NDIA Systems & Mission Engineering Conference

Leveraging DCMA EVMS Data Driven Metrics to Support Your Contract Lifecycle (#22457)

Dave Scott, dmscott@bdo.com

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BDO

Agenda & Learning Objectives

Understand the new DCMA Data Driven Metrics and Business Processes

How to use EVMS compliance metrics for your contracts

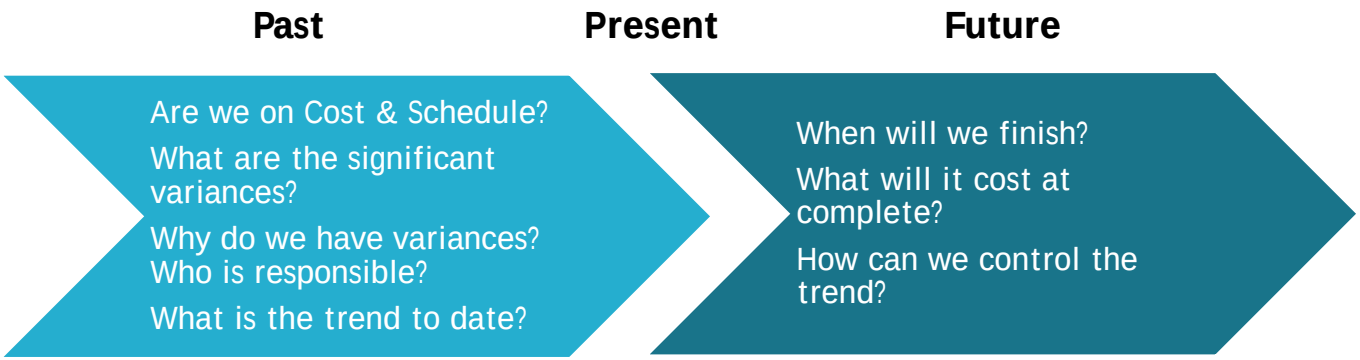
Learn about the benefits of EVMS process improvement

Before and After

Introduction to DCMA EVMS Compliance Metrics and Business Processes

Why is EV useful?

