.68	-387.79	↑	↑	1.067	26.05	21.09
Execution	-370.89	-631.61	↓	↔	1.312	59.05	46.27
Implementation for ME	-208.49	6.82	↔	↑	1.000	0.34	0.38
Hardware Design and Development	-198.17	-204.55	↓	↔	1.933	70.29	42.57
Design & Development	-164.91	386.15	↑	↔	0.925	28.40	33.74
Positioning	-158.54	129.61	↑	↑	0.682	61.48	73.73
Design and Shipping	130.55	-329.44	↔	↔	1.491	45.76	19.10
Acceptance	-117.32	32.26	↓	↑	0.949	66.08	67.82
Final Implementation for S	-91.11	6.04	↔	↑	0.999	0.32	0.39
Final Design Development	-58.82	195.79	↔	↔	0.778	50.88	61.77

Top 10 Cost Variance

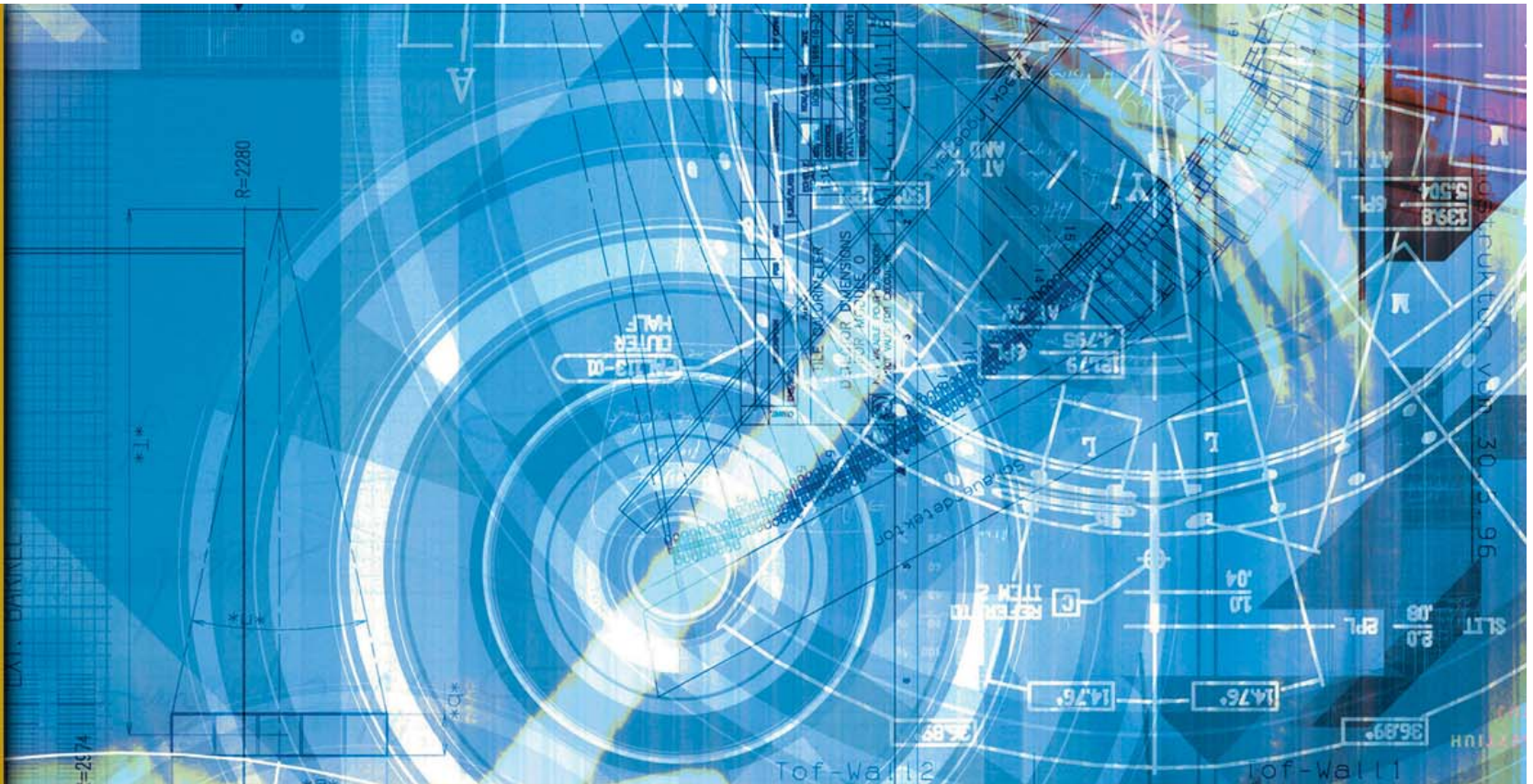
Activity	SV	CV	SPI cum	CPI cum	TopBac	% Spent	% Comp
Execution	-370.89	-631.61	↓	↔	1.312	59.05	46.27
Installation, and Checkout	-425.68	-387.79	↑	↑	1.067	26.05	21.09
Design and Shipping	-130.55	-329.44	↔	↔	1.491	45.76	19.10
Hardware Design and Development	-198.17	-204.55	↓	↔	1.933	70.29	42.57
Commissioning & Maintenance	-2.76	-185.97	↑	↔	11.513	98.25	79.82
Design and Development	0.00	-87.24	↔	↓	1.014	54.99	54.36
Procurement-Production	0.00	-44.97	↔	↔	1.064	18.22	12.99
Process Volume Engineering	-46.68	-44.28	↑	↑	1.017	7.69	6.11
Final Evaluation	0.00	-38.98	↔	↔	1.063	15.85	10.53
Final Design Development	3.51	-38.78	↔	↔	0.000	105.20	100.00