We analyze the past performance ……to help us control the future



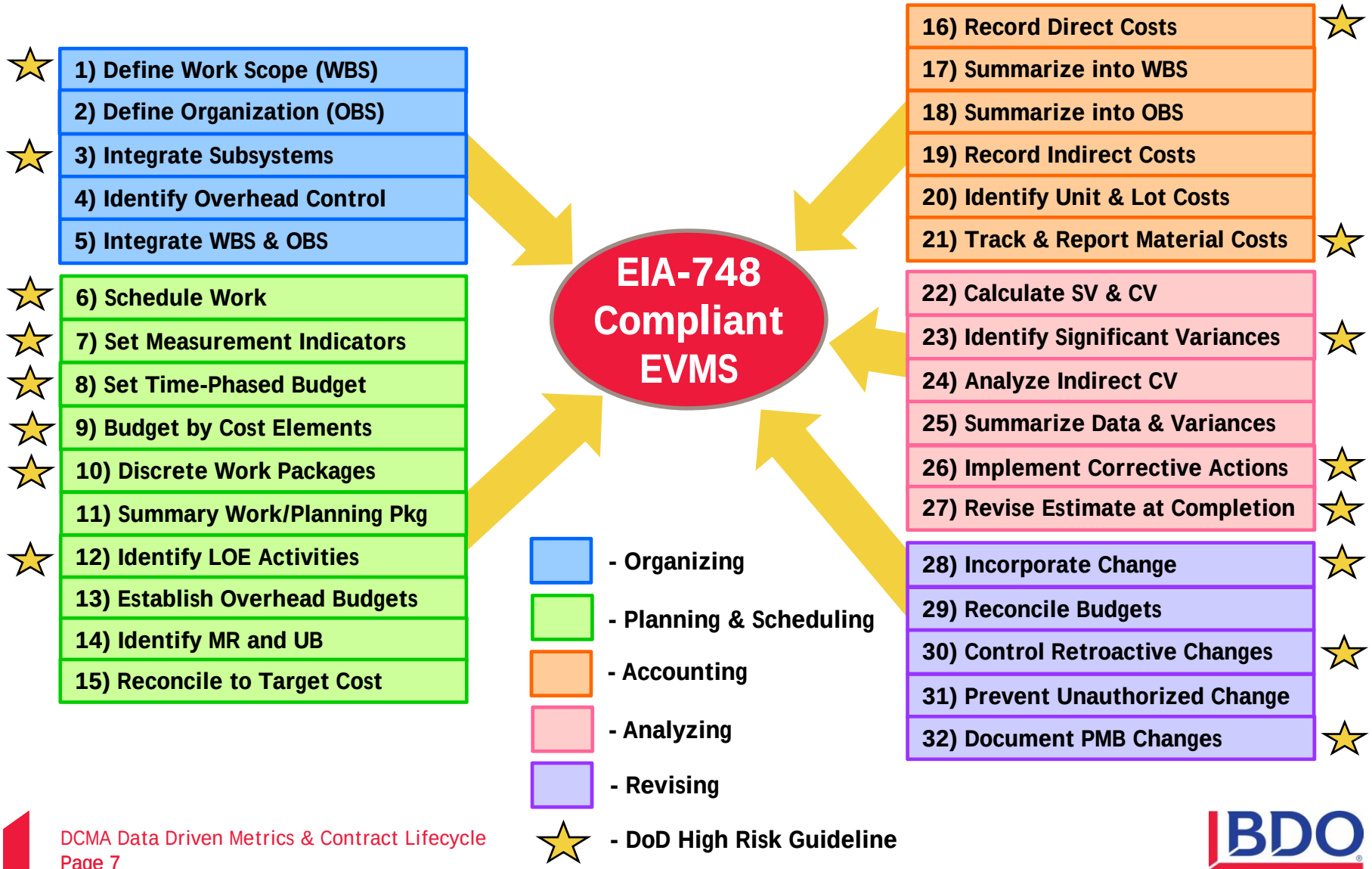
Answer 2 key questions

1. **Did we get what we wanted for what we spent?**
2. **At the end of the project, is it likely that the cost will be less than or equal to our original estimate?**

Besides Compliance - why do EVM?

- EVM is a proven Project Management methodology which is accepted by the Project Management Institute (PMI), GAO, OMB, and DoD
- EVM re-enforces project management best practices such as planning and scheduling
- EVM accurately measures project performance and enables an 'early warning' system to identify potential project issues while there is still time to react
- Opens the door to new opportunities requiring the implementation of a compliant EVMS – i.e. multi-award contracts like the GSA Oasis Contract

EIA-748 EVM Guidelines Overview



Top DCMA Guidelines reporting the highest deficiencies or non compliance

- **Guideline 6:** Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program.
- **Guideline 10:** To the extent it is practical to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units. Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.
- **Guideline 16:** Record direct costs in a manner consistent with the budgets in a formal system controlled by the general books of account.
- **Guideline 27:** Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements.

Sample Automated Metrics

Refers to the EIA-748 guidelines that the metric is testing

								Testing and Metrics						
2														
3	Baseline Coun	Test Metric Coun	Unique Test Metric ID	Revised? (x = Y	Attribute ID	Current Template Revisic	Test Metric Rev Date	Test Steps	Test Metric Numerator (X)	Test Metric Denominator (Y)	Metric Threshol	Min Freq	Artifacts	Test Type
82	67	58	10A302a	x	10A3	v3.0	23-Mar-17	Have PPs incurred actual costs?	X = Count of PPs with $ACWP_{CUM}$	Y = Total count of PPs	X/Y ≤ 2%	M	13	A
83	68	59	10A302b	x	10A3	v3.0	23-Mar-17	Have PPs earned performance?	X = Count of PPs with $BCWP_{CUM}$	Y = Total count of PPs	X/Y ≤ 2%	M	13	A
84	69	60	10A303a	x	10A3	v3.0	23-Mar-17	Do all PPs have duration?	X = Count of PPs with baseline duration	Y = Total count of PPs	X/Y ≤ 10%	M	11	A
85	70	61	11A101a	x	11A1	v3.0	23-Mar-17	For all CAs, does the BAC value for the CA equate to the sum of the WP and PP budgets within the CA?	X = Sum of the absolute values of (CA BAC – the sum of its WP and PP budgets)	Y = Total program BAC	X/Y ≤ 1%	P-IBR	13	A

Guideline 10

- To the extent it is practicable to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units.
- Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.

Guideline 11

- Provide that the sum of all work package budgets plus planning package budgets within a control account equals the control account budget.

Full list of current metrics available at: http://www.dcma.mil/HQ/EVMS/

Test Metric Specification

EVMS Test Metric Specification			
1. Guideline No: 10	**2. Unique Test Metric ID:** 10A302a	**3. Test Type:** Automated	**4. Frequency:** Monthly
5. Attribute: 10A3: Planning packages have the following characteristics: • Are the logical aggregations of work within a control account, normally the far-term effort that can be identified, budgeted, and time-phased in baseline planning, but cannot yet be detail planned into work packages.			
6. Test Step: Have PPs incurred actual costs?			
7. Test Metric: X = Count of PPs with $ACWP_{CUM}$ Y = Total count of PPs			**8. Metric Threshold:** $X/Y \leq 2\%$
9. UN/CEFACT Required DEI(s)			
10. Data Elements Required: 13 EV Cost Tool Data 13C $ACWP_{CUM}$ 13AT Planning Package UIDs			
11. Assumptions: 1. $ACWP_{CUM}$ is collected at the WP/PP level			
12. Instructions: 1. Identify and count the total number of PPs; this is the denominator (Y) of the test metric. 2. Identify and count PPs that have incurred actual costs ($ACWP_{CUM}$ is not zero); this is the numerator (X) of the test metric. 3. Calculate the test metric (Block 7): X divided by Y. 4. If the result is within the threshold (Block 8), the metric passes			
13. Numerator Code			
14. Denominator Code			

Details of each test metric is published so that there is a common understanding of the test and associated thresholds

Sample Manual Metrics

Refers to the EIA-748 guidelines that the metric is testing

								Testing and Metrics						
3	Baseline Coun	Test Metric Coun	Unique Test Metric ID	Revised? (x = YI	Attribute ID	Current Template Revisic	Test Metric Rev Date	Test Steps	Test Metric Numerator (X)	Test Metric Denominator (Y)	Metric Threshol	Min Freq	Artifacts	Test Type
5	-	1	01A101b	NEW	01A1	v3.0	23-Mar-17	Is there a single product-oriented WBS?	X = Occurrence of a WBS that is not product-oriented	n/a	X = 0	A	03, 20, 38, 46	M
6	2	2	01A201a	x	01A2	v3.0	23-Mar-17	Are SOW requirements included in the WBS?	X = Count of sampled SOW paragraphs identifying scope that are not in the WBS	Y = Total count of sampled SOW paragraphs identifying scope	X/Y = 0%	Initial no more than annual	04, 05	M
7	3	3	02A101a	x	02A1	v3.0	23-Mar-17	Is there a single OBS used on the contract?	X = Count of mismatches between the program organizational breakdown	n/a	X = 0	A	07, 20	M
8	4	4	02A102a	x	02A1	v3.0	23-Mar-17	Are all major subcontractors and intra-organizational work with an EVMS DFARS clause flow down requirement included in the OBS reporting requirements in Format 2?	X = Count of major subcontractors and intra-organizational elements with an EVMS DFARS clause flow down requirement not identified in the OBS reporting requirements in Format 2	Y = Total count of major subcontractors and intra-organizational elements with an EVMS DFARS clause flow down requirement	X/Y = 0%	A	06, 20, 21	M
9	5	5	03A101a	x	03A1	v3.0	23-Mar-17	Is control account data traceable between system artifacts including schedule, cost data, and work authorization documents? • Do baseline dates align between the work authorization documentation (WAD) and	X = Count of sampled incomplete CAs with IMS baseline dates outside the WAD POP	Y = Total count of sampled incomplete CAs in IMS	X/Y ≤ 5%	Q	09, 11	M

Guideline 1

- Define the authorized work elements for the program. A Work Breakdown Structure (WBS), tailored for effective internal management control, is commonly used in this process.

Guideline 2

- Identify the program organizational structure, including the major subcontractors, responsible for accomplishing the authorized work, and define the organizational elements in which work will be planned and controlled.

Guideline 3

- Provide for the integration of the planning, scheduling, budgeting, work authorization and cost accumulation processes with each other, and as appropriate, the program work breakdown structure and the program organizational structure.