"0" SV is always worth a closer look

This is an auto sort by a commercial software tool. A great aid to analysis but not analysis in of itself



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Conclusions

presented by:

Presented at the 2009 ISPA/SCEA Joint Annual Conference and Training Workshop - www.iceaaonline.com



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Conclusions

- Linking historically separate program management disciplines in a useful way is not an insurmountable task
- Providing a Program Manager with integrated performance information will promote a “healthier & wealthier” program
- Although the “GAO Guide” is focused primarily on the discipline of cost estimating, it is also a very effective guide for EVM analysts

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Summary

- Given trends that place an ever-increasing emphasis on the linkage between risk, earned value, cost estimating, technical performance and schedule.
 - We showed how periodic “EVM” analysis can draw upon the wealth of information contained in the GAO Guide.
 - We explored the use MCR’s Linked CREST Assessment & Analysis (LCAA) efforts, executed from an oversight capacity

THANK YOU (!) FOR LISTENING

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Acronyms

ACWP: Actual Cost of Work Performed
APB: Acquisition Program Baseline
BAC: Budget At Completion
BCWS: Budgeted Cost of Work Scheduled or “planned value”
BCWP: Budgeted Cost of Work Performed or “earned value”
CA: Control Account
CAIG: Cost Analysis Improvement Group
CFSR: Contract Funds Status Report
CPI: Cost Performance Index
CPR: Contract Performance Report
CRA: Cost Risk Assessment
CWBS: Contractor Work Breakdown Structure
CV: Cost Variance
DID: Data Item Description
DoD: Department of Defense
DCMA: Defense Contract Management Agency
EAC: Estimate at Completion
ETC: Estimate to Completion
EV: Earned Value
EVM: Earned Value Management
EVMS: Earned Value Management System

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Acronyms (cont'd)

GAO: Government Accountability Office

GR&A: Ground Rules & Assumptions

ICE: Independent Cost Estimate

IEAC: Independent Estimate at Completion

IMS: Integrated Master Schedule

IPO: Integrated Program Office

KPP: Key Performance Parameter

LCAA™: Linked Crest Assessment & Analysis

LOE: Level of Effort (Earned Value Measurement Technique)

LRE: Latest Revised Estimate

M: Million(s)

MCR: Management, Consulting, Research, LLC

MR: Management Reserve

NDIA: National Defense Industrial Association

OBS: Organizational Breakdown Structure

PMO: Program Management Office

PM: Program Management

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PMB: Performance Measurement Baseline

POE: Program Office Estimate

RMP: Risk Management Plan

SE: System Engineering

SEP: System Engineering Plan

SOW: Statement of Work

SRA: Schedule Risk Assessment

TCPI: To-Complete Performance Index (a.k.a.
“run-out efficiency”)

TPM: Technical Performance Measure

WBS: Work Breakdown Structure