Full list of current metrics available at: http://www.dcma.mil/HQ/EVMS/

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DCMA Business Processes

DCMA EVMS business practices (BP):

- BP1 - Pre-Award EVM System Plan Review
- BP2 - Post Award Earned Value Management System Description - Initial and Changes
- BP3 - Contract Initiation Support
- BP4 - EVMS Surveillance
- BP5 - EVMS Review for Cause
- BP6 - Compliance Review Execution

New DOD Integrated Program Management Data Report (IPMDR)

- IPMDR – New Data Item Description (DID) which will start being applied to contracts in early CY 2020 – replaces IPMR DID #81861B
  - Electronic data delivery except variance narratives
  - Deliver no later than 16th working day after monthly close
  - Discuss tailoring and incremental delivery with program office
  - Previously on ACAT 1 programs reported electronically by uploading to the EVM-CR but not all ACAT levels will report via the EVM-CR

Objectives

- Encourage dialog with the program office
- Relevant data faster
- Improved visibility into project controls – CA, WP, EOC, Time Phased Forecast
- Improved cost and schedule integration
- Data for more comprehensive analysis like DCMA metrics

IPMR and IPMDR Comparison

IPMR

- Format 1-4 Contract Performance
- WBS
- OBS
- Baseline Changes
- Staff Planning
- Format 5 Variance Analysis
- Format 6 Schedule (plus native)
- Format 7 Time Phased (by WBS)

Format

- UN/CEFACT XML
- EDI 839 (legacy)

IPMDR

Contract Performance Dataset

- Summary Data & Structures (WBS, OBS, …), Reporting Calendar
- Cumulative To-Date BCWS, BCWP, and ACWP by CA/WP
- Time-Phased EAC
- BCWS and ETC by CA/WP

Schedule Dataset (plus native format)

Performance Narrative

- Executive Summary
- Variance Analysis

Format

- Zipped JSON files
- Encodes cost / schedule data as tables & relationships

Using Compliance Metrics to Support the Contract Lifecycle

Proposal & Contract Pre-Award

DOD DFARS Clause 252.234-7001 - Notice of Earned Value Management System

- Requires an EVMS certified by a cognizant federal agency, or
- Gap analysis of current EVMS capabilities vs. the EIA-748 - 32 guidelines, description of the EVMS to be implemented, and an EVMS implementation plan

How to use DCMA Metrics during the proposal phase:

- Use EVMS data from an existing program
- Develop an EVM System Description document which describes the system, business processes, and responsibilities
- Utilize DCMA EVMS compliance metrics to demonstrate system compliance or to support a gap analysis
- Develop EVMS implementation plan to close any gaps

Post Contract Award & IBR

DCMA Business Practice 3 - Contract Initiation Support

- DCMA Initial evaluation of a contractor's Earned Value Management System (EVMS) for all new and existing contracts and programs that have the DFARS requirement;
- May me completed during the Integrated Baseline Review (IBR) or an subsequent initial visit for validation
- Quantitative analysis techniques (64 Metrics) to identify risks and test the reliability of core management processes utilized during the initial stages of a program.
- Emphasizes the contractor's Organization and Planning, Scheduling, and Budgeting processes, and also looks at Accounting and Estimate At Complete (EAC) processes.

How to use DCMA metrics post contract award:

- Utilize metrics on baseline data and initial reports to prepare for IBR

Program Execution

DCMA Business Practice 4 - EVMS Surveillance

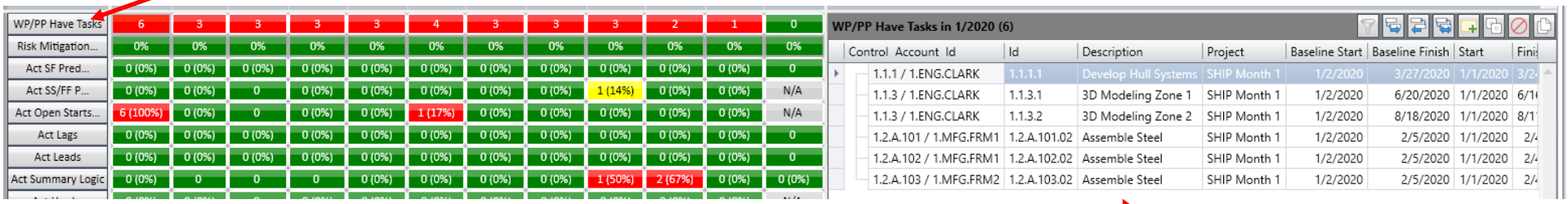
- Process to conduct ongoing assessments (surveillance) of contractor EVMS compliance to the Electronic Industries Alliance Standard-748 EVMS (EIA-748) guidelines.
- There are five (5) groups of metrics (104 Metrics) with different minimum suggested frequencies of evaluation.
- Intended to minimize the data inputs required from the contractor.
  - Group 1 metrics leverage automated data analysis using the Integrated Master Schedule (IMS) and the EV Cost Tool Data
  - Groups 2-5 are mostly manual and broken out to minimize the number of data calls.

How to use DCMA metrics during program execution:

- Use metrics to 'test' EVMS data prior to submissions to ensure compliance
- Use metrics to support internal EVMS surveillance and improvements

Metrics Analysis

In each period, there are between 1-6 WPs/PPs that do not have corresponding tasks in the schedule



WP/PP Have Tasks	6	3	3	3	3	4	3	3	3	2	1	0
Risk Mitigation...	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Act SF Pred...	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Act SS/FF P...	0 (0%)	0 (0%)	0	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)	0 (0%)	0 (0%)	N/A
Act Open Starts...	6 (100%)	0 (0%)	0	0 (0%)	0 (0%)	1 (17%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	N/A
Act Lags	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Act Leads	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Act Summary Logic	0 (0%)	0	0	0	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (50%)	2 (67%)	0 (0%)	0 (0%)

WP/PP Have Tasks in 1/2020 (6)

Control Account Id	Id	Description	Project	Baseline Start	Baseline Finish	Start	Finis
1.1.1 / 1.ENG.CLARK	1.1.1.1	Develop Hull Systems	SHIP Month 1	1/2/2020	3/27/2020	1/1/2020	3/2
1.1.3 / 1.ENG.CLARK	1.1.3.1	3D Modeling Zone 1	SHIP Month 1	1/2/2020	6/20/2020	1/1/2020	6/1
1.1.3 / 1.ENG.CLARK	1.1.3.2	3D Modeling Zone 2	SHIP Month 1	1/2/2020	8/18/2020	1/1/2020	8/1
1.2.A.101 / 1.MFG.FRM1	1.2.A.101.02	Assemble Steel	SHIP Month 1	1/2/2020	2/5/2020	1/1/2020	2/
1.2.A.102 / 1.MFG.FRM1	1.2.A.102.02	Assemble Steel	SHIP Month 1	1/2/2020	2/5/2020	1/1/2020	2/
1.2.A.103 / 1.MFG.FRM2	1.2.A.103.02	Assemble Steel	SHIP Month 1	1/2/2020	2/5/2020	1/1/2020	2/

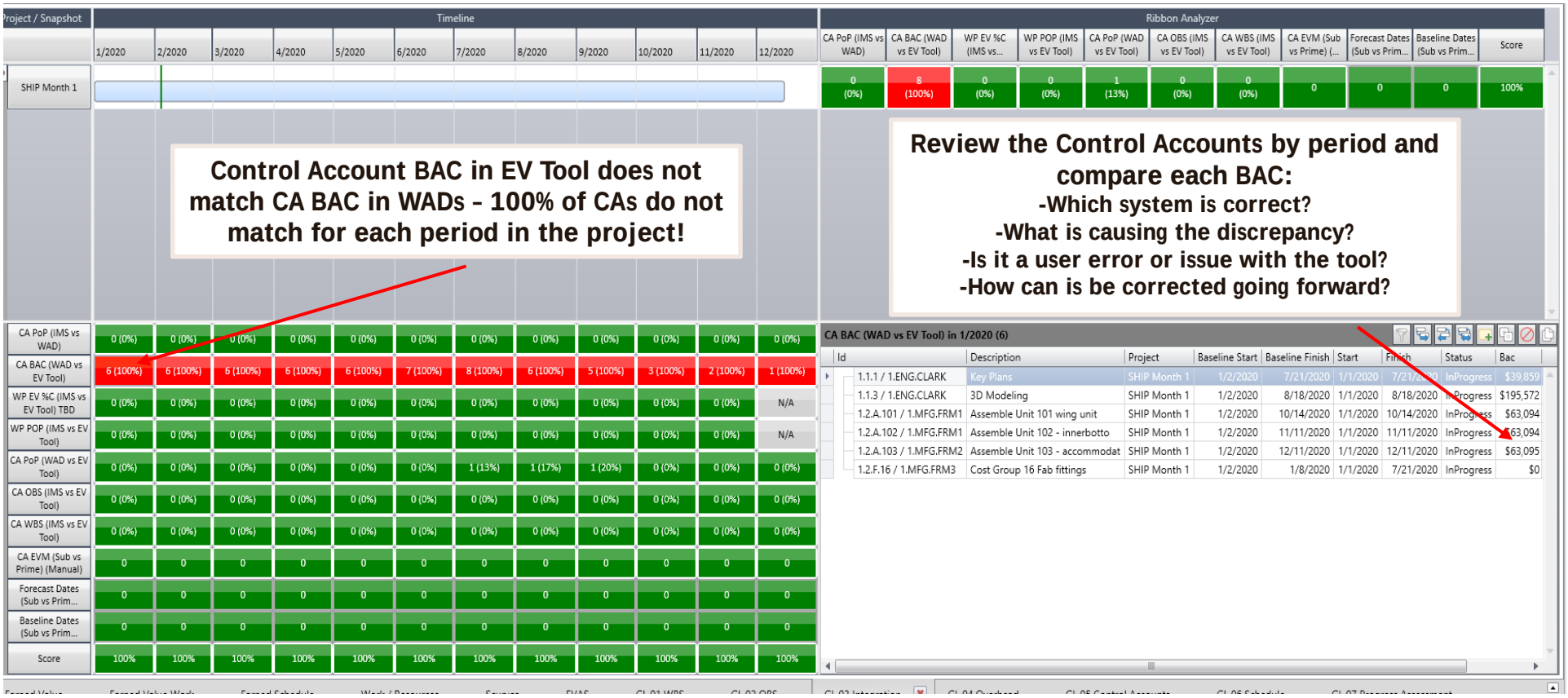
Review each WP/PP, starting with the near term:

-Are the WPs/PPs in the EV tool or schedule correct?

-Are tasks coded correctly in the schedule?

-How can is be corrected going forward?

Metrics Analysis –WAD Integration



Developing Contractor EVMS Metric Capabilities

Data Configuration

- Integrating data from multiple sources for analysis
- Automating metrics when possible through coding of EVM data

Toolset Implementation & Processes

- Reviewing the metrics in an automated manner requires the implementation of a new toolset
- Processes must be reviewed and updated to account for new tools and execution of internal surveillance

Internal Surveillance & Training

- DCMA's intention is that contractors will perform internal surveillance and use the test metrics to review data quality prior to monthly submissions
- Requires qualified resources readily available to address the new data requirements and assess any potential risks before you submit your data to the DCMA

EVMS Continuous Process Improvement

3 Steps to Data Driven Surveillance

Task 1 Assessment	Task 2 Data and Process Design	Task 3 Implementation & Training
• Project plan review and assessment of current EVMS capabilities to support DDM • Review current schedule and cost management capabilities to identify sources of data and recommend enhancements as required to support metrics and tool implementation • Additional data analysis and assessment of manual sources of data like Work Authorization Documents (WADs)	• Design coding changes, such as Planning Package/Work Package flags, Control Account/Summary Level Planning Package flags and identifying elements of cost • Design process changes to support the monthly reporting timeline and support corrective action planning	• Installation and configuration of analysis tool • Project test of metrics, reporting, and root cause analysis • Data clean up and additional changes • Training on DDM, government processes, and selected tool

Surveillance by Exception

Similar approach to managing project analysis but for surveillance

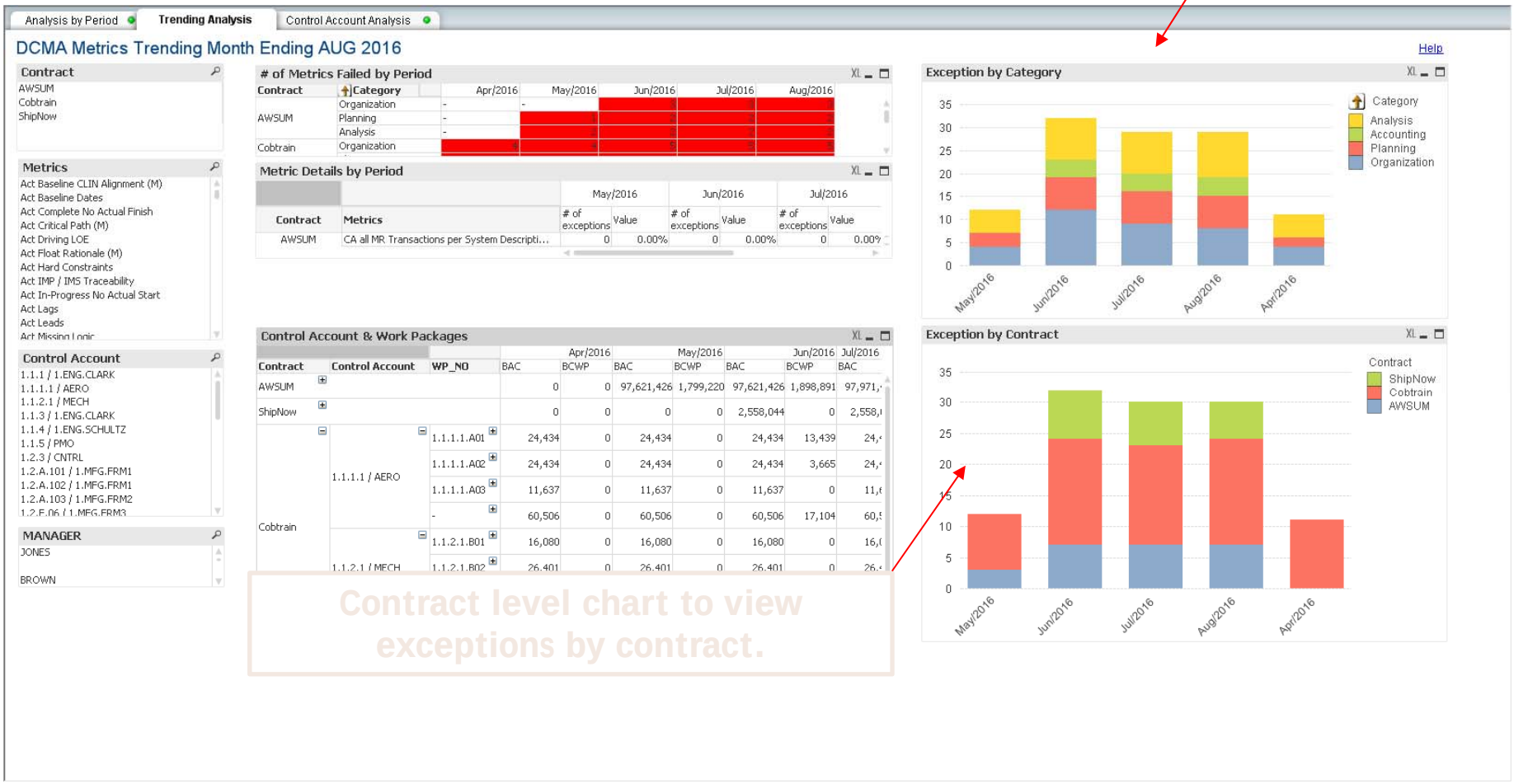
Surveillance is more efficient because you don't need to review every metric, every month

Focus on:

- Metrics associated with top GL deficiencies
- "At-a-glance" assessment of metric health
- Metrics that have been red for several periods
- Metrics that are trending negatively

Metric Trending

Track metrics by category, over time to identify trends and highlight areas to focus on.



Develop a Culture of Continuous Process Improvement

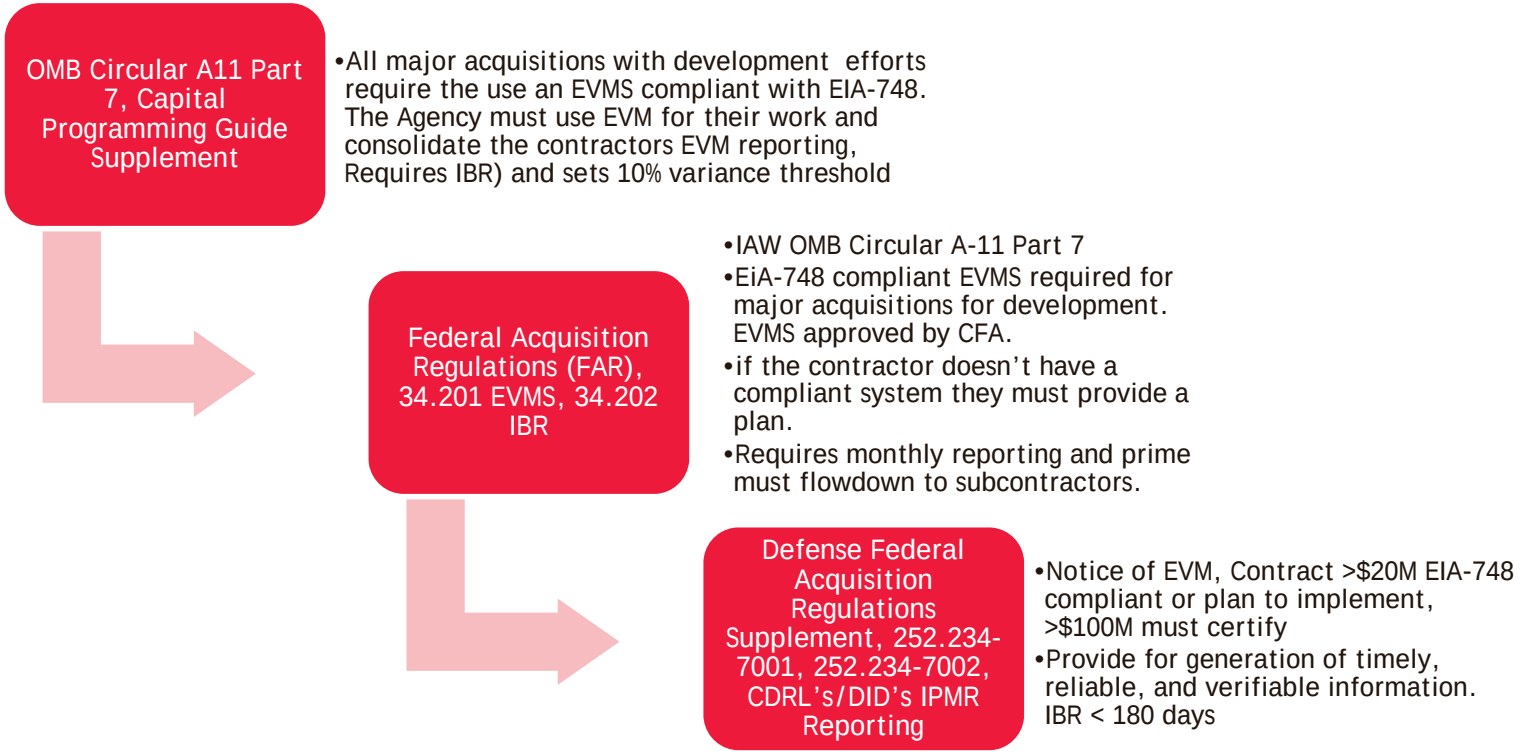
Commit	• Management commitment to automated surveillance to drive actionable EV results
Develop Routine	• Include surveillance by exception in monthly process
Share Resp.	• Assign responsibility to all project team members
Measure Results	• Share metric trends and improvements
Be Patient	• Continuous process improvement takes time

Benefits of Data Driven Metrics

- Encourages a commitment to automate your organization's internal EVMS surveillance processes
- Focused approach to reviewing, trending and analyzing metrics for a streamlined process
- Continuously improve EVMS processes, enhancing project performance management by identifying project controls weaknesses

Appendix

How is EVM Applied on Government Contracts?



What is Surveillance?

NDIA – Integrated Program Management Division (IPMD) Surveillance Guide defines the following goals of an Earned Value Management System (EVMS) surveillance process:

1. Ensure that the organization's EVMS has been effectively implemented in accordance with the organization's EVMS documentation
2. Ensure the EVMS provides timely, accurate, and reliable integrated project management information for internal and customer use
3. Assess the project's commitment and ability to maintain and use its EVMS as an integral part of its project management process

It's not a validation review or integrated baseline review – but uses the EIA-748 32 Guidelines and DOD EVMSIG as a roadmap to conduct surveillance https://www.acq.osd.mil/evm/#/home

New Surveillance Process

What projects are subject to Surveillance?

- Projects with EVM reporting requirement > $100M
- Projects identified for surveillance by the government program office
- Projects deemed to be high risk by the DCMA or stakeholders

DCMA is looking to modernize contractor oversight methods and practices to maximize effectiveness and create a standard benchmark, while simultaneously reducing costs

- Designed to streamline compliance oversight by generating a set of data tests and thresholds by which to adjudicate acceptable risk
- Facilitates the identification of high-risk contracts through an objective, automated process that allows for joint resolution of issues as they occur
- Contracts identified as high-risk are subject to a DCMA surveillance review

DCMA Business Practice 4
Tripped Metric Follow-Up & Close Out

If any metrics exceed the threshold the Team Member will evaluate the data anomalies causing the trip(s). Follow-up actions may include:

1. Discussions with the contractor and other stakeholders
2. Requests for data to support an expanded sample size or additional artifacts related to the data anomalies
3. Interviews with appropriate Control Account Managers and other contractor personnel

Tripped Metric Closeout – After metric follow-up actions are complete, the Team Member will determine if the metric trip represents a false indicator, in which case it should be closed out and annotated.

If it is not a false indicator the team member will take one of the following steps to close out the action:

1. Acceptance of the condition as the correct execution of the contractor system
2. Notation of a risk for future surveillance activities
3. Issuance of Corrective Action Request(s)